

Report to Strategic Priorities and Policy Committee

To: Chair and Members
Strategic Priorities and Policy Committee
From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure
Subject: Draft Climate Emergency Action Plan
Date: February 8, 2022

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions be taken with respect to the draft Climate Emergency Action Plan:

- a) The draft Climate Emergency Action Plan, attached as Appendix "A", **BE RECEIVED**;
- b) The draft Climate Emergency Action Plan Foundational Actions, attached as Appendix "B", **BE RECEIVED**;
- c) The Background Information (Supporting Documents) to Develop the Draft Climate Emergency Action Plan, attached as Appendix "C", **BE RECEIVED** for information; and
- d) Civic Administration **BE DIRECTED** to hold a public participation meeting at a future meeting of the Strategic Priorities and Policy Committee with respect to the draft Climate Emergency Action Plan.

Executive Summary

1.0 Background Information

On April 24, 2019, Municipal Council declared a climate emergency. On November 26, 2019, Council approved series of actions be completed to address the climate emergency, including the development of a Climate Emergency Action Plan (CEAP) and the creation and implementation of a Climate Emergency Evaluation Tool (now referred to as the Climate Lens Process). Updates on progress were provided on August 11, 2020 and April 27, 2021 to the Strategic Priorities and Policy Committee (SPPC). Several climate change reports were also submitted to Civic Works Committee on August 31, 2021 including the Outcome of Climate Lens Screening Applied to Major Transportation Projects and the Outcome of Climate Lens Process Applied to Waste Management Programs and Projects.

Status of Direction from November 26, 2019 Council Resolution

Over 95 per cent of the actions directed by Council are Complete or Ongoing (i.e., being incorporated into regular operating practices and reviews). The one item in progress, include a standard section in all Standing Committee reports that addresses the Climate Emergency Declaration, is in progress with the Clerk's Office. It is scheduled to be implemented in the second quarter of 2022.

Summary of Community Engagement for the Development of the CEAP

CEAP engagement efforts have provided the chance to reach many Londoners with information on climate change action and their responses have provided valuable information to the project team to help guide the formation of the CEAP. The total number of individual written or form responses received was 2,700 and people were reached about 26,300 times through attendance at online workshops and videos, speakers' series and other events, social media activity, and visits to the Get Involved and Climate Action Plan Simulator websites.

Although online engagement efforts have been extensive, staff acknowledge that there are individuals and groups that have not yet been adequately reached. This includes some First Nations communities, many children and youth, equity-deserving groups who may have barriers to participating in online engagement, and Londoners who are not actively engaged in climate change issues.

2.0 Discussion and Considerations

Sections 2.0, 3.0 and 4.0 of this report are divided into six parts. Additional information is also contained in the appendices. PART F refers to the Summary List of Foundational Actions that set the stage for a successful implementation of the Climate Emergency Action Plan.

PART A Climate Change Milestone Targets

Targets adopted by cities are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement, which limits global warming to below 2°Celsius above pre-industrial levels, and are also working to limit warming to 1.5°C. In addition, the targets must reflect a "fair share" of the 50 per cent global reduction in greenhouse gas emissions by 2030 identified in the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C. Under the "fair share" principle, high-income and high-emission cities, on a per-capita basis, are expected to do more to reduce emissions than those with lower income and/or emissions. Cities in North America, Australia, Japan, and Germany are considered high-income and high-emission cities on a per capita basis.

To date, supported by the Federation of Canadian Municipalities (FCM) and ICLEI Local Governments for Sustainability Canada (formerly International Council for Local Environmental Initiatives – ICLEI), over 20 Canadian cities have joined an initiative called Cities Race to Zero including 11 Ontario municipalities. City staff propose London also join the Cities Race to Zero initiative.

City staff also propose new, 1.5°C science-based targets for 2030, 2035, and 2040 to support the current Council-approved target for achieving net-zero emissions by 2050. Community Milestone Targets can only be achieved through collaborative action with all sectors in London. Council can influence progress towards community milestone targets, but it is up to Londoners, employees, and employers to take action. Corporate Milestone Targets are within Council's control as they deal with City facilities and operations.

The following table summarizes current emission reduction progress, existing approved milestone greenhouse gas (GHG) emissions reduction targets, and the proposed new milestone GHG emissions reduction targets for the community and Corporate.

Target Applied to:	Progress - End of 2020 (reduction from baseline)	Existing Approved Milestone Targets (reduction from baseline)	Proposed Milestone Targets (reduction from baseline)
Community (2005 baseline year)	30%	43% by 2030 Net-Zero by 2050	55% by 2030 65% by 2035 75% by 2040 Net-Zero by 2050
Corporate (2007 baseline year)	61%	60% by 2023 Net-Zero by 2050 or sooner	65% by 2030 75% by 2035 90% by 2040 Net-Zero by 2045

It is important to note that achieving reductions of this scale in just eight or nine years will be challenging. To meet the 1.5°C goal of the Paris Agreement, climate science indicates that all Londoners, the Province of Ontario and the Government of Canada must do their fair share. Community engagement and assessment of business readiness to date indicates there is momentum to do just that.

PART B Climate Emergency Action Plan

The draft Climate Emergency Action Plan is a separate document found in Appendix A. The CEAP, along with this report and supporting documents are contained on or linked to the City of London's Get Involved website. Key pieces in the draft Climate Emergency Action Plan can be summarized as:

- The status of climate change in London, actions taken and the rationale for increasing actions immediately;
- New milestone community and Corporate targets and the rationale;
- 10 implementation workplans covering the majority of aspects of mitigation and adaptation pertinent to London including who needs to be involved and how multiple actions can occur at one time from different participants;
- The level of effort and example actions required for different household types to do their "fair share" of greenhouse gas reduction by 2030.
- Key requirements for implementation success; and
- Leadership needs.

The CEAP is a community-wide plan to achieve three main goals:

1. Net-zero community greenhouse gas (GHG) emissions by 2050;
2. Improved resilience to climate change impacts; and
3. Bring everyone along (e.g., individuals, households, businesses, neighbourhoods).

Expected results and the descriptions below embody the changes required in London to address the climate emergency. In 2022, City staff will confirm or establish baselines and desired outcomes by 2030 for each of the Expected Results.

Expected Result	Description	2030 Milestone Outcome
Walkable, Complete Neighbourhoods	Ensure Londoners can access nearby daily needs while reducing automobile dependence and improving equity.	Ensure the majority of Londoners live within an easy walk/roll of their daily needs. Baseline data currently under development.
Increased Active Transportation and Transit	Increase the viability and attractiveness of active transportation and transit to reduce automobile dependence, improve equity, and promote physical health.	Strive to reduce the annual number of in-town automobile trips per person in London by 30-50% from 2019 levels Currently at around 550 trips per person (2019).
More Zero Emission Vehicles	Reduce or eliminate fossil fuel use in vehicles.	Strive for at least 50% of the kilometres travelled on London's roads to be by zero emissions vehicles. Currently at around 0.5%.
More Net-zero Buildings	Improve energy efficiency and reduce or eliminate fossil fuel use in buildings.	Strive to reduce fossil fuel use by buildings to 50% of where it was in 2019. Buildings (excluding industrial) in 2019 used 20.7 million gigajoules of fossil fuel energy (natural gas, fuel oil, and propane).

Expected Result	Description	2030 Milestone Outcome
Lower Carbon Construction	Reduce the use of construction materials with high lifecycle GHG emissions from raw material extraction to manufacturing and final end-use/disposal. Design for less material use overall and utilize recycled products where possible.	Strive for at least 40% less embodied emissions from new buildings and construction projects compared to 2019. Baseline data to be developed in 2022.
More Resilient Buildings and Infrastructure	Build and maintain civic infrastructure and buildings to increase public safety and reduce unexpected and long-term cost burdens as a result of climate change.	Strive for at least one-third of buildings in London to have at least one or more climate resiliency measure. Baseline data to be developed in 2022.
More Carbon Capture	Protect, maintain, and improve London's natural heritage system, urban plantings and agricultural lands to reduce carbon in the atmosphere, support biodiversity, and reduce the effects of climate change.	Strive for at least 25% higher carbon dioxide removal from the air in London by natural processes, agricultural practices, and engineered solutions than 2008. Baseline data from 2012 urban forest effects model is being updated.
Move Towards a Circular Economy	Support our economy's transition to reduced emissions from consumption and waste, more efficient material use, and the creation of regenerative prosperity.	Strive for at least 60% waste diversion from landfill through reduced waste generation and improved material efficiency, driving towards a circular economy. Residential diversion rate is currently 45%, total waste diversion rate is estimated at 33%.
Increased Community Resilience	Improve Londoners' ability to withstand, adapt, and recover from extreme weather events and other impacts of climate change.	Strive for at least 50% of Londoners to have measures in place to withstand and recover from extreme weather events and other impacts of climate change. Baseline data currently under development.
Increased Engagement on Climate Action	Improve education, awareness, and engagement to accelerate action on climate change by businesses, employees, community groups, institutions, and individuals.	Strive for at least 75% of Londoners to understand and acknowledge their contributions to and impacts from climate change. Baseline data to be developed in 2022.

To focus and coordinate efforts and to acknowledge the need for leadership, specific actions that will contribute to achieving the expected results and 2030 outcomes are organized into workplans for 10 Areas of Focus. These include:

1. Engaging, Inspiring and Learning from People
2. Taking Action Now (Household Actions)
3. Transforming Buildings and Development
4. Transforming Transportation and Mobility

5. Transforming Consumption and Waste as Part of the Circular Economy
6. Implementing Natural and Engineered Climate Solutions and Carbon Capture
7. Demonstrating Leadership in Municipal Processes and Collaborations
8. Adapting and Making London More Resilient
9. Advancing Knowledge, Research and Innovation
10. Measuring, Monitoring and Providing Feedback

PART C Implementing the Climate Emergency Action Plan

Implementing the workplans proposed in the 10 Areas of Focus is key for the Climate Emergency Action Plan. Each workplan sets an initial direction for collaborative discussion, action and measuring progress and serves as an initial overview of the activities and actions required to achieve reductions in greenhouse gas emissions or to make London more resilient to climate change. Several specific actions have been identified as priority items. Each workplan is designed for specific audiences, noting that overlap in some workplans exists. The workplans have been developed to tell a short story to help the reader understand the importance and to help potential participants get a head start on the work ahead.

Four important items are threaded throughout the Areas of Focus and workplans:

1. Community engagement to implement the CEAP must be broader, deeper and more reflective of all Londoners. Additional efforts are needed to reach First Nations communities, children and youth, seniors, equity-deserving groups who may have barriers to participating, and Londoners who are not actively engaged in climate change issues.
2. Alignment of where to take action to address climate change is essential. Workplans provide this framework for all to understand the general direction for moving forward. This allows many participants to get engaged, develop their own plans, undertake work and take action at the same time while heading in the same direction. It also avoids duplication and creates a stronger network. City staff will have involvement in all workplans as noted in the responsible services area(s) section. City staff will lead, co-lead and/or provide backbone support where it makes sense or is desirable. In some cases, limited to no City involvement is needed. Community and business leads and champions are fundamental to implementing the workplan.
3. Economic development and business opportunities exist within most areas of CEAP. This must be viewed as a priority. Businesses, institutions, and Londoners already spend about \$1.5 billion each year on energy. Almost 90% of the expenditure leaves the local economy. Realigning and focusing on existing expenditures is an important first task. Identifying and creating real opportunities for employment, business retention and growth, and economic development is a priority.
4. Leveraging approved City budgets for 2022 and 2023 by incorporating climate change actions, awareness and conversations allows early activities in many key areas (e.g., Mobility Master Plan, ReThink Zoning By-law Review, Community Diversity and Inclusion Strategy, Green Bin implementation, Wastewater Treatment Operations Master Plan). This leveraging strategy is also applicable work underway in businesses, institutions and other sectors.

The implementation of CEAP occurs through the 10 workplans for the Areas of Focus contained in report found in Appendix A. Contained in Appendix B are Foundational Actions that have been pulled primarily from the workplans to be advanced in the short term with existing resources and are viewed as being of higher priority and supportive of many actions to follow. They are identified in this manner to make it easier to highlight the initial efforts to create momentum and capacity to deliver the work as the CEAP progresses in 2022.

Foundational Action #9, described subsequently, requires a by-law be passed at Council:

- **Establish Western University Memorandum of Understanding** - the Memorandum of Understanding (MoU) between the City of London and Western University sets out the intentions of the City and Western to advance their joint climate change mitigation and adaptation objectives (Appendix G). The MoU is based upon the mutual understanding that the combined expertise, influence, and commitment of the parties are better applied together to support their common goals. This MOU is part of the Advancing Knowledge, Research and Innovation Area of Focus and workplan.

PART D Actions with Other Levels of Government

Significant action across all levels of government is required to make progress towards net-zero emissions and improved resilience to climate change impacts. Jurisdiction over the regulation of emissions in some key sectors, like electricity production, natural resource extraction, regional transportation and building codes, lies with provincial and federal governments. Without action to reduce emissions and improve resilience in these sectors, progress towards municipal emissions targets and resilience objectives will be much harder. Additionally, funding support from other levels of government will be integral to advancing various municipal actions contained within the CEAP. Key advocacy positions that should be advanced are provided for both the Government of Ontario and Government of Canada.

3.0 PART E Financial Impact/Considerations

Investment in climate action over the full term of the CEAP (to 2050) by the City, businesses and residents is anticipated to be significant. As outlined later in this report, many actions listed within the CEAP Workplans in 2022 and 2023 can be implemented within existing budgets and by utilizing existing City resources. Additionally, some of these investments are anticipated to align with, augment and sometimes replace planned future spending. In some cases, investments to achieve CEAP goals may result in opportunities for net savings, though additional up-front capital costs may be required to realize lower lifetime asset costs.

Subject to the approval of the recommendations and foundational actions in this report, Civic Administration will develop a detailed Climate Change Investment and Implementation Plan for all the CEAP initiatives requiring additional investment, inclusive of associated timing and financial impacts of these initiatives. Given the City's finite financial resources, this investment and implementation plan will be critical to determine scope, timing and pacing of these additional investments. This investment and implementation plan will also support the development of the City's 2023-2027 Strategic Plan and 2024-2027 Multi-Year Budget, as well as future Strategic Plan and Multi-Year Budget processes.

The investment required to support all initiatives in the CEAP cannot be borne entirely by the City of London. Support from federal and provincial partners will be critical to ensuring the successful implementation of many initiatives within this plan.

4.0 PART F – Summary List of Foundational Actions and Reporting

To move forward with the Climate Emergency Action Plan there are a number of foundational actions that are required (Appendix B). These actions set the stage for the successful implementation of the CEAP in 2022. Seventeen (17) foundational actions have been identified across four main categories:

- A. Greenhouse gas emissions reduction milestone targets
- B. Implementing the Climate Emergency Action Plan
- C. Engagement with other levels of government
- D. Financial impact/considerations

In addition, there are also numerous additional actions listed as parts of the ten Areas of Focus and their respective workplans. It is recognized that many aspects of the CEAP can be undertaken now while others will develop over time.

Foundational Action #17 is from Area of Focus Measuring, Monitoring & Providing Feedback. This action is to develop and provide an annual update to Council and the community on the progress of the Climate Emergency Action Plan, new and emerging ideas for implementation, and proposed adjustments to the Climate Emergency Action Plan. The importance of this action will allow staff to monitor progress and to adjust what needs to be a living plan annually based on challenges, successes, new technologies and other factors.

Schedule of Immediate Next Steps

Subject to Council direction, the immediate next steps in the review of the draft Climate Emergency Action Plan, approval and initial implementation steps.

Timeframe	Item
February 2, 2022	Staff report is posted on the Council Meetings webpage at https://london.ca/
February 8, 2022	SPPC meeting - table the draft Climate Emergency Action Plan, staff recommendations, foundational actions and presentation
February 2022	Receive written comments on the Get Involved website, via email, via mail
To be determined (TBD)	SPPC meeting including holding a public participation meeting (PPM)
TBD	Council meeting - approval to finalize Climate Emergency Action Plan
TBD	Launch

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 both climate change mitigation and adaptation address four of five areas of the Strategic Plan, at one level or another:

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

Analysis

1.1 Background Information

1.2 Previous Reports Related to this Matter

- August 31, 2021, Outcome of Climate Lens Process Applied to Waste Management Programs and Projects to the Civic Works Committee (CWC)
- August 31, 2021, Outcome of Climate Lens Screening Applied to Major Transportation Projects to CWC
- April 27, 2021, Update – Development of the Climate Emergency Action Plan to the Strategic Priorities and Policy Committee (SPPC)
- August 11, 2020, Climate Emergency Action Plan Update Report to the SPPC
- November 26, 2019, Climate Change Emergency Update report to the SPPC
- April 23, 2019, Climate Emergency Declared at Municipal Council

1.3 Key Dates - Development of the Climate Emergency Action Plan

Key public-facing dates in the development of the Climate Emergency Action Plan are identified in Table 1. The COVID-19 pandemic delayed a number of items directed by Council, including community engagement.

Table 1: Summary of Key Developments to Date

Key Dates	Item	Overview
April 23, 2019	Climate Emergency Declared at Municipal Council	Municipal Council approved the declaration of a climate emergency put forward by the Advisory Committee on the Environment through the Planning and Environment Committee. (April 15, 2019 PEC meeting Agenda & Minutes ; April 23, 2019 Council meeting Agenda & Minutes)
November 26, 2019	Climate Change Emergency Update report to the SPPC	This report contained 25 directions to staff including the establishment of a City-wide target for net-zero GHG emissions by 2050, creation and use of a climate lens on specific projects, specific areas to focus on and completion of a Climate Emergency Action Plan (CEAP). (November 26, 2019 SPPC Meeting Agenda)
January 24, 2020	Launch of Community Engagement	Project Get Involved webpage was launched with survey questions and opportunities for the public to make comments regarding the CEAP. Engagement materials were periodically updated to advance engagement and apply learnings to seek further insight from the community.
March 2, 2020	Budget approval	\$50,000 was approved to undertake the development of the Climate Emergency Action Plan including community engagement.
August 11, 2020	Climate Emergency Action Plan Update Report to the SPPC	Update Report on the progress towards the 25 directions to staff from the November 26, 2019 SPPC report and modified timelines (particularly as a result of COVID-19 related challenges). (August 11, 2020 SPPC Meeting Agenda)
October 28, 2020	Release of a comprehensive CEAP “Discussion Primer”	Feedback from surveys and other engagement, as well as peer municipality climate action research informed the creation of the document. The document was posted on Get Involved and disseminated directly to many stakeholders and potential CEAP partners for feedback.
April 27, 2021	Update – Development of the Climate Emergency Action Plan to the SPPC	Update on the rollout and evolution of the Climate Lens Process, community engagement for the development of the CEAP, and Corporate, City-influenced and community climate actions. (April 27, 2021 SPPC meeting Agenda)
August 31, 2021	Several climate change reports submitted to Civic Works Committee (CWC)	2020 Corporate Energy Consumption and Activities Report 2020 Community Energy Use and Greenhouse Gas Emissions Inventory Outcome of Climate Lens Process Applied to Waste Management Programs and Projects Outcome of Climate Lens Screening Applied to Major Transportation Projects (August 31, 2021 CWC meeting Agenda)

1.4 Status of Direction from November 26, 2019 Council Resolution

Appendix D contains 25 actions directed by Council from the November 26, 2019 resolution. A summary of the status is found on Table 2.

Table 2: Status of Council Direction from November 26, 2019

Status	Number	%
Completed actions	13	52%
Ongoing actions (i.e., being incorporated into regular operating practices and reviews)	11	44%
In progress (and action not complete)	1	4%
	25	100%

Over 95 per cent of the actions directed by Council are Complete or Ongoing (i.e., being incorporated into regular operating practices and reviews). The one item is identified as In Progress: include a standard section in all Standing Committee reports that addresses the Climate Emergency Declaration and, where appropriate, apply the Climate Screening Process (previously called the Climate Emergency Screening Tool – CEET) to the issues that are addressed in each report. This last action is expected to be implemented in the second quarter of 2022.

1.5 Summary of Community Engagement for the Development of the Climate Emergency Action Plan (CEAP)

Due to the COVID-19 pandemic, the ability to engage the community through in-person events such as summer festivals, neighbourhood fairs, and community meetings was not available. In the absence of in-person events or activities, City staff used a series of enhanced on-line platforms.

In August 2020, a community engagement process that primarily made use of on-line engagement activities was launched. The City of London's [Get Involved website](#) was the central location for most of the community engagement process. This site included the following:

- Background information, including:
 - Current and recent City-led actions on climate change
 - Basic information on climate change mitigation and adaptation
 - Current and historical greenhouse gas emissions at the community scale as well as for municipal operations
 - Brief summaries of greenhouse gas emission targets and plans for peer municipalities
- Links to tools and resources to highlight actions taken and support actions by individuals and businesses, including:
 - Project Neutral household carbon footprint calculator
 - London Environmental Network
 - Green Economy London
- Different options for level of effort for individuals to provide feedback, including:
 - Feedback forms
 - Open-ended comments
 - Discussion Primer (i.e., draft of potential climate actions for consideration)
 - Link to eDemocracy's Climate Action Plan Simulator

Online education and awareness sessions and community group and business meetings and collaborations were also part of the engagement.

CEAP engagement efforts have provided the chance to reach many Londoners with information on climate change action and their responses have provided valuable

information to the project team to help guide the formation of the CEAP. The total number of individual responses received was 2,700 and people were reached about 26,300 times through attendance at online workshops and videos, speakers' series and other events, social media activity, and visits to the Get Involved and Climate Action Plan Simulator websites.

Direct CEAP engagement participation (written and form responses)

- Feedback form #1: 158 responses
- Feedback form #2: 458 responses
- Discussion Primer (Get Involved + direct): 98 responses
- eDemocracy's Climate Action Plan Simulator: 1,263 responses
- 2020 lifestyle home show survey: 725 responses

Total number of individual, direct responses received through engagement efforts: 2,700.

CEAP engagement reach

- Get Involved Site: October 8, 2020 to April 30, 2021: 7,070 website visits
- eDemocracy's Climate Action Plan Simulator: 12,190 website visits
- Attendees to events or on-line view of events hosted by the LEN, London Public Library, City of London and related events (e.g., Green in the City, Green Economy London) from 2020-2021: 7,000

Total number of times people were reached through engagement efforts including direct participation: 26,300.

Although online engagement efforts have been extensive, staff acknowledge that there are individuals and groups that have not yet been adequately reached. This includes some First Nations communities, many children and youth, equity-deserving groups who may have barriers to participating in online engagement, and Londoners who are not actively engaged in climate change issues.

Based on comments received that included identifying information, more effort needs to be made to engage all interested Londoners, including those who may experience barriers to participation. This emphasizes the importance of ongoing and increased engagement efforts as a key component of implementation activities.

1.6 Funding the Development of the Climate Emergency Action Plan

Council approved \$50,000 on March 2, 2020 for the development of the Climate Emergency Action Plan. Expenditures between March 2020 and December 2021 have totaled \$60,000 (Table 3). Additional funding was allocated from approved climate change awareness and education accounts to meet the needs of the project as the timeframe to complete the work was extended into 2021.

Table 3: Summary of Engagement Expenditures in Developing the Climate CEAP

Item	Estimated Amount
Ethelo Climate Action Simulator	\$15,000
CEAP Videos	\$7,000
Project Neutral (CEAP portion)	\$5,000
Promotions (e.g., radio advertisements, print media, speaker fees)	\$15,000
Various community workshops, sessions	\$15,000
Miscellaneous (e.g., social media purchases, etc.)	\$3,000
Total	\$60,000

3.0 Discussion and Considerations

Sections 2.0, 3.0 and 4.0 of this report are divided into six parts and contains details in the following subsections (and Appendices E, F and G) as noted below. PART F refers to the Summary List of Foundational Actions that set the stage for a successful implementation of the Climate Emergency Action Plan. A note is provided in each part or subsection that is associated with a Foundational Action.

PART A Climate Change Milestone Targets

- 2.1 Background and Definitions
- 2.2 Current Greenhouse Gas Emissions Reduction Targets (Community and Corporate)
- 2.3 Current Greenhouse Gas Emissions in London and Progress Towards Targets
- 2.4 Review of Targets in Other Municipalities (and Appendix E)
- 2.5 Why is London Ready to Increase Targets?
- 2.6 Proposed Community and Corporate Milestone Targets
- 2.7 Joining the Race to Zero Cities Campaign

PART B Climate Emergency Action Plan

- 2.8 Overview of the Draft Climate Emergency Action Plan
- 2.9 Background Information (Supporting Documents) to Develop the Climate Emergency Action Plan
- 2.10 Proposed Goals and Expected Results
- 2.11 Proposed Areas of Focus for Implementation
- 2.12 Status of Climate Change Adaptation

PART C Implementing the Climate Emergency Action Plan

- 2.13 Highlights from Implementation Workplans (Areas of Focus)
 - Transportation Management Association (and Appendix F)
 - City of London Boards and Commissions
 - Western University Memorandum of Understanding (and Appendix G)
 - Best Practises for Investment in Energy Efficiency and GHG Reduction

PART D Actions with Other Levels of Government

- 2.14 Government of Ontario
- 2.15 Government of Canada

3.0 PART E Financial Impact/Considerations

- 3.1 Background
- 3.2 Experience with Mitigation Costs and Benefits
- 3.3 Experience with Adaptation Costs and Benefits
- 3.4 Existing and Near-Term Funded Actions and Resources
- 3.5 Future Financial Impacts

4.0 PART F Summary of List of Foundational Actions and Reporting (and Appendix B)

PART A Climate Change Mitigation Milestone Targets

2.1 Background and Definitions

The City of London has a well-established process for estimating annual greenhouse gas emissions from both municipal (i.e., corporate) operations as well as the community at large. This allows City staff to establish milestone targets to strive for and to measure progress towards achieving net-zero emissions. The terms “milestone targets” and “net-zero emissions” are used frequently in this report and are defined as:

- Milestone targets – a milestone is defined as an action or event marking a significant change or stage in development. Short-term and medium-term milestone targets are set to mark progress towards achieving the 2050 net-zero emissions target.

- Net-zero emissions - the Government of Canada defines net-zero emissions as “our economy either emits no greenhouse gas emissions or offsets its emissions, for example, through actions such as tree planting or employing technologies that can capture carbon before it is released into the air”

2.2 Current Greenhouse Gas Emissions Reduction Targets (Community and Corporate)

London’s current community greenhouse gas emission reduction targets are:

- 15 per cent reduction from 1990 levels by 2020
- 37 per cent reduction from 1990 levels by 2030
- Net-zero emissions by 2050

The milestone targets for 2020 and 2030 come from the 2014-2018 Community Energy Action Plan, which were approved in July 2014. The net-zero emissions target for 2050 was adopted and approved by Council in November 2019.

London’s current corporate greenhouse gas emission reduction targets come from the 2014-2018 and 2019-2023 Corporate Energy Conservation and Demand Management Plan, the latest plan which was approved in October 2019:

- 59 per cent reduction from 2007 levels by 2018
- 60 per cent reduction from 2007 levels by 2023
- Net-zero emissions by 2050 or sooner

2.3 Current Greenhouse Gas Emissions in London and Progress Towards Targets

Community-Wide Emissions

Energy use, including transportation fuel use, in London was responsible for almost 2.6 million tonnes or 95 per cent of greenhouse gas emissions in 2020. Significant energy sources used in London include natural gas, gasoline, electricity, diesel, fuel oil, and propane. 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.

Total community greenhouse gas emissions in 2020 were over 2.7 million tonnes. This is 22 per cent lower than the 1990 level and well below the 15 per cent reduction target that had been set for 2020.

The COVID-19 pandemic had a significant impact on transportation fuel use, with an associated 20 per cent 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 per cent drop in residential greenhouse gas emissions between 2019 and 2020.

Energy-Related Emissions from the Corporation of the City of London

Energy use by the Corporation was responsible for 17,500 tonnes of greenhouse gas emissions in 2020. Significant energy sources used to deliver municipal services include electricity, natural gas, diesel, gasoline, steam, and chilled water. Major energy users include buildings, wastewater treatment, fleet vehicles, traffic signals and streetlights, and water pumping.

Energy-related GHG emissions in 2020 were six per cent (1,200 tonnes) lower than 2018 and 61 per cent lower compared to 2007. Given that electricity represents over half (56%) of City’s corporate energy needs, a lot of the emission reductions from corporate energy use since 2007 are due to a cleaner electricity grid in Ontario. However, corporate energy conservation actions have also had an impact.

The impact of the COVID-19 pandemic on City's energy consumption was significant, where building-related energy commodities had a considerable drop, while vehicle fuel use increased. This resulted in a seven per cent decrease in energy consumption from 2019 overall.

2.4 Review of Targets in Other Municipalities

Comparing GHG emission reduction targets from one Canadian municipality to another at any point in time is not a straightforward exercise. The differences between the baseline year used, the progress made since the target was set, the initial emissions intensity in a municipality, measurement methodology and included sources, and the climate, topographic, urban design and socioeconomic characteristics of the area can be significant when trying to evaluate any municipality's level of ambition reflected in their GHG emissions reduction targets.

To establish an understanding of the actions and ambitions of other municipalities with some similar characteristics to London, a sub-set of Ontario municipalities has been identified as a "peer group". This peer group has been identified to inform the development of the Climate Emergency Action Plan based on the following criteria:

- **Geographic Location:** Ontario municipalities were the focus (the closer to London, the better), considering the likely similarity of future climate impacts and the relevance of actions taken under the same Provincial government.
- **Level of Government:** London is a single tier municipality which is responsible for all local services to residents. Review of climate commitments and actions of other single tier municipalities were prioritized, however upper tier and lower tier municipalities were still considered where other selection criteria strongly suggested inclusion.
- **Existing Actions and Commitments:** Review of material from municipalities that have taken significant action on climate change adaptation and mitigation was prioritized.

The peer group of municipalities includes Guelph, Hamilton, Kingston, Ottawa, Greater Sudbury, Windsor, Durham Region, Waterloo Region, Burlington, Mississauga, and Oakville. See Appendix E for a summary of current community and corporate GHG reduction targets for London's peer municipalities.

In addition, City staff track progress in other communities, including Halifax, Toronto, Winnipeg, Calgary, Edmonton and Vancouver. Each of these municipalities are known to have leading-edge plans, actions and policies that are likely applicable to London but do require additional effort in understanding the local and provincial context (e.g., Vancouver has its own building code). Although Toronto is in Ontario, its size at about 2.8 million people and special legislation (*City of Toronto Act, 2006*) requires additional effort in interpretation.

2.5 Why is London Ready to Increase Targets?

Current Community Involvement and Comments

Community engagement efforts informing CEAP development included thousands of interactions with interested Londoners and City staff received over 2,700 individual comments. For example, within these comments, many Londoners (non-random sample involving 158 participants – Feedback Form #1) told us the following:

- 89% of Londoners participating in this feedback understand that climate change is caused by human activities;
- Participating Londoners have a good understanding about climate change – an average of "8" on a scale of 1 to 10 (1 being "very little" and 10 being "high level of understanding"); and

- 83% of participating Londoners believe they have the ability to influence climate change and take climate action in at least some capacity.

The Climate Action Plan Simulator was available for use from December 20, 2020 until April 30, 2021. In total, 12,190 people visited Climate Action Plan Simulator website and 1,263 people participated in the Climate Action Plan Simulator engagement process. As part of the simulator engagement process, participants were provided a series of survey questions to help City staff understand their perspectives on taking climate action.

Some of the highlights include:

- 74% of participants were interested in someone who can manage the paperwork of all the different home energy retrofit incentives for them;
- 65% of participants were worried about climate change's impact on the quality of life for their children and future generations;
- 57% of participants were interested in reducing food waste;
- 56% of participants were interested in buying an electric vehicle, or already own one;
- 53% of participants were interested in solar hot water heating;
- 45% of participants see cost as being the barrier to buying an electric vehicle;
- 40+% of participants have already done some home energy renovations such as insulation, new furnace, new windows, and/or draft proofing; and
- 40% of participants were interested in buying or building a net-zero energy home.

The top five barriers for taking climate change action mentioned by many Londoners (non-random sample involving 339 participants – Feedback Form #2) were:

- Need to expand city-sponsored composting, which will result in less waste going to landfill;
- Need to create more safe environments to walk or bike, including a network of protected bike lanes accessible for all ages and abilities;
- Need for more frequent, efficient, and well-distributed public transit services (including rapid transit);
- Access to financial resources to address the cost of taking climate actions, such as installing solar panels or purchasing electric vehicles; and
- Convenience of “business as usual” and not knowing where to get started.

The above details along with the results from other engagement activities highlight the willingness of many Londoners to take action. The details also highlight the need for help and action from the City of London, the federal and provincial governments, businesses and community groups. It is also important to note that it is currently unclear what type of engagement and feedback was received from marginalized and hard-to-reach groups in London. It has been assumed that community comments are not as complete as possible and future steps are being planned to correct this challenge.

Additional details on community engagement are included in supporting documents titled “Climate Action Plan Simulator Engagement Report” and “Learning from People” listed in Appendix C.

Current Business Involvement

London businesses and institutions have taken considerable action to acknowledge and begin to address the challenges of climate change. More than 60 per cent of London's top 85 employers (by number of employees as noted by the London Economic Development Corporation) have taken some form of climate action recently, including one or more of the following:

- Published an environmental, climate change and/or sustainability commitment;
- Committed to reducing greenhouse gas emissions;
- Committed to a net-zero emissions target;
- Committed to a zero-waste target;
- Established climate change adaptation goals or strategies;

- Established natural heritage protection, conservation and/or preservation commitments or goals; and/or
- Engaged in partnerships with Municipal, Community and/or non-profit organizations to advance climate action.

In addition, 19 of Canada's Greenest Employers (as selected by Mediacorp Canada Inc.) have operations in London and Green Economy London, one of seven Green Economy Hubs across Ontario, is supporting 45 London organizations as part of a wider network of businesses to set and achieve sustainability targets. Action on climate change from businesses and institutions across nearly all sectors of the local economy and community shows a readiness and willingness to move even further towards a more resilient, net-zero emissions future.

For the past 14 years, the Canada's Greenest Employers project has given special designations to employers that lead the nation in creating a culture of environmental awareness in their organizations. To be selected for this designation, the following criteria are considered:

- Companies that have developed unique environmental initiatives and programs;
- How successful companies of interest have been in reducing internal environmental impacts;
- How involved companies are in these environmental initiatives and how these companies themselves contribute; and
- How much these environmental initiatives have shaped the companies' public identity and how it has led to attracting new employees and clients.

London is also home to operations of 13 companies listed on the 2021 Corporate Knights (CK) Global 100 most sustainable companies, which is a ranking that includes publicly traded companies grossing a minimum of \$1 billion annually. The list is determined based on the evaluation of companies according to 24 key performance indicators (KPIs) covering aspects including resource management, employee management, financial management, clean revenue and clean investment and supplier performance using publicly disclosed data.

Additional details on London's business community actions are included in the supporting document titled "Overview of Business and Employers Climate Action" listed in Appendix C.

2.6 Proposed Community and Corporate Milestone Targets for Climate Change

Foundational Actions 1, 2 and 3

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 Londoners, visitors, employers, and employees. Individual and collective action with respect to sustainable energy use, energy management, and energy conservation is critical for the future. Establishing previous targets and the ones proposed in this section took this understanding in mind.

To measure the path to net zero in London requires milestone targets. Setting science-based community GHG reduction milestone targets can:

- Demonstrate a commitment on the importance of aligning climate action with the science to support community and businesses actions, direction, and aspirations;
- Provide transparency about where GHG emission reduction commitments need to be according to the science and where the gaps are to help prioritize actions that may be easier to achieve, while more challenging ones require more planning and longer periods of time;
- Bring a long-term target of 2050 into a more meaningful near-term timeframe (e.g., 2030) where current Londoners can more closely relate to the challenges;
- Create more manageable steps that can be measured and reported annually;

- Build capacity in the community and with businesses, incrementally and annually, to deal with budgets, resources and other requirements to meet targets;
- Signal to new businesses and investors that London is committed to climate change action and environmentally sustainable practices; and
- Highlight to existing businesses that London is aligned, is a community of committed people, employees and employers, and ready for the challenges and opportunities in the short, medium and longer terms.

Setting science-based Corporate GHG reduction milestone targets can:

- Help prioritize the needs for sustainable funding sources, new funding sources and/or re-allocate existing funding for internal GHG reduction projects;
- Help prioritize actions that may be easier to achieve while more challenging ones require more planning and longer periods of time;
- Encourage the identification of additional reduction opportunities when direction for GHG reduction efforts has been set;
- Create more manageable steps that can be measured and reported annually; Encourage innovation and creativity, improve staff morale, and help in the recruiting and retention of qualified employees;
- Showcase projects and programs to assist other with decision-making and fast tracking the learning curve; and
- Demonstrate leadership.

In April 2021, the Government of Canada revised its 2030 target to aim for a 40 to 45 per cent reduction in greenhouse gas emissions from 2005 levels as well as net-zero emissions by 2050. The provincial government 2030 target is for a 30 per cent reduction from 2005 levels and, at this time, has not established further emission reduction targets.

To help make baseline measurement dates consistent, City staff propose to switch to 2005 (versus 1990) as the new baseline year for community GHG emissions given that:

- 2005 is the baseline year used for target setting by the Government of Canada and the Province of Ontario; and
- 2005 represents a year where per-person emissions in London were close to their peak (the basis for setting a 1.5°C science-based target).

Based on the above, the proposed milestone targets for the community and Corporate are identified on Table 4.

Table 4: Existing and Proposed Milestone Targets for GHG Reduction

Target Applied to:	Progress at the End of 2020 (reduction from baseline year)	Existing Approved Targets (reduction from baseline year)	Proposed Milestone Targets (reduction from baseline year)
Community (2005 baseline year)	30%	43% by 2030 Net-Zero by 2050	55% by 2030 65% by 2035 75% by 2040 Net-Zero by 2050
Corporate (2007 baseline year)	61%	60% by 2023 Net-Zero by 2050 or sooner	65% by 2030 75% by 2035 90% by 2040 Net-Zero by 2045

For 2030, this would require a city-wide reduction in annual emissions of about 1 million tonnes from 2020 or 1.25 million tonnes from pre-pandemic levels (which were about 3.0 million tonnes per year versus 2.7 million in 2020).

City staff have developed high-level estimates (Table 5) to illustrate the level of effort for local emission reductions required to reach the new 1.5°C science-based target for 2030. Some of this would be enabled by accelerated action at the federal and provincial government level, as well as by global and national businesses. However, local action is also required particularly in mobility and buildings. Also included on this table are estimated GHG emissions by sector (and subsector where possible) for 2019 (pre-pandemic) and 2020 (pandemic). These high-level estimates assume that London's growth follows the forecasts in the London Plan.

Table 5: Examples of Energy-Related Local Reductions Needed to Reach the New 2030 1.5°C Science-Based Target

Sector	Actions (between 2022 and 2030)	Estimated Annual GHG Emissions in 2019 (tonnes per year)	Estimated Annual GHG Emissions in 2020 (tonnes per year)	GHG Emission Reduction by 2030 (tonnes per year)
Transportation	electrifying LTC bus fleet - 25% by 2030	20,000	17,000	4,000
Transportation	40% fewer in-town vehicle trips by car	470,000	370,000	100,000
Transportation	25% fewer out-of-town trips by car	470,000	370,000	60,000
Transportation	50% lower fuel use (L/100 km) for personal vehicles	940,000	740,000	260,000
Transportation	75% lower fuel use (L/100 km) for local vehicle fleets	71,000	64,000	40,000
Energy/waste	renewable natural gas produced locally	n/a	n/a	20,000
Energy	solar PV – 270 MW of rooftop solar by 2030	n/a	n/a	20,000
Buildings	natural gas use 50% lower than 2019	970,000	960,000	500,000
Buildings	100% replacement of local fuel oil heating with heat pumps	40,000	40,000	40,000
			Total	1,044,000

It is important to note that achieving reductions of this scale in eight or nine years will be challenging. This will require commitments and actions from the community, from London's businesses and institutions, partners and stakeholders, and all City Service Areas. To meet the 1.5°C goal of the Paris Agreement, climate science indicates that all Londoners, the Province of Ontario and the Government of Canada must do their fair share.

Waste minimization and diversion activities will also have climate change mitigation benefits. The measures contained within the 60% Waste Diversion Action Plan are estimated to reduce GHG emissions by 17,000 to 27,000 tonnes annually, some with GHG reduction benefits in London and others with GHG reductions outside London (Table 6).

Table 6: GHG Reductions from Additional Waste Diversion Actions

Additional Waste Reduction Actions	Range of GHG Emission Reductions (tonnes per year)
Food waste avoidance	2,300 - 6,000
Home composting	600 - 1,000
Community composting	100 – 200
Curbside Green Bin program	10,000 – 16,000

Understanding the capability of local actions to remove carbon dioxide from the atmosphere will be important to offset local greenhouse gas emissions. These include:

- Carbon dioxide removed by natural heritage systems within London (e.g., Environmentally Significant Areas, woodlots);
- Carbon dioxide removed by the urban forest and other green infrastructure within London (e.g., street trees, trees in parks, trees on private property, stormwater ponds designed to mimic wetlands);
- Carbon dioxide removed by the adoption of regenerative agricultural practices within London that increase the carbon content of soil; and
- Carbon dioxide removed by engineered processes within London (e.g., direct air capture, point-source carbon capture and utilization/storage of captured carbon dioxide).

Quantifying all carbon sequestration capacity within an area the size of London is an area of study that is in development. City staff are not aware of any Canadian municipalities currently measuring or tracking these data. Components of carbon sequestration capacity, like estimates of the quantity of carbon removed from the atmosphere by trees on public property, have been identified and measured in some jurisdictions, including London.

In 2012, the City utilized the Urban Forest Effects (UFORE) model to estimate that London's trees removed (on a net basis) about 35,000 tonnes per year of carbon dioxide from the atmosphere, or just over one per cent of current community-wide greenhouse gas emissions. This estimate does not include land outside of the Urban Growth Boundary, the capacity for carbon sequestration on agricultural land, or any other sequestration capacity associated with land use or land use change. Advancing municipal capabilities and capacity to measure and track sequestration potential on the landscape and from engineered systems is important and will be required as milestone emission targets approach and the purchase of GHG emissions offsets are considered.

With respect to Corporate targets, City staff have carried out high level estimates of different pathways for reaching net-zero emissions by 2045, taking into account planned actions already within the multi-year budget, proposed actions that have had feasibility studies undertaken, and options for new actions. These targets and associated actions also consider the fact GHG emissions from Ontario's electricity grid are expected to increase as the Pickering Nuclear Generating Station is shut down in 2025. Actions that have been taken into consideration when evaluating options included:

- Large-scale net-metered solar power on major City buildings;
- Electrification of building heat;
- Use of renewable natural gas for building heat;
- Large-scale net-metered solar power at water and wastewater facilities;
- Electrification of light-duty fleet vehicles; and
- Use of renewable natural gas for heavy-duty fleet vehicles.

In summary:

- Achieving the milestone targets will require significant changes in how we live, work, commute, play and build. The level of effort of Londoners, employees, employers and visitors to make the adjustments and changes required is unprecedented. This will be the same in all Canadian communities and most parts of the world. The actions required will create more liveable communities;
- When compared to current information from the ten peer municipalities, the proposed milestone targets for London are consistent with or exceed targets proposed by others; and
- When compared to six leading-edge plans outside of the peer group, the proposed milestone targets are consistent with what has been approved noting that Vancouver and Toronto have committed to more advanced 2030 milestone targets and Toronto has recently committed to reach net-zero by 2040, a decade sooner than most other municipalities' net-zero emissions targets.

2.7 Joining the Cities Race to Zero Campaign

Foundational Action 4

Net-zero greenhouse gas emissions by 2050, about 30 years from now, is a goal that has been set or is being considered by over 140 countries including Canada, United States, United Kingdom, France, Italy, Japan and Mexico. A few countries like Germany and Sweden have set 2045 as the year for carbon neutrality. The world's largest greenhouse gas emitter, China, has set 2060 for net zero emissions (Climate Action Tracker, November 2021 <https://climateactiontracker.org/global/cat-net-zero-target-evaluations/>).

Race to Zero is the United Nations-backed global campaign rallying non-state organizations – including companies, cities, regions, and financial and educational institutions – to take rigorous and immediate action to halve global emissions by 2030 and deliver a healthier, fairer zero carbon world in time. All members are committed to the same overarching goal: reducing emissions across all scopes swiftly and fairly in line with the Paris Agreement, with transparent action plans and robust near-term targets.

It mobilizes a coalition of leading net-zero initiatives, currently (as of December 31, 2021) representing 67 regions, 1,049 cities, 5,229 companies, 1,039 educational institutions, 441 financial institutions, and 52 healthcare institutions. All organizations must meet stringent criteria which will bring them to the starting line to credibly race to zero emissions.

The Cities Race to Zero is a collaboration between C40 Cities, ICLEI Local Governments for Sustainability (formerly International Council for Local Environmental Initiatives – ICLEI), CDP Cities, Global Covenant of Mayors and others to recruit the world's urban centres to take urgent action to confront the climate crisis and create a future where everyone can thrive. Cities Race to Zero is first and foremost a political commitment on the importance of aligning climate action with the science (and 1.5°C ambition). The spirit of this is most important, and program administrators recognize that the science will continue to change as time goes on.

The Cities Race to Zero program encourages all cities to be as transparent as possible about where they need to be according to the science and where the gaps are based on business-as-usual. This provides an opportunity for municipalities to collectively advocate for science-based targets and for more action from higher levels of government and other stakeholder groups to raise and align ambition. The more transparent municipalities can be about the gap, the more likely municipalities can develop political pressure and community understanding to accelerate action.

Joining the Cities Race to Zero program requires the following as stated on the website:

1. *“Publicly endorse the following principles:*
 - *We recognise the global climate emergency.*
 - *We are committed to keeping global heating below the 1.5°Celsius goal of the Paris Agreement.*
 - *We are committed to putting inclusive climate action at the center of all urban decision-making, to create thriving and equitable communities for everyone.*
 - *We invite our partners – political leaders, CEOs, trade unions, investors, and civil society – to join us in recognising the global climate emergency and help us deliver on science-based action to overcome it.*
2. *Pledge to reach (net)-zero in the 2040s or sooner, or by mid-century (2050) at the latest, in line with global efforts to limit warming to 1.5°Celsius.*
3. *Explain what steps will be taken toward achieving net-zero, especially in the short- to medium-term. Set an interim target to achieve in the next decade, which reflects a fair share of the 50% global reduction in CO2 by 2030 identified in the IPCC Special Report on Global Warming of 1.5°Celsius.*
4. *Immediately proceed to planning at least one inclusive and equitable climate action as listed on www.citiesracetozero.org that will help to place your city on a resilient pathway consistent with the 1.5°Celsius objective of the Paris Agreement and begin implementation no later than 2022.*
5. *Report progress annually, beginning no later than 2022 to your usual or the recommended reporting platform.”*

For Criterion 4, there are 46 predefined actions to choose from, many of which are currently underway in London, such as:

- Collect spatial or disaggregated data to inform the design and/or monitor the implementation of climate actions (i.e., energy mapping work);
- Take action to develop 15 or 30-minute neighborhoods (also known as complete neighborhoods) all throughout the city, where residents are able to meet most of their needs within a short walk or bicycle ride from their homes. (i.e., The London Plan);
- Pilot test and procure, with partners as necessary, zero emissions buses by 2025. (i.e., LTC work with CUTRIC);
- Expand and improve walking, cycling and integrated transit access and identify potential areas for future zero emission zones by 2025. (i.e., Mobility Master Plan); and
- Progressively phase out organics disposal to landfill and incinerators, i.e., at least 25% by 2025 (i.e., Green Bin program).

On October 14, 2021, the Federation of Canadian Municipalities’ Big City Mayors’ Caucus Chair Mike Savage issued a statement ahead of the United Nations climate change conference (COP26) which included the following:

“Canada is facing a climate emergency. Whether it’s wildfires, devastating flooding or fatal heatwaves, we’re experiencing the climate crisis in our cities firsthand, and more action is needed.

“Recognizing the urgency of the climate crisis, the Federation of Canadian Municipalities’ Big City Mayors’ Caucus commits to taking action to keep global warming to below the 1.5 degrees Celsius goal of the Paris Agreement. This means reducing global emissions to zero or net-zero by 2050 at the latest. In

advance of the upcoming COP26, BCMC declares support for the Cities Race to Zero pledge as part of the United Nation's Race to Zero campaign and urges all Canadian cities to join Cities Race to Zero.”

To date, supported by the FCM and ICLEI Local Governments for Sustainability Canada, over 20 Canadian cities have joined the international Cities Race to Zero framework including 11 Ontario municipalities: Ajax, Brampton, Burlington, Guelph, Halton Hills, Hamilton, Ottawa, St. Catharines, Thunder Bay, Toronto, and Whitby.

Given the participation of many of London’s peer municipalities and given London’s membership in the Big City Mayors’ Caucus, Civic Administration recommends joining the Race to Zero Cities campaign. Upon approval the CEAP, London will meet all requirements to join. There are no fees associated with membership.

PART B Climate Emergency Action Plan

2.8 Overview of the Draft Climate Emergency Action Plan

The draft Climate Emergency Action Plan is a separate document listed as Appendix A. The development of the CEAP started in January 2020 with the initial release of information, the formalized community engagement component was launched in August 2020, two update reports were submitted to Municipal Council (August 2020 and April 2021), and final report writing began in the fall of 2021. The documents below are contained on or linked to the website City of London’s Get Involved website:

- Report to the Strategic Priorities and Policy Committee (this report);
- Climate Emergency Action Plan;
- Highlights – Executive Summary of the Climate Emergency Action Plan; and
- 13 Background Information (Supporting Documents) to Develop the Draft Climate Emergency Action Plan.

Key pieces in the draft Climate Emergency Action Plan can be summarized as:

- The status of climate change in London, actions taken and the rationale for increasing actions immediately;
- New milestone community and Corporate targets and the rationale;
- 10 implementation workplans covering the majority of aspects of mitigation and adaptation pertinent to London including who needs to be involved and how multiple actions can occur at one time from different participants;
- The level of effort and example actions required for different household types to do their “fair share” of greenhouse gas reduction by 2030.
- Key requirements for implementation success; and
- Leadership needs.

2.9 Background Information (Supporting Documents) to Develop the Climate Emergency Action Plan

The Climate Emergency Action Plan and associated workplans are supported by the following existing and new documents available on the City of London’s [Get Involved website](#) and listed as Appendix C:

1. The **Discussion Primer** was a set of proposed climate actions, released in October 2020, and used to engage Londoners and key stakeholders in 2020 and early 2021.
2. eDemocracy’s **Climate Action Plan Simulator Engagement Report** summarizes the outcome of this engagement tool as well as lessons learned.
3. The **Learning from People** supporting document summarizes the outcomes of the community engagement processes including the City of London’s Get Involved London engagement process, eDemocracy’s Climate Action Plan simulator, and

community-led and supported engagement activities.

4. The **Learning from Other Municipalities and Municipal Organizations** supporting document summarizes existing programs where municipalities are already working together on climate action, outlines what targets have been set and which actions are being taken, and summarizes what has been learned.
5. The **Impacts of Climate Change in London** supporting document summarizes climate change impacts to date and forecasted impacts under different future emission reduction forecasts.
6. The **Overview of City Plans and Strategies that Support Climate Action** supporting document summarizes existing City of London plans and programs that provide a foundation for the Climate Emergency Action Plan.
7. The **Overview of Business and Employers Climate Action** supporting document summarizes existing climate actions being undertaken by London's top employers and examines current trends supporting climate action and sustainability in the global business community.
8. The **Overview of Community Climate Action** supporting document summarizes many existing climate actions being undertaken by some London's community organizations.
9. The **Provincial Government – Climate Change Information, Roles and Responsibilities** supporting document summarizes existing climate actions being undertaken by the Province of Ontario.
10. The **Federal Government – Climate Change Information, Roles and Responsibilities** supporting document summarizes existing climate actions being undertaken by the Government of Canada.
11. The **Overview of Current and Potential Climate Action Costs and Funding Opportunities** supporting document summarizes existing studies that have been undertaken by academia, the insurance industry, and other municipalities to assess the costs and benefits of climate change.
12. The **2020 Community Energy Use and GHG Emissions Inventory**, released previously in August 2021, summarizes community wide energy use and greenhouse gas emissions trends since 1990.
13. The **2020 Corporate Energy Consumption and Activities Report**, released previously in August 2021, summarizes energy use and associated greenhouse gas emissions trends from Corporation of the City of London activities since 2007 as well as recent (2020) corporate energy management activities.

2.10 Proposed Goals and Expected Results

The CEAP is a community-wide plan to achieve three main goals:

- Net-zero community greenhouse gas (GHG) emissions by 2050;
- Improved resilience to climate change impacts; and
- Bring everyone along (e.g., individuals, households, businesses, neighbourhoods).

These goals will be achieved through actions that will be taken to deliver on a series of expected results (Table 7). These expected results and the descriptions below embody the changes required in London to address the climate emergency.

Table 7: Expected Results

Expected Result	Description
Walkable, Complete Neighbourhoods	Ensure Londoners can access nearby daily needs while reducing automobile dependence and improving equity.
Increased Active Transportation and Transit	Increase the viability and attractiveness of active transportation and transit to reduce automobile dependence, improve equity, and promote physical health.
More Zero Emission Vehicles	Reduce or eliminate fossil fuel use in vehicles.
More Net-Zero Buildings	Improve energy efficiency and reduce or eliminate fossil fuel use in buildings.
Lower Carbon Construction	Reduce the use of construction materials with high lifecycle GHG emissions from raw material extraction to manufacturing and final end-use/disposal. Design for less material use overall and utilize recycled products where possible.
More Resilient Buildings and Infrastructure	Build and maintain civic infrastructure and buildings to increase public safety and reduce unexpected and long-term cost burdens as a result of climate change.
More Carbon Capture	Protect, maintain, and improve London's natural heritage system, urban plantings and agricultural lands to reduce carbon in the atmosphere, support biodiversity, and reduce the effects of climate change.
Move Towards a Circular Economy	Support our economy's transition to reduced emissions from consumption and waste, more efficient material use, and the creation of regenerative prosperity.
Increased Community Resilience	Improve Londoners' ability to withstand, adapt, and recover from extreme weather events and other impacts of climate change.
Increased Engagement on Climate Action	Improve education, awareness and engagement to accelerate action on climate change by businesses, employees, community groups, institutions and individuals.

In 2022, City staff will confirm or establish baselines and desired outcomes by 2030 for each of the Expected Results as shown below.

Table 8: Desired Outcomes

Expected Result	2030 Milestone Outcome
Walkable, Complete Neighbourhoods	Ensure the majority of Londoners live within an easy walk/roll of their daily needs. Baseline data currently under development.
Increased Active Transportation and Transit	Strive to reduce the annual number of in-town automobile trips per person in London by 30-50% from 2019 levels Currently at around 550 trips per person (2019) .
More Zero Emission Vehicles	Strive for at least 50% of the kilometres travelled on London's roads to be by zero emissions vehicles. Currently at around 0.5%
More Net-zero Buildings	Strive to reduce fossil fuel use by buildings to 50% of where it was in 2019.

Expected Result	2030 Milestone Outcome
	Buildings (excluding industrial) in 2019 used 20.7 million gigajoules of fossil fuel energy (natural gas, fuel oil, and propane).
Lower Carbon Construction	Strive for at least 40% less embodied emissions from new buildings and construction projects compared to 2019. Baseline data to be developed in 2022.
More Resilient Buildings and Infrastructure	Strive for at least one-third of buildings in London to have at least one or more climate resiliency measure. Baseline data to be developed in 2022.
More Carbon Capture	Strive for at least 25% higher carbon dioxide removal from the air in London by natural processes, agricultural practices, and engineered solutions than 2008. Baseline data from 2012 urban forest effects model is being updated.
Move Towards a Circular Economy	Strive for at least 60% waste diversion from landfill through reduced waste generation and improved material efficiency, driving towards a circular economy. Residential diversion rate is currently 45%, total waste diversion rate is estimated at 33%.
Increased Community Resilience	Strive for at least 50% of Londoners to have measures in place to withstand and recover from extreme weather events and other impacts of climate change. Baseline data currently under development.
Increased Engagement on Climate Action	Strive for at least 75% of Londoners to understand and acknowledge their contributions to and impacts from climate change. Baseline data to be developed in 2022.

2.11 Proposed Areas of Focus for Implementation

Foundational Action 5 (with additional emphasis on 6 as part of Area of Focus Engaging, Inspiring and Learning from People)

To focus and coordinate efforts of many and acknowledge the need for leadership, specific actions that will contribute to achieving the expected results are organized into implementation workplans for the 10 specific Areas of Focus. Together, these Areas of Focus include all activities and sources that contribute to London's current GHG emissions inventory and include sectors and activities beyond the current inventory that will become more significant as data sources become more readily available and emission reduction efforts progress (e.g., scope 3 emissions from consumption and agricultural emissions). These Areas of Focus also capture the needs, partners and entities that will be instrumental to improving London's resilience to climate change impacts. The Areas of Focus are:

1. Engaging, Inspiring and Learning from People
2. Taking Action Now (Household Actions)
3. Transforming Buildings and Development
4. Transforming Transportation and Mobility
5. Transforming Consumption and Waste as Part of the Circular Economy
6. Implementing Natural and Engineered Climate Solutions and Carbon Capture
7. Demonstrating Leadership in Municipal Processes and Collaborations
8. Adapting and Making London More Resilient
9. Advancing Knowledge, Research and Innovation
10. Measuring, Monitoring and Providing Feedback

Each Area of Focus and its accompanying workplan address more than one expected result. Presented on Table 9 is the intersection of each Area of Focus Workplan with the expected results. For example, the Engaging, Inspiring and Learning from People Workplan has actions that will lead to progress on all the expected results, whereas the Implementing Natural and Engineered Climate Solutions and Carbon Capture Workplan focuses primarily on six of the expected results.

Table 9: Alignment Matrix of Area of Focus and Expected Results (● = aligned)

Area of Focus Workplans	Walkable, Complete Neighbourhoods	Increased Active Transportation and Transit	More Zero Emission Vehicles	More Net-zero Buildings	Lower Carbon Construction	More Resilient Buildings and Infrastructure	More Carbon Capture	Move Towards a Circular Economy	Increased Community Resilience	Increased Engagement on Climate Action
Engaging, Inspiring and Learning from People	●	●	●	●	●	●	●	●	●	●
Taking Action Now (Household Actions)	○	●	●	●	○	●	○	●	●	●
Transforming Buildings and Development	●	●	●	●	●	●	●	○	○	●
Transforming Transportation and Mobility	●	●	●	○	○	●	●	○	○	●
Transforming Consumption and Waste as Part of the Circular Economy	○	○	○	●	●	●	○	●	○	●
Implementing Natural and Engineered Climate Solutions and Carbon Capture	●	○	○	○	○	●	●	●	●	●
Demonstrating Leadership in Municipal Processes and Collaborations	●	●	●	●	●	●	●	●	●	●
Adapting and Making London More Resilient	●	●	○	●	○	●	●	○	●	●
Advancing Knowledge, Research and Innovation	●	●	●	●	●	●	●	●	●	●
Measuring, Monitoring and Providing Feedback	●	●	●	●	●	●	●	●	●	●

2.12 Status of Climate Change Adaptation

London's climate is described as having four distinct seasons with large seasonal temperature differences. Precipitation is usually distributed throughout the year. These local conditions are gradually changing because of climate change. Adapting, as a city, as a community, and as citizens to these existing changes and those anticipated to occur in the future, are crucial to becoming more resilient.

According to the United Nations, **adaptation** refers to "... adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. In simple terms, countries and communities need to develop adaptation solution and implement action to respond to the impacts of climate change that are

already happening, as well as prepare for future impacts.” Successful adaptation requires the actions by everyone at all levels.

Resilience is defined by Oxford Dictionary as the “.....capacity to recover quickly from difficulties; toughness, and the ability to spring back into shape; elasticity”.

Local adaptation actions are balanced with global mitigation efforts to reduce the greenhouse gas (GHG) emissions. Mitigation efforts are designed to slow the climatic changes that create extreme weather. Therefore, the more successful at global mitigation, the more moderate the local adaptation efforts need to be. The challenge is that existing global GHG emissions have already committed us to adaptation measures that will become more onerous if emissions are not reduced and/or eliminated to net zero. Adaptation measures will therefore continue to evolve as there is more understanding about the impacts of global GHG emissions.

Status of Work - London and Area

Addressing climate change adaptation is different from addressing climate change mitigation, however they are closely related and complimentary. Some actions such as tree planting and wetland expansion serve both as mitigation and adaptation actions because they both result in carbon being removed from the atmosphere (mitigation) and act to reduce the severity of climate change related impacts (providing shading to reduce heat effects and absorbing water to reduce flood severity). Adaptation targets are more challenging to set and measure progress towards, but it is key understand and/or plan for the worst in order to lessen the impacts and enable London to bounce back after severe weather events driven by climate change.

To prepare for extreme weather events, assessment work for the Corporation began in 2014. The internally led City of London team conducting the work identified eight weather events which London has been and will be further subject to in the future:

- Flooding;
- Intense snow;
- Sleet/hail/ice;
- Extreme cold;
- Heat wave;
- Drought; and
- Poor air quality.

A risk rating for each of the eight weather events was calculated by combining the likelihood of occurrence with the probability of damages. The risk ratings were then used to assess the risks from each event to each City Service Area to determine the overall risk to the Corporation. The impact risks were generally even across the Corporation with the impacts being most felt by the Middlesex London Health Unit (MLHU), and the emergency services (fire and police).

To update the previous work, confirm previous climate assumptions and assessments, and expand the focus to the entire London community, the City has partnered with ICLEI Local Governments for Sustainability Canada’s Advancing Adaptation program to create a city-scale adaptation plan for London as a component of the CEAP. This work is well underway and is anticipated to be one of the first deliverables of the CEAP in 2022.

Status of Work - Province of Ontario

Climate Ready: Ontario’s Adaptation Strategy and Action Plan (2011 to 2014)

<http://www.climateontario.ca/doc/publications/ClimateReady-OntariosAdaptationStrategy.pdf>

This previous government initiative established five goals and 37 actions to assist Ontarians protect families and secure business investments. It addressed such items as changes needed to the Building Code, risk management tools to manage heat related illnesses, and collaborating with existing experts to improve climate projections to assist in decision-making.

A Made-in-Ontario Environment Plan (2018) (Addressing Climate Change)

<https://www.ontario.ca/page/made-in-ontario-environment-plan>

The current government committed to undertake Ontario's first-ever broad, multi-sector provincial climate change impact assessment to identify where the province is vulnerable and which regions and economic sectors are most likely to be impacted.

Protecting People and Property: Ontario's Flooding Strategy (2020)

<https://files.ontario.ca/mnrf-2020-flood-strategy-en-2020-03-10.pdf>

Based on recommendations from a Special Advisor's report in 2019, the Ministry of Northern Development, Natural Resources and Forestry created a strategy that outlines steps the Ontario government will take with its partners over the coming years to reduce flood risk and help Ontarians better prepare for flooding events through a series of new and enhanced actions. City of London staff are currently involved as Association of Municipalities (AMO) representatives on a technical team providing advice.

Provincial Climate Change Impact Assessment (work in progress)

<https://news.ontario.ca/en/release/57998/ontario-launches-first-ever-climate-change-impact-assessment>

This assessment is being done by a consulting team led by the Climate Risk Institute to identify where the province is vulnerable to climate change.

Status of Work - Government of Canada

<https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/report-1.html>

A National Adaptation Strategy will help Canada respond to the shared reality of climate change impacts by uniting all orders of government, Indigenous Peoples, private companies, academia, civil society, youth, and all Canadians in a whole-of-society approach to climate change adaptation. The Strategy will build upon the Pan-Canadian Framework and encourage action that is cross-cutting and complementary to adaptation strategies led by provinces, territories, local governments, Indigenous Peoples and others. The strategy is in progress with a proposed release date of Fall 2022.

PART C Implementing the Climate Emergency Action Plan

Moving forward with the CEAP will be based on implementing the workplans for the 10 Areas of Focus (Appendix A). The workplans have been developed based on details provided during the community engagement; compiled or recommended from other municipalities, organizations, committees and others specializing in climate change actions; approved by Council; and/or recommended by City staff.

The purpose of the workplans is to set an initial direction and overview for collaborative discussion, action and measuring progress. The workplans are all about implementation. The workplan serves as an initial understanding of the activities and actions required to achieve reductions in greenhouse gas emissions or to make London more resilient to climate change. Several specific actions have been identified as priority items. Each workplan is designed for specific audiences noting that overlap in some workplans exists. The workplans have been developed to tell a short story to help the reader understand the importance and to help potential participants get a head start on the work ahead. Each workplan includes the following:

- Purpose of this Workplan
- Climate Change Expected Results
- Why Does this Matter?
- Background – How did we get here?
- What are some recent actions?
- Responsible City Service Area(s)
- Key Community Partners and Stakeholders
- Key Actions (and Milestones)
- Examples of Measuring Progress
- Resources

Four important items are threaded throughout the Areas of Focus and workplans:

1. Community engagement to implement the CEAP must be broader, deeper and more reflective of all Londoners. Additional efforts are needed to reach First Nations communities, children and youth, seniors, equity-deserving groups who may have barriers to participating, and Londoners who are not actively engaged in climate change issues.
2. Alignment of where to take action to address climate change is essential. Workplans provide this framework for all to understand the general direction for moving forward. This allows many participants to get engaged, develop their own plans, undertake work and take action at the same time while heading in the same direction. It also avoids duplication and creates a stronger network. City staff will have involvement in all workplans as noted in the responsible services area(s) section. City staff will lead, co-lead and/or provide backbone support where it makes sense or is desirable. In some cases, limited to no City involvement is needed. Community and business leads and champions are fundamental to implementing the workplan.
3. Economic development and business opportunities exist within most areas of CEAP. This must be viewed as a priority. Businesses, institutions, and Londoners already spend about \$1.5 billion each year on energy. Almost 90% of the expenditure leaves the local economy. Realigning and focusing on existing expenditures is an important first task. Identifying and creating real opportunities for employment, business retention and growth, and economic development is a priority.
4. Leveraging approved City budgets for 2022 and 2023 by incorporating climate change actions, awareness and conversations allows early activities in many key areas (e.g., Mobility Master Plan, ReThink Zoning By-law Review, Community Diversity and Inclusion Strategy, Green Bin implementation, Wastewater Treatment Operations Master Plan). This leveraging strategy is also applicable work underway in businesses, institutions and other sectors.

Update on Climate Lens Process

The roll-out of the Climate Lens Process is in progress and has provided a foundation for collaboration on the preparation of the Climate Emergency Action Plan, particularly those parts of the plan that pertain to Corporate climate actions and objectives. The exercise of engaging with staff to co-create tools, reference documents and other resources to facilitate and formalize the incorporation of climate change considerations into decision-making promoted education and awareness among staff on climate issues and opportunities, many of which are now addressed in the CEAP Workplans.

The Climate Lens Process was integral to the production of two reports in August 2021 pertaining to climate change considerations in Waste Management and Transportation Planning and Design Services. Since the completion of this work, staff resources advancing the Climate Lens Process roll-out have been dedicated to the review of engagement information, additional research, facilitating further internal and external engagement contributing to the CEAP and preparing the various documents that comprise the CEAP. The Climate Lens Process roll-out will continue following the approval of the CEAP and will be an important implementation tool for many components of the CEAP workplans.

2.13 Highlights from the 10 Implementation Workplans (Area of Focus)

Table 10 contains selected highlights from the ten workplans that are likely of greater interest to many and relate specifically to actions that Civic Administration will take in the near term as part of CEAP implementation. A summary comment is provided on how the action will be resourced and how it will be funded. In some cases, resources and funding is available for the initial work (e.g., analysis and report back), not for undertaking the action. Section 3.0 provides additional details on financial impact and considerations.

Table 10: Selected CEAP Actions, Resources and Funding

Action	Resources and Funding
<p>1. Engaging, Inspiring and Learning from People Develop a comprehensive plan to obtain ongoing input from the City of London advisory committees, Londoners, community and business groups, employers, institutions and local Indigenous communities (Chippewas of the Thames First Nation, Munsee-Delaware Nation, Oneida Nation of the Thames and Urban Indigenous peoples), including the integration of specific efforts to reach people facing barriers to participation and disproportionate impacts from climate change.</p>	Align and benefit from existing activities and expenditures (e.g., Mobility Master Plan, Community Diversity and Inclusion Strategy, Green Bin, etc.)
<p>2. Taking Action Now (Household Actions) Finalize and present program design options for an FCM-funded home energy retrofit pilot project for launch in 2023, involving about 50 homes per year for three years, based on similar programs in place in Ottawa, Toronto, and other Ontario cities in 2022. Report back to Committee and Council on final pilot project design to obtain final approval. Reporting would occur at the mid-point of the pilot project and after completion including the next steps based on the findings.</p>	Existing staff resources and funding for preparation of background research and application. Pilot Project is not funded and will require Council approval
Review and provide options to reduce, restrict or phase out fossil fuel consuming equipment (e.g., lawnmowers, trimmers, leaf blowers) (report back in 2023).	Existing staff resources and funding
<p>3. Transforming Buildings and Development Work with London's development industry to establish a shared understanding of the challenge and a shared commitment to address climate change by identifying shared actions that will assist the development industry in moving toward more energy efficient and resilient development. This would be supported and monitored by establishing agreed-upon objectives, metrics and timelines that will result in reduced GHG emissions, reduced carbon intensity of materials, and improved resilience to local climate change impacts from new development and buildings (ongoing).</p>	Align and benefit from existing activities and expenditures
Reduce or eliminate parking minimums in the Zoning By-law (report back in 2022).	Existing staff resources and funding
Review and provide options to reduce, restrict or phase out fossil fuel as the primary source of heat in all new buildings in London as of 2030 (report back in 2024).	Existing staff resources and funding
<p>4. Transforming Transportation and Mobility Ensure a climate change and greenhouse gas reduction perspective is applied in the development of the upcoming Mobility Master Plan.</p>	Align and benefit from existing activities and expenditures
Create a Transportation Management Association. More information on this action is provided after Table 9.	Existing staff resources and funding
<p>5. Transforming Consumption and Waste as Part of the Circular Economy Ensure the implementation of the 60% Waste Diversion Action Plan and the development of the Long-term Resource Recovery Plan occurs from climate change and GHG reduction</p>	Align and benefit from existing activities and expenditures

Action	Resources and Funding
perspectives. This will include leveraging this project to facilitate discussion and action as part of moving towards a circular economy.	
<p>6. Implementing Natural and Engineered Climate Solutions and Carbon Capture</p> <p>Assess available options to estimate London’s current carbon sequestration rate from urban forests and other natural areas as part of the Urban Forest Strategy and other City initiatives.</p>	Align and benefit from existing activities and expenditures
<p>7. Demonstrating Leadership in Municipal Processes and Collaborations</p> <p>As part of the Biosolids Management Master Plan, explore the potential to achieve net-zero carbon emissions from the wastewater treatment system and potential synergies in the management of biosolids that can support climate action goals (e.g., production of renewable natural gas, nutrient recycling opportunities, sewer waste heat recovery, etc.).</p>	Align and benefit from existing activities and expenditures
Starting in 2024, all new City of London buildings in the prefeasibility stage will be designed to achieve net-zero ready emissions, with construction implementation contingent on the availability of additional funding beyond baseline levels.	Resources and funding requirements to be developed in tandem with the planning of each project
Require all City of London lifecycle renewal projects for existing buildings to make incremental energy efficiency and resiliency improvements to contribute to Corporate milestone targets (where heritage conservation is not impacted), contingent on the availability of additional funding beyond baseline levels.	Resources and funding requirements to be developed in tandem with the planning of each project
Develop refined cost estimates and a financing strategy for implementing required climate change mitigation and adaptation actions for inclusion in the Corporate Asset Management Plan, for consideration with the Multi-Year Budget and for use in advocacy efforts to secure Federal/Provincial funding (report back in 2023).	Existing staff resources and funding
<p>Develop procurement processes (report back in 2023), consistent with the Procurement of Goods and Service Policy, that ensure all fleet procurements fully examine alternatives and opportunities to reduce and/or eliminate fossil fuel use in City fleet, taking into account key operational factors such as product availability and performance, service levels, infrastructure and power supply requirements, financial feasibility and budgetary limitations, including:</p> <ul style="list-style-type: none"> • Requiring all new passenger vehicles (cars, vans, SUVs) procured to be electric vehicles or other zero-emission vehicles as of 2025 • Requiring all new light and medium duty work vehicles and equipment (pick-up trucks, work vans, heavy duty diesel pick-ups) procured to be electric or other zero-emission fuel alternatives where available as of 2028 • Requiring that all external fleet rental and lease contracts be amended to require supply of light and medium duty 	Existing staff resources and funding for report. Resources and future funding requirements to be developed for future multi-year budgets

Action	Resources and Funding
<p>vehicles and equipment that are electric or other zero emission fuel alternatives as of 2028</p> <ul style="list-style-type: none"> • Requiring the procurement of all new heavy-duty vehicles and equipment for the City of London's vehicle fleet be electric or other zero emission fuel alternatives as of 2030, subject to availability and performance • Requiring all new City of London hand-held, portable, and light-duty off-road equipment procured to be electric or other zero-emission equipment as of 2025 	
<p>8. Adapting and Making London More Resilient</p> <p>City staff will continue to use the Advancing Adaptation Program led by ICLEI to complete an Adaptation Strategy in 2022. The Strategy will utilize the earlier work completed in London's Risk Assessment for Climate Change Adaptation in addition to earlier baseline climate change vulnerability work prepared by the Middlesex London Health Unit.</p>	<p>Align and benefit from existing activities and expenditures.</p> <p>Resources and funding requirements for implementation to be developed after the completion of the Strategy. It is anticipated many of the actions could be accomplished through existing capital expenditure plans or by augmenting those plans</p>
<p>9. Advancing Knowledge, Research and Innovation</p> <p>Implement a Memorandum of Understanding (MoU) with Western University for Action on Climate Change and co-create a partnership for knowledge, research and innovation. More information on this action is provided after Table 9.</p>	<p>Existing staff resources and funding</p>
<p>10. Measuring, Monitoring and Providing Feedback</p> <p>Undertake a procurement process to solicit technical assistance to develop detailed cost estimate modelling to support climate change mitigation and community energy planning work.</p>	<p>Federal and Provincial sources are anticipated to cover between 50 and 75% of project costs</p>

Additional information on four actions that are planned to proceed immediately is provided below.

Foundational Action 7 - Transportation Management Association (TMA)

A Transportation Management Association (TMA) serves as a transportation consultant for businesses wishing to implement transportation demand management programs such as carpooling, vanpooling, telework, transit discount programs, biking, walking, and parking management. A TMA allow employers to work together, share limited resources, and address their employees' commuting challenges. Components of a TMA have been available through the City on a smaller scale for many years as part of the Transportation Demand Management (TDM) program (e.g., through the Business Travel Wise Program and the EcoMobility demonstration project). Supports have included TDM advice to businesses, information on the benefits of reducing single occupant commuting, employee commuter surveys and mapping, individualized

marketing and route planning, carpool services, rideshare networks, business bike rack program, pilot projects, etc.

In 2019, the City of London began a feasibility study to determine interest and need in forming a TMA to serve major business areas of London (e.g., downtown, business corridors, business parks) (Appendix F). Part of the work included conducting employer and employee surveys in early 2020 (pre-pandemic). Findings pointed to interest in and support for the development of a city-wide TMA in London. Findings also highlighted the difference in needs for downtown businesses versus businesses in industrial parks and business corridors.

It is difficult to project current commuting patterns too far into the future because of the effects of the pandemic. However, many commuter trips are still being made by single occupancy vehicle and these represent an opportunity to provide other options to commuters. In 2020, according to Google's Environmental Insights Explorer tool, there were 43,800,000 in-bound and out-bound trips made into London. This represented roughly one-half of annual emissions from transportation activity.

As part of the CEAP Transforming Transportation and Mobility Area of Focus, the creation of the TMA will use a three phased approach:

- Phase One – In 2022 and 2023, City staff will lead the development of the initial stages of the TMA, including identifying partners, members, and initial services using previously approved multi-year budget funding. This work builds on existing services and programs offered by the City and brings them to an expanded number businesses in specific areas.
- Phase Two – In 2023, alternative operating and governance models will be examined that meet the needs of London employers including the ultimate service delivery model (e.g., in-house service provision via the City, contracted service provider, not-for-profit service provider, shared responsibilities), additional services, financing, and related requirements. This phase is key as it will determine scale and flexibility required to meet member needs but also focus on financial and operating feasibility.
- Phase Three – In 2024, depending on a positive outcome for Phase One and Two, the TMA will transition to a new model developed by the City and TMA members and partners. This would include a comprehensive business plan.

London's TMA will include a suite of programs and services, subject to availability and funding sources, that would eventually include programs and services such as:

- Programs such as carpool matching, preferential parking (carpool), Emergency Ride Home (ERH), on-site bike parking, employer partnerships; and
- Services such as remote and flexible work supports, employee incentive programs, employee travel behaviour surveys, workplace site assessment, and mapping, on-site outreach events, workplace TMA champion meetings and workplace recognition program.

Foundational Action 8 - City of London Boards and Commissions

City of London's Boards and Commission provide specific and/or specialized service to the London community. A Board or Commission is an independent body consisting of members of which some or all are appointed by Municipal Council. A Board or Commission is established through legislation that specifically addresses how the leadership structure is to be organized. In London, the following exist:

- Covent Garden Market
- Eldon House
- Greater London International Airport Authority

- Kettle Creek Conservation Authority
- London and Middlesex Community Housing Inc.
- London Hydro
- London Police Services
- London Public Library
- London Transit Commission
- Lower Thames Valley Conservation Authority
- Middlesex-London Health Unit
- Museum London
- RBC Place London
- Tourism London
- Upper Thames River Conservation Authority

City of London Boards and Commissions currently undertake a number of actions with respect to climate change as part of their operating practices. In the case of London Hydro, Conservation Authorities and Middlesex London Health Unit (MLHU), they also provide services that are of fundamental importance to climate change mitigation and adaptation.

As part of the Area of Focus of Demonstrating Leadership in Municipal Processes and Collaborations, City staff and Council would benefit from increased information dealing with climate change and the actions taken by Boards and Commissions. This could be achieved through an annual update provide to Committee and Council on climate change actions and progress. Additional opportunities should also be reviewed by individual Boards or Commissions with respect to:

- Use of the Climate Lens Process being used at the City of London;
- Implementing the Climate Lens Process, or a similar process, on major programs and upcoming projects; and
- Developing a climate change reporting system that meets the needs of the Board or Commission and the City.

Foundational Action 9 - Western University Memorandum of Understanding

Background

Education is one of the most powerful tools in preparing for the local, regional, and global challenges associated with climate change. It helps individuals, communities, businesses, and governments build the understanding, skills, and attitudes needed to engage in lowering greenhouse gas emissions and creating climate-resilient communities. Education on climate change must not be considered as an ‘add-on’; rather a key component of any plan(s) to address the effects of climate change, put into practice collaborative solutions and achieve short, medium, and long-term results and goals. Education is required to raise awareness, change behaviours and attitudes, encourage creativity and solutions, and enable people to make informed decisions that impact others. Education and awareness about positive actions and positive results to climate change may help diminish both anxiety and apathy in response to climate change.

As leaders in knowledge, research and innovation, universities and colleges are in a unique position to leverage their expertise and make significant advancements in addressing climate change and the climate emergency. How these institutions operate, undertake research, and teach their students can act as a catalyst for real and lasting change. In addition to the fundamentals of education, research and innovation, universities are at the forefront of data and analytics, applied research, technology development and commercialization, and creating and utilizing networks of individuals, organizations, businesses, and communities.

Purpose of the Memorandum of Understanding with Western University

The Memorandum of Understanding (“MoU”) between the City of London and Western University is intended to set out the mutual intentions of the City and Western to

advance their joint climate change mitigation and adaptation objectives (Appendix G). The MoU is based upon the mutual understanding that the combined expertise, influence, and commitment of the parties are better applied together to support their common goals. The MoU establishes the non-legally binding framework and set of principles for enhanced and focused coordination and collaboration to support their shared interests in climate change mitigation and adaptation. The short-term objective of the collaboration includes:

- Building on the existing foundation of traditional and innovative projects to mitigate and/or adapt to climate change;
- Creating a focal point (centre or centres) for the ongoing examination of practical and innovative solutions for energy efficiency, energy conservation, energy literacy, climate change mitigation, climate change adaptation, community engagement, technology development, testing and commercialization, and understanding the impacts of severe weather locally and regionally;
- Developing a list of research and project areas that would benefit from direct involvement of Western staff, faculty and students (working title is Academic Agenda for Action on Climate Change) and contribute to the implementation of the Climate Emergency Action Plan;
- Establishing partnerships and collaborations between government, academia, and businesses to synergistically build on existing strengths to create opportunities to reduce greenhouse gas emissions and/or to build a more resilient London and region; and
- Being known as an innovative centre of excellence with shared facilities and resources providing leadership, implementing best practices, undertaking leading edge research, providing knowledge and support to industry, while educating and training students, researchers, and postdoctoral fellows in the various fields of climate change mitigation and adaptation.

The Memorandum of Understanding contained in Appendix F has been reviewed and approved by Western University. Note that discussions are scheduled with Fanshawe College to identify similar opportunities with that institution and any future MOU's will be brought to the appropriate Committee as required.

Foundational Action 10 - Best Practises for Investment in Energy Efficiency and GHG Reduction

On June 25, 2019, Municipal Council resolved:

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.

Work Undertaken

When required, City staff use a Project Justification approach or methodology for projects that require additional investment and/or create savings. Depending on the amount of investment, these initiatives would require Council approval if they are outside of the approved budget and/or require action as per the Procurement of Goods and Services Policy. Currently there are no available best practices, guidelines or standards to compare the value of an individual climate change investment with ones that may come forward at some point in time.

To achieve the CEAP milestone emissions reduction targets, investment in emission reduction measures will be required. Considering that new technologies and opportunities for emission reduction investment are constantly arising, it is prudent to have an established method for evaluating these opportunities so that the most value can be achieved from any investment.

Applying a purely financial lens to any potential investment in emissions reduction projects will not provide sufficient information to evaluate options. Many emissions reduction projects or opportunities have social and environmental co-benefits that must be considered, especially those co-benefits that contribute to improving human health outcomes, equity, inclusion and adaptation to climate impacts. A review by City staff of available information on methods for evaluating emissions reduction projects has not identified any guidelines or best practises that account for this full cost and benefit analysis approach.

Some available resources recommend using a cost per tonne of carbon emissions abated metric to evaluate the financial strength of any project, but these evaluations are typically done within the context of trying to achieve emissions reductions in some specific area (e.g., energy efficiency, renewable energy, reducing supply chain impacts, waste reduction or diversion, reducing methane emissions, improving fuel efficiency). This approach does not account for the co-benefits of any project or help evaluate projects that impact emissions in different sectors (i.e., the method would not be satisfactory on its own to evaluate or compare a project reducing emissions in fleet vehicles versus an investment in social housing energy efficiency retrofits).

Outcome

Considering the state of maturity of emissions reduction project evaluation and the need to align decisions with more than simply financial performance, City staff recommend continuing with and evolving the current Project Justification approach to emission reduction project evaluation. This approach includes the following considerations and will be advanced as part of the Climate Lens Process implementation:

- Cost per tonne of emissions avoided or abated (including availability of additional funding sources and anticipated future cost of carbon impacts);
- Compliance with milestone emissions reduction targets (i.e., will a business-as-usual investment “lock in” emissions beyond milestone target date(s) and require the purchase of off-sets);
- Compliance with Corporate Energy Management Program;
- Demonstration potential at Pilot or Full Scale;
- Implementation potential;
- Risk management;
- Adaptation co-benefit analysis; and
- Social and human health co-benefit analysis.

In addition to pursuing and advancing the business case approach for recommending Corporate investments in energy efficiency and GHG reduction, staff will continue to compile information on similar municipal business cases to assist with decision making and encourage organizations such as Clean Air Partnership (CAP), QUEST Canada, and the Federation of Canadian Municipalities to develop a municipal best practice(s) catalogue.

Until such time that more advanced and holistic tools and/or approaches are available, it is recommended that Civic Administration continue to use the Project Justification approach for recommending Corporate investments in energy efficiency and greenhouse gas reduction and:

- Continue to compile information on similar municipal business cases to assist with decision-making in London, and
- Encourage organizations such as Clean Air Partnership (CAP), QUEST Canada, and the Federation of Canadian Municipalities to develop a municipal best practice(s) catalogue;

PART D Actions with Other Levels of Government

Foundational Actions 11 and 12

Significant action across all levels of government is required to make progress towards net-zero emissions and improved resilience to climate change impacts. Jurisdiction over the regulation of emissions in some key sectors, like electricity production, natural resource extraction, regional transportation and building codes, lies with provincial and federal governments. Without action to reduce emissions and improve resilience in these sectors, progress towards municipal emissions targets and resilience objectives will be much harder. Additionally, funding support from other levels of government will be integral to advancing various municipal actions contained within the CEAP. As such, supportive advocacy to advance action and funding needs at these higher levels of government is a key component of the CEAP. Key advocacy positions that should be advanced are listed in the next two subsections.

2.14 Government of Ontario

1. Revise Ontario's current 2030 greenhouse gas emissions reduction target to be, at a minimum, equal to Canada's new 2030 target (i.e., increase Ontario's reduction target from a 30 per cent reduction to one requiring at least a 40 to 45 per cent reduction).
2. Ensure that greenhouse gas emissions from Ontario's electricity generation, transmission, and distribution system are maintained at or below current (2018-2020) levels in terms of grid-average emissions on a per kilowatt-hour basis (i.e., 30 grams per kilowatt-hour) through to 2035 and put plans in place for achieving net-zero greenhouse gas emissions from Ontario's electricity system no later than 2050 as per Canada's climate plan.
3. Ensure that natural gas Demand Side Management and Integrated Resource Planning frameworks for 2023-2027 includes sufficient measures for achieving, as a minimum, Canada's 2030 greenhouse gas emission reduction targets and Canada's net-zero emissions target no later than 2050 as per Canada's climate plan, such as retrofit incentives, lower-income support programs, electrification/fuel-switching, hydrogen, and renewable natural gas.
4. Strengthen the Ontario Building Code's requirements for climate adaptation, energy efficiency, and non-fossil fuel alternatives for hot water and space heating (e.g., air-sourced heat pumps, ground-sourced heat pumps, solar, district energy).
5. Fund municipal climate change planning and engagement tools (e.g., CityInsight, Project Neutral, MyHeat Solar) that can benefit all municipalities through favourable licensing arrangements that lower costs and create consistency in municipal reporting.
6. Make grants available to pursue regional solutions for climate change adaptation that benefit and align multiple organizations in common solutions and knowledge sharing.
7. Make grants/funding programs available to municipalities, businesses and not-for-profits to obtain additional resources dedicated to local climate change actions.
8. Implement the recommendations made by Ontario's Special Advisor on flooding in his report completed in 2019 that identifies additional resources that need to be placed into flood plain management and flood risk reduction.
9. Coordinate funding with federal agencies to ensure municipalities can update urban floodplain mapping that is instrumental in land use planning and public education.
10. Provide provincial leadership in assessing the carbon sequestration capabilities of natural features that will then promote the value of 'green infrastructure' and enable

consistency in carbon budget determinations to assist with municipal target setting to achieve Net Zero GHG emissions.

Government of Ontario, Ontario Energy Board (OEB) and/or the Independent Electricity System Operator (IESO)

1. Integrate greenhouse gas emissions reduction targets into their decision-making framework and mandate.
2. Implement rate structure changes that support electrification, fuel switching and renewable natural gas away from natural gas.
3. Strengthen the capacity of the electrical grid to accommodate the existing building sector switch away from natural gas for space heating.
4. Enable the use of virtual net metering for a customer with multiple locations within the service area of their Local Distribution Company to allow for innovative electricity demand management solutions.
5. Return the ability for Local Distribution Companies to develop and deliver innovative local electricity conservation and demand management programs customized to meet the needs of their local customers.
6. Continue retrofit cost reduction measures, such as performance-based rebates for improved energy and emission performance.
7. Ensure the provincial energy supply and distribution system (e.g., electricity, natural gas, transportation energy/fuels) is resilient to severe weather and other climate change related weather events (e.g., prolonged droughts, heat waves, “Polar Vortex” cold snaps, etc.)

2.15 Government of Canada

1. Continue their commitment to carbon pricing via the *Greenhouse Gas Pollution Pricing Act*.
2. Work with the automotive sector address the two-tiered marketplace has been created in Canada, where most of the electric vehicles that are supplied to Canada by vehicle manufacturers are sent to British Columbia and Quebec, to ensure fair and equitable access to Canadians in smaller markets like London.
3. Expand the scope of the Incentives for Zero-Emission Vehicles Program (iZEV) to include electrically assisted bicycles and cargo bikes.
4. Create/expand grant programs and tax incentives to improve the business case for deep energy efficiency retrofits with longer payback periods.
5. Continue their commitment to work with municipalities to ensure rebates and financing for deep emissions retrofits flows effectively and directly to recipients.
6. Continue their enhancement of deep retrofit financing through the Canadian Infrastructure Bank or other options.
7. Support regenerative forestry and agricultural practices that contribute to the widespread availability of low embodied carbon, biogenic materials for the building industry.
8. Make grants/funding programs available to municipalities, businesses and not-for-profits to obtain additional resources dedicated to local climate change actions.
9. Coordinate funding with provincial agencies to ensure municipalities can update urban floodplain mapping that is instrumental in land use planning and in public education.

3.0 PART E - Financial Impact/Considerations

Foundational Actions 13, 14, 15 and 16

3.1 Background

Based on a literature review, costs or cost discussions associated with climate change mitigation and adaptation actions can be generally grouped into five broad categories:

1. **New costs** – spending money on something new that would not otherwise be undertaken for the purpose of saving and/or avoiding costs elsewhere. Examples include rooftop solar power, passive heating/cooling, heat recapture.
2. **Extra costs** – spending more than business-as-usual for the purpose of saving and/or avoiding some costs elsewhere. Extra costs could be considered as the premium that is paid to be more ‘green’ or more ‘climate-friendly’. Examples include buying a heat pump when replacing an older air conditioner, buying an electric vehicle when replacing a gasoline-fuelled vehicle, buying a consumer product with greater durability, and building a net-zero building versus building it to code.
3. **Lower costs** – spending the same or less than business-as-usual for the purpose of saving and/or avoiding costs elsewhere. Examples include buying a cargo e-bike when replacing a gasoline-fuelled vehicle, taking transit instead of buying a newer vehicle, and living in a smaller home.
4. **Emergency (unplanned) costs** – unplanned costs due to the impact of severe weather associated with climate change that could occur at one location, a neighbourhood or business area, or community-wide.
5. **The costs of inaction** – often refers to the cost of potential outcomes if money is not spent upfront to create the necessary changes and/or to make something more resilient.

These are not technical definitions; rather they are simple descriptions of household or business expenditures and the rationale on why they would likely occur. The first two sets of costs are often the focus of traditional climate action cost calculations, whereas the third set of costs have traditionally been related to discussions around transportation demand management (e.g., how a person moves around within a city). The fourth set of costs are often associated with emergency situations and/or disasters and relate specifically to climate change adaptation (or the lack thereof). The final set of costs are often associated with cost/benefit analyses, may include all or some of the other four costs and are often the focus when evaluating the business case for climate change adaptation.

3.2 Experience with Mitigation Costs and Benefits

In September 2020, the Institute for Sustainable Finance at Queen’s University’s Smith School of Business produced its report, *Capital Mobilization Plan for a Canadian Low-Carbon Economy*, on likely climate change mitigation abatement costs in Canada for the 2020 to 2030 period. As noted in their Executive Summary:

The most salient conclusion from this first report, is that Canada requires a substantial, but far from insurmountable, investment of \$128 billion over the next 10 years to achieve our 2030 emission reduction targets.

It is important to note that this analysis was based on Canada’s 2030 greenhouse gas emission reduction target at that time, which was to reduce Canada’s total emissions by 30 per cent from 2005 levels by 2030. With the Government of Canada increasing its 2030 target ambition to reduce emissions to 40 to 45 per cent below 2005 levels by 2030, the estimated abatement costs in this report are now on the low end.

The Smith School of Business report also compared their estimated investment requirements to federal government spending on COVID stimulus, noting that the investment on climate action over 10 years would be only 63 per cent of that spent on COVID-19 stimulus in just one year (2020).

Several Canadian municipalities have hired a technical consultant and undertaken detailed cost estimate modelling to support climate change mitigation and community energy planning work, including:

- Toronto (April 2017);
- Durham Region (November 2018);
- Guelph (March 2019);
- Sudbury (October 2019);
- Burlington & Hamilton (April 2020); and
- Ottawa (October 2020).

The analysis provided for Burlington's Climate Action Plan indicated that their Low Carbon scenario (consistent with a 1.5°C science-based fair share reduction target) would be less expensive than a Business-As-Usual approach, where no additional climate action efforts occurred. Over the 2020-2050 period, their Low Carbon scenario would save residents and businesses in Burlington about \$6.7 billion in today's dollars. On average, Burlington would require about \$125 million per year in local investments in climate change mitigation from residents, businesses, and governments under their Low Carbon scenario.

The analysis provided for Ottawa's Energy Evolution: Ottawa's Community Energy Transition Strategy, also based on a 1.5°C science-based fair share reduction target, indicated that there would be a net savings of \$12.4 billion in today's dollars over the 2020-2050 period. On average, Ottawa would require about \$1.6 billion per year in local investments from residents, businesses, and governments in climate change mitigation over the 2020-2030 period, dropping to \$782 million per year over the 2031-2050 period.

On a per-person basis, the annual investment estimated for Burlington works out to \$680 per year in today's dollars. For Ottawa, this would be \$1,140 per year for the 2020-2030 period and \$560 per year for the 2031-2050 period.

3.3 Experience with Adaptation Costs and Benefits

In 2020, the Federation of Canadian Municipalities and Insurance Bureau of Canada commissioned Green Analytics to establish a credible estimate of the investment in local infrastructure and local adaptation measures needed to reduce the impacts of climate change in Canada. For Central Canada (Ontario and Quebec), the average cost for adaptation for municipalities was estimated to be 0.12 per cent of gross domestic product (GDP).

Several organizations and insurance groups in North America and elsewhere have estimated that the investment in adaptation reaps significant benefits:

- Public Safety Canada estimated in 2016 that for every dollar invested in climate change adaptation, \$3 to \$5 dollars is saved in recovery costs.
- The Federation of Canadian Municipalities estimated in 2019 that for every \$1 billion invested in disaster mitigation, \$6 billion in costs can be avoided.
- Using a past Canadian example, the Red River Floodway built in 1960 for \$63 million has saved \$8 billion in avoided recovery costs for the City of Winnipeg.

From a provincial perspective, the Financial Accountability Office of Ontario (FAO) released a report in December, 2021 titled, "Costing Climate Change Impacts to Public Infrastructure". It addressed only publicly owned buildings, with water and transportation impact reports intended for release later in 2022. Also, the assessment only considered

extreme rainfall and heat impacts. Their comments on existing climate conditions were:

“The cost of maintaining Ontario’s portfolio of public buildings and facilities in a state of good repair would be around \$10.1 billion per year on average, totalling about \$799 billion over the rest of the 21st century (2022-2100). These projected “baseline costs” are what would have occurred in a stable climate.”

Their comments on future climate conditions were:

“To ensure safety and reliability, public infrastructure is designed, built and maintained to withstand a specific range of climate conditions typically based on historic climate data. However, extreme rainfall and extreme heat are projected to become more frequent and intense, while shorter winters will somewhat lower the annual number of freeze-thaw cycles. Taken together, the FAO estimates these hazards will add roughly \$6 billion to the costs of maintaining public buildings and facilities in a state of good repair over the remainder of this decade (2022-2030).

Their comments on the variability of future climate conditions and costs were:

“Over the long term, the extent of global climate change will influence the severity of these climate hazards and their impacts to public buildings. In a medium emissions scenario, the cumulative cost of maintaining the existing portfolio of public buildings in a state of good repair will increase by \$66 billion (8.2 per cent increase over baseline), or \$0.8 billion per year on average over the rest of the 21st century. However, in a high emissions scenario, cumulative costs would increase by \$116 billion (14.5 per cent increase over baseline), or \$1.5 billion per year on average over the rest of the century. These results reflect higher capital expenses from accelerated deterioration and higher operations and maintenance expenses.”

The report also estimated the costs of proactively adapting early (using building retrofits) versus the costs of reactively changing buildings at end of a building’s life (rebuilding). It suggested that rebuilding is slightly less expensive; however, given the longer time scale necessary for rebuilding, there would be more buildings left unprotected against climate change impacts for longer, which would pose a higher risk of climate damages.

Estimating the potential adaptation costs for London requires an in-depth understanding of the community-wide vulnerabilities and potential actions required to address those vulnerabilities. As such, utilizing work completed for other jurisdictions to estimate costs in London is not likely to result in realistic or defensible results. Work to determine the vulnerabilities and associated actions to address them is a key component of London’s CEAP and is underway through participation in the ICLEI Local Governments for Sustainability Canada Advancing Adaptation Program.

3.4 Existing and Near-Term Funded Actions and Resources

Based on previous annual budgets assigned to energy conservation, energy efficiency and other greenhouse gas reduction education, awareness and pilot projects, plus new fund assigned during the 2020 to 2023 Multi-Year Budget, the current dedicated annual investment is approximately \$120,000 in operating funding and \$100,000 in capital funding. This does not include leveraging budgets and resources in existing approved projects and programs.

Many actions listed within the CEAP Workplans in 2022 and 2023 can be implemented within existing budgets and by utilizing existing City resources as summarized in Table 9 (Subsection 2.13 Highlights from the Workplans).

3.5 Future Financial Implications

Investment in climate action over the full term of the CEAP (to 2050) by the City, businesses and residents is anticipated to be significant. However, some of these investments are anticipated to align with and sometimes replace planned future spending. In some cases, investments to achieve CEAP goals may result in opportunities for net savings, though additional up-front capital costs may be required to realize lower lifetime asset costs. In particular, net savings are expected for some infrastructure if total lifecycle costs (capital, operating and maintenance) are evaluated with the expected cost burden of an escalating price of carbon and the incorporation of climate change impact risks. Work to better understand and uncover these potential opportunities for net savings is included in components of the Municipal Leadership and Measuring, Monitoring and Providing Feedback Area of Focus Workplan, including:

- Using the Climate Lens Process to better inform decision-making;
- Integrating climate considerations into the Corporate Asset Management Plan;
- Evaluating carbon accounting/budgeting options for potential implementation in financial management; and
- Developing an updated detailed assessment of the economic cost and benefits of community-wide climate change mitigation actions (e.g., marginal abatement costs) needed to reach net-zero emissions by 2050.

Subject to the approval of the recommendations and foundational actions in this report, Civic Administration will develop a detailed Climate Change Investment and Implementation Plan for all Climate Emergency Action Plan initiatives requiring additional investment, inclusive of associated timing and financial impacts of these initiatives. Given the City's finite financial resources, this investment and implementation plan will be critical to determine scope, timing and pacing of these additional investments. This investment and implementation plan will also support the development of the City's 2023-2027 Strategic Plan and 2024-2027 Multi-Year Budget, as well as future Strategic Plan and Multi-Year Budget processes.

The investment required to support all initiatives in the CEAP cannot be borne entirely by the City of London. As previously noted, support from federal and provincial partners will be critical to ensuring the successful implementation of many initiatives within this plan.

4.0 PART F – Summary List of Foundational Actions and Reporting

Foundational Action 17

As noted at the start of Section 2.0, to move forward with the CEAP there are a number of foundational actions that are required. Contained in Appendix B are Foundational Actions that have been pulled primarily from the workplans to be advanced in the short term with existing resources and are viewed as being of higher priority and supportive of many actions to follow. These actions set the stage for the successful implementation of the CEAP. Seventeen (17) foundational actions have been identified (Appendix B) across four main categories:

- A. Greenhouse gas emissions reduction milestone targets
- B. Implementing the Climate Emergency Action Plan
- C. Engagement with other levels of government
- D. Financial impact/considerations

There are also numerous additional actions listed as parts of the ten Areas of Focus (and their respective workplans). It is recognized that many aspects of the CEAP can be undertaken now while others will be developed over time. Area of Focus Measuring, Monitoring & Providing Feedback will address the need to develop and provide an annual update to Council and the community on the progress of the Climate Emergency Action Plan, new and emerging ideas for implementation, and proposed adjustments to the Climate Emergency Action Plan (Foundational Action #17).

Conclusion – Next Steps

Subject to Council direction, Table 11 contains the immediate next steps in the review of the draft Climate Emergency Action Plan, approval and initial implementation steps.

Table 11: Schedule of Immediate Next Steps

Timeframe	Item
February 2, 2022	Staff report is posted on the Council Meetings webpage at https://london.ca/
February 8, 2022	SPPC meeting - Table the draft Climate Emergency Action Plan, staff recommendations, foundational actions and presentation
February 2022	Receive written comments on the Get Involved website, via email, via mail
To be determined (TBD)	SPPC meeting including holding a public participation meeting (PPM)
TBD	Council meeting - approval to finalize Climate Emergency Action Plan
TBD	Launch

Prepared by: Michael Fabro P.Eng., MEB
Manager, Climate Change Planning

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

Prepared by: Patrick Donnelly, M.SC., RPP
Manager, Watersheds & Climate Change

Prepared by: Gregg Barrett, ACIP
Director, Planning & Development

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 Draft Climate Emergency Action Plan

Appendix B Foundational Actions for the Draft Climate Emergency Action Plan

Appendix C Background Information to Develop the Draft Climate Emergency Action Plan

Appendix D Status of Direction from November 26, 2019 Council Resolution

Appendix E Community and Corporate Targets in Peer Ontario Communities and Selected Other Canadian Municipalities

Appendix F Background and Rationale for a Transportation Management Association

Appendix G By-law and Memorandum of Understanding with the University of Western Ontario

Appendix A
Draft Climate Emergency Action Plan

Report is contained as a separate document

Appendix B

Foundational Actions for the Draft Climate Emergency Action Plan

To move forward with the Climate Emergency Action Plan (CEAP), there are a number of foundational actions that are required. These actions set the stage for the successful implementation of the CEAP.

A. Actions related to greenhouse gas emissions reduction milestone targets	
1	Change the baseline year for measuring community-wide greenhouse gas emission reduction from 1990 (current baseline) to 2005 to be consistent with the Government of Ontario, the Federal Government and a growing number of Canadian municipalities.
2	Adopt the following short and mid-term milestone targets to achieve the community-wide target of net zero community greenhouse emissions by the year 2050: <ol style="list-style-type: none"> i. 55 percent reduction in total annual city-wide emissions by 2030, consistent with the 1.5°C science-based target established by the United Nations Framework Convention on Climate Change’s Race to Zero campaign. ii. 65 per cent by 2035 iii. 75 per cent by 2040.
3	Revise the Corporate net zero energy related GHG emissions target from 2050 to 2045 and will be based on the following milestone targets: <ol style="list-style-type: none"> i. 65 per cent reduction in total energy-related emissions from 2007 levels by 2030 ii. 75 per cent by 2035 iii. 90 per cent by 2040.
4	Join the Race to Zero Cities Campaign, a global campaign to rally leadership and support for science-based targets.
B. Actions related to implementing the Climate Emergency Action Plan	
5	Include the following Areas of Focus in the Climate Emergency Action Plan: <ol style="list-style-type: none"> 1. Engaging, Inspiring and Learning from People 2. Taking Action Now (Household Actions) 3. Transforming Buildings and Development 4. Transforming Transportation and Mobility 5. Transforming Consumption and Waste as Part of the Circular Economy 6. Implementing Natural and Engineered Climate Solutions and Carbon Capture 7. Demonstrating Leadership in Municipal Processes and Collaborations 8. Adapting and Making London More Resilient 9. Advancing Knowledge, Research and Innovation 10. Measuring, Monitoring, and Providing Feedback.
6	Obtain ongoing input from the City of London advisory committees, Londoners, community and business groups, employers, institutions, local First Nations communities (Chippewas of the Thames First Nation, Munsee-Delaware Nation, Oneida Nation of the Thames and Urban Indigenous peoples), including the integration of specific efforts to reach people facing barriers to participation and disproportionate impacts from climate change (Area of Focus 1 Engaging, Inspiring and Learning from People).
7	Create a Transportation Management Association (TMA) using the approach outlined in this report and prepare two progress reports, 2022 and 2023, including participants, services, costs, benefits and outcomes (Area of Focus 4 Transforming Transportation and Mobility).

8	Request the City of London Boards and Commissions to provide an annual update to Council on climate change actions and progress (Area of Focus 7 Demonstrating Leadership in Municipal Processes and Collaborations).
9	Introduce the attached proposed by-law (Appendix G) at a future meeting of the Municipal Council to: <ul style="list-style-type: none"> i. Authorize and approve a Memorandum of Understanding with the University of Western Ontario to advance joint climate change mitigation and adaptation research, technologies, analyses, and knowledge attached as Schedule “A” to the by-law, and ii. Authorize the Mayor and the City Clerk to execute the Memorandum of Understanding authorized and approved in i), above. (Area of Focus 9 Advancing Knowledge, Research and Innovation)
10	Continue to use the Project Justification approach for recommending Corporate investments in energy efficiency and greenhouse gas reduction, continue to compile information on similar municipal business cases to assist with decision-making in London, and encourage organizations such as Clean Air Partnership (CAP), QUEST Canada, and the Federation of Canadian Municipalities to develop a municipal best practice(s) catalogue to assist with decision-making.
C. Action related to engagement with other levels of government	
11	Request that the Mayor share the Climate Emergency Action Plan with the Government of Ontario, the Ontario Energy Board (OEB) and the Independent Electricity System Operator (IESO) and encourage intergovernmental cooperation to achieve the City of London’s climate-related goals.
12	Request that the Mayor share the Climate Emergency Action Plan with the Government of Canada and encourage intergovernmental cooperation to achieve the City of London’s climate-related goal.
D. Actions related to financial impact/considerations	
13	Undertake a procurement process to solicit technical assistance to develop detailed cost estimate modelling to support climate change mitigation and community energy planning work (Area of Focus 10 Measuring, Monitoring and Providing Feedback).
14	Implement the initiatives contained in this report that can be addressed through existing budgets, programs and projects in 2022 and 2023.
15	Adjust the 2022 and 2023 operating and capital budgets as required to best accommodate Climate Emergency Action Plan initiatives proposed to be funded through existing budgets, programs and projects.
16	Develop a detailed Climate Change Investment and Implementation Plan with associated timing and financial impacts for all Climate Emergency Action Plan initiatives requiring additional investment to support the development of the City’s 2023-2027 Strategic Plan and 2024-2027 Multi-Year Budget, as well as future Strategic Plan and Multi-Year Budget processes.
17	Develop and provide an annual update to Council and the community on the progress of the Climate Emergency Action Plan, new and emerging ideas for implementation, and proposed adjustments to the Climate Emergency Action Plan (Area of Focus 10 Measuring, Monitoring and Providing Feedback).

Appendix C

Background Information (Supporting Documents) to Develop the Draft Climate Emergency Action Plan

The draft Climate Emergency Action Plan was created based on the supporting information collected and assessed by City of London staff. Each document is found as a separate report on the City of London's [Get Involved website](#):

1. **Discussion Primer** - a set of proposed climate actions used to engage Londoners and key stakeholders in 2020 and early 2021.
2. **eDemocracy's Climate Action Plan Simulator Engagement Report** - summarizes the outcome of this engagement tool as well as lessons learned.
3. **Learning from People** - summarizes the outcomes of the various community engagement processes
4. **Learning from Other Municipalities and Municipal Organizations** - summarizes existing programs where municipalities are already working together on climate action, outlines what targets have been set and which actions are being taken, and summarizes what has been learned.
5. **Impacts of Climate Change in London** - summarizes climate change impacts to date and forecasted impacts under different future emission reduction forecasts.
6. **Overview of City Plans and Strategies that Support Climate Action** - summarizes existing City of London plans and programs that provide a foundation for CEAP.
7. **Overview of Business and Employers Climate Action** - summarizes existing climate actions being undertaken by London's top employers and examines current trends supporting climate action and sustainability in the global business community.
8. **Overview of Community Climate Action** - summarizes many existing climate actions being undertaken by some London's community organizations.
9. **Provincial Government – Climate Change Information, Roles and Responsibilities** - summarizes existing climate actions being undertaken by the Province of Ontario.
10. **Federal Government – Climate Change Information, Roles and Responsibilities** - summarizes existing climate actions being undertaken by the Government of Canada.
11. **Overview of Current and Potential Climate Action Costs and Funding Opportunities** - summarizes existing studies that have been undertaken by academia, the insurance industry, and other municipalities to assess the costs and benefits of climate change.
12. **2020 Community Energy Use and GHG Emissions Inventory** - released previously in August 2021, summarizes community wide energy use and greenhouse gas emissions trends since 1990.
13. **2020 Corporate Energy Consumption and Activities Report** - released previously in August 2021, summarizes energy use and associated greenhouse gas emissions trends from Corporation of the City of London activities since 2007 as well as recent (2020) corporate energy management activities.

Appendix D

Status of Direction from November 26, 2019 Council Resolution

a) Immediate Actions

Council's Recommendation	Staff Actions/Comments	Timing
i) <i>Establish a City-wide target for London to achieve net-zero community greenhouse gas (GHG) emissions by the year 2050.</i>	Council's resolution of November 26, 2019 establishes that the City of London's target is net-zero community GHG emissions by the year 2050.	Complete
ii) <i>Consistent with the direction of Council's recently adopted Corporate Energy Conservation & Demand Management (CDM) Plan, pursue opportunities to achieve corporate net-zero GHG emissions prior to 2050 with the goal of demonstrating municipal commitment and leadership to Climate Emergency mitigation.</i>	Council's resolution to set a net-zero corporate GHG emission target by 2050 and the continued work on a Climate Emergency Action Plan shows strong leadership by the City to mitigate GHG emissions from its own operations. Since December 2019, the City has been undertaking activities such as electrification of the Zamboni fleet; solar energy feasibility studies; building automation renewal projects; optimization of building systems and building insulation projects; heat recovery and geothermal space heating projects; and commissioning of compressed natural gas garbage packers and maintenance garage upgrades	Ongoing
iii) <i>Establish an internal team, inclusive of representatives from all service areas, to be champions for climate emergency actions within their service area and to help implement climate emergency initiatives.</i>	A Corporate Climate Emergency Action Team (Action Team) was established on January 23, 2020, with over 20 representatives from internal services areas of the City. The Action Team is supported by the Corporate Climate Emergency Resource Team (Resource Team)	Complete
iv) <i>All Service Areas to identify immediate opportunities that can be implemented within existing resources using existing and new tools; deliver an educational program to all service areas to assist them with understanding the climate emergency and possible actions to address it.</i>	Action Team members have been working in their service areas to identify immediate actions that can be implemented to address the Climate Emergency. Service areas have put forward over 65 potential opportunities for consideration. Due to the pandemic and other priorities, further work in some areas of the Corporation have been delayed	Ongoing
v) <i>Launch the process to develop a new Climate Emergency Action Plan (CEAP) and incorporate the Community Energy</i>	On January 24, 2020, the City launched a Climate Emergency Action Plan Get Involved webpage . The webpage included survey questions and opportunities for the public to make	Complete

Council's Recommendation	Staff Actions/Comments	Timing
<i>Action Plan into this process.</i>	comments regarding the Climate Emergency Action Plan.	
<i>vi) Develop an interim screening Climate Emergency Evaluation Tool (CEET) [revised to Climate Emergency Screening Tool – CEST].</i>	Using best practices and industry/municipal research, the Resource Team created an interim screening tool, which then evolved as described in the August, 2021 staff report as part of the Climate Lens Process.	Complete
<i>vii) Create a new Climate Emergency area on the City's web site, providing better communication to Londoners on the climate emergency, its implications and how they can assist.</i>	On January 28, 2020, the City's website was updated with a new Climate Emergency page.	Complete
<i>viii) Advocate, as a municipal leader in Canada, for climate emergency action at the provincial and federal government level.</i>	The City has continued its commitment and partnerships with the Global Covenant of Mayors and the Federation of Canadian Municipalities (FCM). The City also continues its participation in climate initiatives led by the Clean Air Partnership (CAP) and Regional Public Works Commissioners of Ontario (RPWCO).	Ongoing
<i>ix) Advance those actions and strategies identified in Council's strategic plan that will address the Climate Emergency through existing budgets.</i>	Council's Strategic Plan (2019-2023) contains more than 30 specific strategies and actions that support climate change mitigation and adaptation. The internal Action Team is fully aware of these items and Council's direction.	Complete

b) Action within 4 months

Council Recommendation	Staff Actions/Comments	Timing
<i>i) Continue community and key stakeholder engagement on the CEAP process.</i>	Community awareness and engagement was undertaken primarily on-line between January 2020 and September 2021.	Complete
<i>ii) Complete an initial screen of current major transportation projects using the interim screening CEET.</i>	A staff report was presented to CWC on August 31, 2021 detailing the initial screen of projects and recommending actions that were later endorsed by Council.	Complete
<i>iii) Complete and formalize a permanent screening CEET and administrative processes through expert review and London-focused risk evaluation.</i>	The Climate Lens Process was documented in a staff report to SPPC on April 27, 2021. The implementation of the Climate Lens Process is underway and ongoing.	Complete

<p>iv) <i>Include a standard section in all Standing Committee reports that addresses the Climate Emergency Declaration and, where appropriate, applies the screening CEET to the issues that are addressed in each report.</i></p>	<p>Background work has been completed along with proposed wording, examples and implementation requirements. Next steps include activities with the City Clerk and the Senior Leadership Team. These next steps are included as actions in the Climate Emergency Action Plan</p>	<p>In progress</p>
<p>v) <i>Seek out opportunities for new funding to support climate emergency initiatives.</i></p>	<p>The City of London continues to work with FCM through the Building Adaptive and Resilient Communities (BARC) and the Global Covenant of Mayors Showcase Cities projects to explore additional funding opportunities for Climate Emergency initiatives.</p>	<p>Ongoing</p>

c) Action to be taken within 1 Year

Council Recommendation	Staff Actions/Comments	Timing
<p>i) <i>Work with each Service Area to review all proposed major City projects and master plans (e.g., road widenings, facilities, parks and recreation facility upgrades, wastewater treatment, waste disposal, fleet) within the 10 year capital plan through the screening CEET and, where appropriate, recommend the modification of these projects.</i></p>	<p>The Climate Lens Process and associated tools are in use to embed climate change considerations in projects and master plans in some Service Areas (e.g., Wastewater, Solid Waste, Transportation Planning and Design). As the Climate Lens Process continues to be implemented, more projects and master plans will be included.</p>	<p>Ongoing</p>
<p>ii) <i>Work with each Service Area to review all proposed major City projects and master plans (e.g., road widenings, facilities, parks and recreation facility upgrades, wastewater treatment, waste disposal, fleet) within the 10 year capital plan through the screening CEET and, where appropriate, recommend the modification of these projects.</i></p>	<p>The Climate Lens Process and associated tools are in use to embed climate change considerations in projects and master plans in some Service Areas (e.g., Wastewater, Solid Waste, Transportation Planning and Design). As the Climate Lens Process continues to be implemented, more projects and master plans will be included.</p>	<p>Ongoing</p>
<p>iii) <i>Work with each Service Area to review all major existing programs and projects through the screening CEET to determine what should be considered for elimination, what may be changed and</i></p>	<p>The Climate Lens Process and associated tools are in use to embed climate change considerations in projects and master plans in some Service Areas (e.g., Wastewater, Solid Waste, Transportation Planning and Design). As the Climate Lens Process</p>	<p>Ongoing</p>

Council Recommendation	Staff Actions/Comments	Timing
<i>what should be started in response to the climate emergency.</i>	continues to be implemented, more projects and master plans will be included.	
<i>iv) Identify methods for advancing the urban forest strategy more quickly including exploring reforestation of under-utilized agricultural land within London and tree planting on a regional basis.</i>	Key issues related to urban forestry, afforestation, regional tree planting and GHG emissions reduction and improved climate change resilience on agricultural lands are addressed within the Climate Emergency Action Plan Area of Focus Workplans.	Ongoing
<i>v) Establish appropriate tools to encourage cool roofs, green roofs, and/or rooftop solar energy systems and other green infrastructure for private developments.</i>	Tools to encourage cool roofs, green roofs and/or rooftop solar systems are integrated into the CEAP Transforming Buildings and Development Area of Focus implementation Work Plan.	Ongoing
<i>vi) Work with relevant Service Areas to apply the screening CEET to review and make any required changes to address the climate emergency in the Design Specifications Manual, Site Plan Control Area By-law, Urban Design Guidelines, Tree Protection by-law, Purchasing By-law, all granting processes and other documents and processes that have an impact on the climate emergency; it being noted that these assessments and amendments will be undertaken in priority, based on the magnitude of their potential impact on the climate emergency and it being further noted that the entirety of this process will be undertaken over a period that extends beyond the one-year timeline.</i>	<p>The Climate Lens Process and associated tools are in use in some Service Areas and schedules are being established for the review of existing guiding documents, strategies and master plans. Due to resource constraints, the Climate Lens Process is first prioritizing guidelines, plans, strategies and other initiatives that are up for renewal. As the Climate Lens Process continues to be implemented, more items will be subject to review with the Process.</p> <p>As noted, this process will continue beyond one year.</p>	Ongoing

d) Action to be taken within 1 Year

That the Civic Administration BE DIRECTED to complete the Climate Emergency Action Plan within one year, to include but not be limited to the following components:

Council Recommendation	Staff Actions/Comments	Timing
<i>A clear city-wide net zero community GHG emissions target (no later than 2050, but with the intent of establishing a path to net zero GHG emissions prior to 2050).</i>	The CEAP includes targets that satisfy this recommendation.	Complete
<i>A clear Corporate net zero GHG emissions target (no later than 2050, but with the intent of establishing a path to net zero GHG emissions prior to 2050).</i>	The CEAP includes targets that satisfy this recommendation.	Complete
<i>A clear strategy and specific actions to achieve the targets established in (i) and (ii), above.</i>	The CEAP includes Area of Focus implementation Work Plans that satisfy this recommendation.	Complete
<i>A strategic approach and specific tools for communicating the climate emergency.</i>	The ongoing need for engagement of all segments of London's population on the necessity of taking climate action is a stated major component of the implementation of the CEAP.	Complete
<i>Elevate discussions with developers, homebuilders and contractors regarding design and construction techniques to reduce lifecycle GHG emission impacts.</i>	Building upon past work through the Local Energy Efficiency Partnership (LEEP) projects with Natural Resources Canada, discussion with London Development Institute (LDI), London Home Builders Association (LHBA) and contractors will be high priority during CEAP implementation. This is reflected in the Transforming Buildings and Development implementation Area of Focus workplan.	Ongoing
<i>Explore opportunities for utilizing GHG offsets and establish policy for when this is appropriate.</i>	A clear definition of how "net-zero community GHG emissions" is to be determined will rely upon the potential role of emissions offsets. Actions identified in the Measuring, Monitoring and Providing Feedback Area of Focus workplan address this recommendation.	Ongoing

Appendix E

Community and Corporate Targets in Peer Ontario Communities and Selected Other Canadian Municipalities

10 Peer Ontario Communities' GHG Emissions Reduction Targets

Municipality	Community Target (date set)	Corporate Target (date set)
Burlington	Net carbon neutral by 2050 (April 2020)	21% below 2018 levels by 2024 Net carbon neutral by 2040 (July 2019)
Durham Region	5% below 2007 levels by 2015 20% below 2007 levels by 2020 80% below 2007 levels by 2050 (November 2018)	20% below 2019 levels by 2025 40% below 2019 levels by 2030 100% below 2019 levels by 2045 Note: Aligns with 1.5°C science-based target (March 2021)
Greater Sudbury	Net-zero emissions by 2050 (March 2021)	Net-zero emissions by 2050 (March 2021)
Guelph	Net-zero carbon emissions by 2050 (May 2018)	City facilities and operations to use 100% renewable energy by 2050 (May 2018)
Hamilton	50% below 2006 levels by 2030 Carbon neutral before 2050 (March 2019)	50% below 2005 levels by 2030 100% below 2005 levels by 2050 (February 2021)
Kingston	15% below 2011 levels by 2020 30% below 2011 levels by 2030 Carbon neutral by 2040 (December 2021)	15% below 2018 levels by 2022 30% below 2018 levels by 2030 Carbon neutral by 2040 (2019)
Mississauga	40% below 1990 levels by 2030 80% below 1990 levels by 2050 Carbon neutral long-term goal (December 2019)	1% below 2018 levels per year from 2019-2023 Effectively 5% below 2018 level by 2023 (July 2019)
Oakville	50% below 2016 levels by 2041 Carbon neutral long-term goal (February 2020)	30% below 2014 levels by 2024 80% below 2014 levels by 2050 (June 2019)
Ottawa	43% below 2012 levels by 2025 68% below 2012 levels by 2030 96% below 2012 levels by 2040 Net-zero carbon by 2050 Note: Aligns with 1.5°C science-based target (December 2020)	30% below 2012 levels by 2025 50% below 2012 levels by 2030 Net-zero carbon by 2040 Note: Aligns with 1.5°C science-based target (December 2020)

Municipality	Community Target (date set)	Corporate Target (date set)
Waterloo Region	30% below 2010 levels by 2030 80% below 2010 levels by 2050 (May 2021)	80% below 2010 levels by 2050 (May 2021)
Windsor	Reduce per capita GHG emissions by 40% from 2014 baseline by 2041 (July 2017)	20% below 2014 levels by 2030 40% below 2014 levels by 2041 (July 2017)

6 Selected Canadian Communities' GHG Emissions Reduction Targets

Municipality	Community Target (date set)	Corporate Target (date set)
Calgary	Net zero by 2050 (November 2021)	Net zero by 2050 (November 2021)
Edmonton	35% below 2005 level by 2025 50% below 2005 level by 2030 Net zero by 2050 (April 2021)	50% below 2005 level by 2030 (May 2018) Net zero by 2050 (April 2021)
Halifax	30% below 2010 level by 2030 Net zero by 2050 (June 2020)	Net zero by 2050 (June 2020)
Toronto	45% below 1990 levels by 2025 65% below 1990 level by 2030 Net zero by 2040 (December 2021)	New buildings - Near-zero emission starting in 2026 Existing buildings – 40% below 2017 energy use by 2040 Fleet – 45% low carbon vehicles by 2030 Renewable energy – 1.5 million GJ/year of biogas by 2030 (December 2021)
Vancouver	50% below 2007 level by 2030 Net zero before 2050 (November 2020)	Fleet - 60% below 2007 level by 2030 Transitioning to 100% renewable energy usage by 2050 50% below 2007 level by 2030 Net zero before 2050 (November 2020)
Winnipeg	20% below 2011 level by 2030 80% below 2011 level by 2050 (September 2018)	20% below 2011 level by 2030 80% below 2011 level by 2050 (September 2018)

Appendix F

Background and Rationale for a Transportation Management Association

This appendix is divided into the following sections

1. What is a Transportation Management Association (TMA)?
2. Background
3. Benefits of a TMA
4. Location, Project Phase and Timeline
5. Proposed Services, Supports and Programs
6. Resources, Funding and Potential Partners/Supporters

1. What is a Transportation Management Association (TMA)?

A Transportation Management Association (TMA) serves as a transportation coordinator for businesses wishing to implement transportation demand management programs such as carpooling, vanpooling, telework, transit discount programs, biking, walking, and parking management. A TMA works with local governments, transit agencies, and other transportation providers to promote transportation services for employees and customers. A TMA allow employers to work together, share limited resources, and address their employees' commuting challenges.

There are examples of TMAs across North America. In Ontario two very large TMAs operate in the [Greater Toronto and Hamilton Area](#) (GTHA, over 20 cities) and [Region of Waterloo](#) (3 cities).

Many cities in Ontario, like London, have components of transportation demand management activities operating within the local government but are not part of a formalized TMA such as:

- Transportation demand management (TDM) advice to businesses;
- information on the benefits of reducing single occupant commuting;
- employee commuter surveys and mapping;
- individualized marketing and route planning;
- carpool services;
- rideshare networks;
- business bike rack program; and
- pilot projects

2. Background

In 2019, the City of London began a feasibility study to determine interest and need in forming a Transportation Management Association (TMA) to serve major business areas of London (e.g., downtown, business corridors, business parks). Work was completed in five different areas:

- i. TMA Best Practice Research: Governance, Operational Models and Local Context
- ii. TMA Best Practice Research: A Practitioner's Guide to Launching a Successful TMA
- iii. London Survey – Employers and Employees
- iv. Connection to Corporate Strategic Plan
- v. Connection to Climate Emergency Action Plan

i. TMA Best Practice Research: Governance, Operational Models and Local Context

This part of the Feasibility Study included a technical review of North American TMA best practices, including governance and operational models. Four case studies were evaluated with details on their community context, governance and operating model, and services offered. Key takeaways for London were presented based on these case studies.

A general review of the governance and operating models used by TMAs across North America was also conducted. It included an assessment to help determine the most appropriate model for London's future TMA.

The work also included reviewing London's existing commuting conditions. This helped in determining the context in which the local TMA may operate, identifying potential locations for an initial TMA service area, and which type of potential employer participants would be good candidates within that service area. Further refinement is required to define the final service area boundaries, governance and operational model, but this work provided valuable knowledge and experience based on other TMAs.

From an annual operating cost perspective, the Region of Waterloo offers supports to employers and their employees through the TravelWise Transportation Management Association Program. Sustainable Waterloo Region is the not-for-profit organization that provides consulting services to the Region, including providing the day-to-day TravelWise operations on behalf of the Region. Activities include recruiting and onboarding new members, developing marketing and communications, and delivering services to member employers and employees. This is done in partnership with the Region, with both organizations bringing their skills to the program. From an annual operating cost perspective, the program has an upset annual limit of \$122,000 for program delivery. Membership fees offset additional program costs.

ii TMA Best Practice Research: A Practitioner's Guide to Launching a Successful TMA

The Feasibility Study included work on reviewing TMAs in other jurisdictions to determine what essential services to provide in London and the importance of goal-setting and how to measure success. The review showed that launching a successful TMA is a significant undertaking that requires careful planning and appropriate funding combined with a sustainable operating model. A TMA can be a nimble and efficient organization that serves many purposes on behalf of its members and the municipality.

The Practitioner's Guide included learnings from the GTHA's Smart Commute program and other communities with similar contexts to London. There are many pitfalls to avoid and learnings that will help streamline the launch of London's TMA. The Guide included advice on obtaining baseline data (e.g., employer and employee surveys) and implementing Key Performance Indicators (KPIs) to ensure a solid baseline of evidence to ensure the TMA is nimble, valued and sustainable.

Because this work was completed before the start of the pandemic, an addendum was conducted dealing with the immediate and long-term effects of COVID-19 on commuting behaviour and TMA operations. Some of this was, and remains, speculative, but provides the City of London with additional context for engaging employers in the TMA and what services could be in demand.

iii. London Survey – Employers and Employees

Part of the work included conducting employer and employee surveys in early 2020 (pre-pandemic). Relevant findings included:

Employer Survey

- 56 per cent of employers were interested in learning more.
- Employers of varying sizes from across the city were interested in participating in the program.
- 85 per cent of employers said that employees expressed concerns about getting to and from work and most challenges were related to parking (56 per cent) and the availability of transit (47 per cent).

Employee Survey

- 69 per cent of employees usually drove alone to work.
- 61 per cent of employees indicated an interest in making a change in their commuting behaviour if employers made programs available to them.

These findings are an indication of continued post-pandemic interest and support the development of a city-wide TMA in London.

It is difficult to project current commuting patterns too far into the future because of the effects of the pandemic. Commuters will continue to assess the safety of public transit and carpooling based on their personal needs and preferences. Many past commuters have been able to switch their commute to teleworking. However, telework is not a feasible option for workers in manufacturing, the service sector, and front-line workers.

TMA in a post COVID-19 environment will still require strong, strategically aligned partners and funders, a full suite of online tools and services to meet the needs of the workplaces they serve, programs that support all commute options, and they will require financial support from the workplaces they serve.

iv. Connection to Corporate Strategic Plan

Personal transportation is the largest source of greenhouse gas emissions in London. Transportation Demand Management has been a priority action for London's community energy planning activities since the mid-2000s. The development of a TMA is a key action of London's Climate Emergency Action Plan and has direct ties to the Mobility Master Plan under development. The TMA addresses four of the five Areas of Focus in the Strategic Plan, at one level or another:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Creating a Safe London for Women and Girls

v. Connection to Climate Emergency Action Plan

Over the 2015-2019 period (pre-pandemic), transportation represented about 1.4 million tonnes of GHG emissions per year or about 47 per cent of local GHG emissions. This includes in-town trips, trips to/from London, and goods movement.

Personal vehicles account for most of London's transportation emissions, at almost 1 million tonnes of GHG emissions on average per year. According to Google's Environmental Insights Explorer tool, up to one-half of these emissions are for in-town trips, many of which could be replaced by walking, cycling, and transit. In 2020, Google's Environmental Insights Explorer tool estimates that there were 21,900,000 in-bound/out-bound trips made in London.

These data build on work done as part of the City's EcoMobility project in the Oxford Street East industrial area in 2009-2011. Postal code mapping among the larger workplaces showed that roughly 30 per cent of employees commute from outside London.

In 2016, 64 per cent of all trips (e.g., auto, transit, walk, bike, other) taken daily within London are made by a driver of a vehicle. Commuting trips represent a significant opportunity to decrease local GHG emissions.

3. Benefits of a TMA

The benefits to employers of participating in a TMA include increased employee access and retention, reduced parking costs and demand, and supporting a positive impact on the environment. The benefits to employees include increased access to employment, reduced personal transportation costs, and integrating physical activity into time already sunk into commuting. Participation in a TMA and related programs is one way both employers and employees can take action on climate change.

There are many options for how a TMA is governed and operates, and a TMA can be structured to serve the needs of different types of commuters. Below is a list of common transportation and mobility issues and opportunities that a TMA can help support or address:

- **Local Traffic Congestion:** single occupant vehicle reduction strategies can help increase the capacity of roadways;
- **Parking Shortages:** workplaces that lack parking capacity can make it challenging for employees and customers to reach a worksite. A TMA can provide options that help reduce parking demand;
- **Labour Recruitment and Retention:** employers located in areas that lack any or frequent transit, often face issues recruiting millennial and lower-income staff. TMA services can help expand the options available to them to get to work;
- **Air Quality and Emission Reduction Initiatives:** reducing vehicle trips helps reduce local air pollution, and can enable organizations that undertake regular greenhouse gas inventories to reduce their Scope 3 transportation greenhouse gas emissions;
- **Leadership in Energy and Environmental Design (LEED) Certification:** services provided by a TMA can be applied to achieve LEED certification; and,
- **Promoting Municipal Programs:** through outreach and communication channels at workplaces, TMAs can promote multi-modal programs, services and events that a municipality may offer.

4. Location, Project Phase and Timeline

Over time, it is currently envisioned that the TMA will be city-wide. This follows a similar model to other TMAs in Ontario, including Region of Waterloo and Smart Commute Associations in the GTHA. At the start, it will focus on areas with the most active interest (e.g., downtown London, business parks, etc.) to establish an initial base of employers. Once the TMA has established strong relationships with employers and has experience delivering the program, the TMA can be scaled or replicated to serve different geographic areas.

As part of the CEAP Transforming Transportation and Mobility Area of Focus, the creation of the TMA will use a three phased approach:

- **Phase One –** In 2022 and 2023, City staff will lead the development of the initial stages of the TMA, including identifying partners, members, and initial services using previously approved multi-year budget funding. This work builds on existing services and programs offered by the City and brings them to an expanded number businesses in specific areas.

In order to launch the TMA in the short-term, for the first two years, the City will take on the responsibilities of management and operational needs.

To launch, this will include outreach to employers and setting up an advisory committee to help direct priority activities and guide day-to-day operations. The committee will be made up of representatives from key employers, business organizations, partner organizations, and City service areas.

- **Phase Two –** In 2023, alternative operating and governance models will be examined that meet the needs of London employers including the ultimate service delivery model (e.g., in-house service provision via the City, contracted service provider, not-for-profit service provider, shared responsibilities), additional services, financing, and related requirements. This phase is key as it will determine scale and flexibility required to meet member needs but also focus on financial and operating feasibility.
- **Phase Three –** In 2024, depending on a positive outcome for Phase One and Two, the TMA will transition to a new model developed by the City and TMA members and partners. This would include a comprehensive business plan.

In the longer term (years 3 and onward), TMA management and operations will transfer to another operating model. Examples of models include private, non-profit, government coordinated, or integration into an existing business association. Non-profit TMAs are usually more cost-effective than programs managed by individual businesses. They allow small employers to provide commute trip reduction services comparable to those offered by large employers. Being controlled by members allows it to be nimble and responsive to address their own needs. They can also take on an advocacy role for their employees.

5. Proposed Services, Supports and Programs

In order for TMAs to achieve meaningful impacts, they must develop a broad range of programs and services to offer potential members and their employees. They must also have the ability to customize programs and services to the particular needs of the workplaces they serve. Phase One will include the refinement and/or development of these programs and services:

Programs

- Carpool matching and multi-modal trip planning software with branded subgroups
- Preferential parking (carpool)
- Emergency Ride Home (ERH)
- Corporate transit pass
- On-site bike parking
- Employer partnerships

Services

- Remote and Flexible work supports (access to webinars, rewards, other supports)
- Employee incentive programs
- Employee travel behaviour surveys, workplace site assessment, and mapping
- Regular communications and reports on program usage
- Annual campaigns, incentives, and rewards
- On-site outreach events (could be virtual)
- Workplace TMA champion meetings
- Workplace recognition program

6. Resources, Funding and Potential Partners/Supporters

To launch the TMA and for the first two years of operations led by the City, the initial programs and services will occur as follows:

- Staffing in the order of one full time equivalent (FTE) has been approved to bring workplaces onboard, finalize terms and conditions for participation, deliver programming, and work on long-term sustainability of the TMA; and
- Approved funding for TDM programs in the City's annual budget is \$40,000 and \$20,000 in capital.

During the start-up of the TMA, the goal is to solicit support from the business community. Discussions will be held with organization such as:

- London Chamber of Commerce
- Argyle Business Improvement Association (BIA)
- Downtown London
- Hamilton Road BIA
- Hyde Park BIA
- Old East Village BIA
- London Economic Development Corporation (LEDC)
- Green Economy London (GEL)
- Small Business Centre
- London Transit Commission (LTC)

Expectations for participating employers generally include the following:

- Designating an employee workplace coordinator (TMA Champion);
- Participating and internal promotion of the initial and annual employee travel surveys; and
- Participating in the design of a business plan including the payment of an annual membership fee and/or the allocation of an existing annual fee towards the TMA operations. Based on experience with other TMAs, annual fees are traditionally in this range:
 - 2-20 employees - \$200
 - 21-50 employees - \$500
 - 51-100 employees - \$650
 - 101+ employees - \$1,000

Funding opportunities for pilot projects undertaken by the TMA may also be available from the Federation of Canadian Municipalities Green Municipal Fund. Grant amounts may cover up to 50% of eligible costs, to a maximum of \$500,000. Examples of projects that may be eligible include:

- Ridesharing and ride hailing programs
- On-demand transportation solutions
- First- and last-mile solutions
- Connecting commuters to park-and-ride facilities

Appendix G

By-law and Memorandum of Understanding with the University of Western Ontario

Bill No.
2022

By-law No. A.-

A by-law to authorize and approve a Memorandum of Understanding between University of Western Ontario and The Corporation of the City of London and to authorize the Mayor and the City Clerk to execute the Memorandum of Understanding.

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 a Memorandum of Understanding with the University of Western Ontario ("Western") to undertake collaborative work in the areas of energy efficiency, energy conservation, energy literacy, climate change mitigation, climate change adaptation, community engagement, technology development, testing and commercialization, and understanding the impacts of severe weather locally and regionally;

AND WHEREAS it is deemed appropriate to authorize the Mayor and the City Clerk to execute the Memorandum of Understanding on behalf of the City;

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

1. The Memorandum of Understanding between The Corporation of the City of London and the University of Western Ontario, 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 Memorandum of Understanding 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 _____, 2022

Ed Holder
Mayor

Michael Schulthess
City Clerk

First Reading – _____, 2022

Second Reading – _____, 2022

Third Reading – _____, 2022

Schedule A

Memorandum of Understanding

Between

The Corporation of the City of London (“City”)

And

The University of Western Ontario (“Western”)

Whereas the Council of the Corporation of the City of London declared a climate emergency on April 23, 2019 for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change;

Whereas Council directed Civic Administration to develop with the community a Climate Emergency Action Plan to build on years of collaborative work in the areas of energy efficiency, energy conservation, energy literacy, climate change mitigation, climate change adaptation, community engagement, technology development, testing and commercialization, and understanding the impacts of severe weather locally and regionally;

Whereas the City wishes to examine, support, conduct research and/or implement projects under the broad classification(s) of climate change mitigation and climate change adaptation in London, or in collaboration with others outside of London, as part of continuous learning, implementation, and improvement methodologies;

Whereas the City wishes to pursue projects, relationships, and partnerships for the purposes of innovation, creativity, best practices, and excellence in climate change mitigation and adaptation as part of the implementation of the Climate Emergency Action Plan;

Whereas the City has several established and ongoing relationships and projects with individual faculties and research institutes such as the Institute for Chemicals and Fuels from Alternative Resources (ICFAR), Human Environments Analysis Laboratory (HEAL), Centre for Environment and Sustainability, and WesternWater Centre (WWC);

Whereas Western has a broad range of demonstrated expertise in the areas of climate change mitigation and adaptation;

Whereas Western has identified Carbon Reduction, Climate Change, Green Energy, Circular Economy and Environmental Sustainability as areas of research strength, knowledge transfer, and implementation through on-the-ground projects and programs; and

Whereas through Western’s interdisciplinary approach to research, academic learning and student innovation and creativity, and now wants to further extend its relationship with the City for mutual interests.

1.0 Purpose of the Memorandum

This Memorandum of Understanding (“MoU”) is intended to set out the mutual intentions of the City and Western to advance their joint climate change mitigation and adaptation objectives. The MoU is based upon the mutual understanding that the combined expertise, influence, and commitment of the parties are better applied together to support their common goals. The MoU establishes the non-legally binding framework and set of principles for enhanced and focused coordination and collaboration to support their shared interests in climate change mitigation and adaptation.

The parties to this MoU acknowledge that if they wish to jointly carry out specific initiatives that may arise out of this MoU, they will have to engage in further discussion and prepare necessary agreements to define, authorize and execute, among other things, each party's roles and responsibilities, resource allocation and other details.

The MoU is not an exclusive arrangement and does not restrict either party from pursuing their mandates either on their own or in collaboration with any other party.

2.0 Short-Term Objective

The short-term objective of the collaboration between the City and Western is to:

- Build on the existing foundation of traditional and innovative projects to mitigate and/or adapt to climate change;
- Create a focal point (centre or centres) for the ongoing examination of practical and innovative solutions for energy efficiency, energy conservation, energy literacy, climate change mitigation, climate change adaptation, community engagement, technology development, testing and commercialization, and understanding the impacts of severe weather locally and regionally;
- Develop a list of research and project areas that would benefit from direct involvement of Western staff, faculty and students (working title is Academic Agenda for Action on Climate Change) and contribute to the implementation of the Climate Emergency Action Plan;
- Establish partnerships and collaborations between government, academia, and businesses to synergistically build on existing strengths to create opportunities to reduce greenhouse gas emissions and/or to build a more resilient London and region; and
- Be known as an innovative centre of excellence with shared facilities and resources providing leadership, implementing best practices, undertaking leading edge research, providing knowledge and support to industry, while educating and training students, researchers, and postdoctoral fellows in the various fields of climate change mitigation and adaptation.

3.0 General Arrangement

This MoU sets out the General Arrangement between the parties that will be the basis for working together.

The responsibilities of the City are to include:

- Share climate change mitigation and adaptation knowledge and expertise with Western and other partners,
- Assist with funding applications and discussions/negotiations with potential partners,
- Provide access to relevant City facilities, following established protocols, such as Material Recovery Facility (MRF), Greenway Wastewater Treatment facility, W12A Landfill Site, facilities with energy efficient equipment installed, other City facilities,
- Participate in project development, design, and/or implementation,
- Participate, when available, in discussions, tours and related activities,
- Provide climate change mitigation and adaptation materials, in appropriate quantities, to assist with knowledge transfer,
- Participate and/or make available resources to assist with student research,
- Assist with reporting, being available for media interviews and related matters, and
- Keep London Municipal Council informed of progress.

The responsibilities of Western are to include:

- Carry out research and development projects supported by grants and contracts which generate knowledge, expertise and trained personnel with a focus on climate change mitigation and adaptation;
- Share climate change mitigation and adaptation expertise with the City and with the industry partners;
- Contribute to the implementation of the Climate Emergency Action Plan;
- Act as window of access of academic expertise on behalf of the Western community for the City, government agencies, and potential industry partners bringing together the appropriate teams from across Western aiming at maximizing synergies of expertise, infrastructure and resources; and
- Proactively engage in conversations with the City and with industry partners to ensure continuous review and improvement of current initiatives and development of new projects.

4.0 Formal Agreement

The parties agree to work together to develop a Formal Agreement to undertake activities that involve capital works, contracts with funding agencies, contracts with private companies and investors.

5.0 Effective Date and Duration

This MoU will come into effect upon the date it has been signed by all parties and will remain in effect until December 31, 2026. This MoU will be reviewed two months prior to each anniversary date and minor amendments may be made on consent of the parties, which may be provided on behalf of the City by the City's _____, or designate and on behalf of Western by _____, or designate

Either party may withdraw from this MoU by providing sixty (60) days' written notice to the other party. Notice may be provided to the parties as follows:

- The City: _____
- Western: _____

A party may withdraw from this MoU by providing a sixty (60) day written notice to the other parties.

This MoU is subject to approval processes required by each of the parties.

DATED this _____ day of _____.

IN WITNESS WHEREOF:

THE CORPORATION OF THE CITY OF LONDON

By:

Name: Ed Holder
Title: Mayor

By:

Name: Michael Schulthess
Title: City Clerk

I/We have authority to bind the City.

THE UNIVERSITY OF WESTERN ONTARIO

By:

Name: _____

Title: _____ The University of Western Ontario

Acknowledgement:

By:

Name: _____

Title: _____

I/We have authority to bind Western.