Advisory Committee on the Environment

Report

2nd Meeting of the Advisory Committee on the Environment
March 3, 2021
Advisory Committee Virtual Meeting - during the COVID-19 Emergency

Attendance

PRESENT: M.T. Ross (Acting Chair), N. Beauregard, M. Bloxam, J. Howell, M.D. Ross, D. Szoller, A. Tipping and B. Vogel and J. Bunn (Committee Clerk)

ABSENT: K. May, R. Sirois, R. Pate, J. Santarelli and A. Thompson

ALSO PRESENT: T. Arnos, M. Fabro, A. Pascual, K. Scherr, C. Smith, J. Stanford and B. Westlake-Power

The meeting was called to order at 12:18 PM.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

None.

3. Consent

3.1 1st Report of the Advisory Committee on the Environment

That it BE NOTED that the 1st Report of the Advisory Committee on the Environment, from its meeting held on February 3, 2021, was received.

3.2 Notice of Planning Application - Draft Plan of Subdivision Official Plan and Zoning By-law Amendment - 14 Gideon Drive and 2012 Oxford Street West

That it BE NOTED that the Notice of Planning Application, dated February 10, 2021, from S. Meksula, Senior Planner, with respect to a Draft Plan of Subdivision Official Plan and Zoning By-law Amendment, related to the properties located at 14 Gideon Drive and 2012 Oxford Street West, was received.

3.3 Sustainability: Transdisciplinary Theory, Practice, and Action Conference

That it BE NOTED that the document, as appended to the agenda, from D. Szoller, with respect to the Sustainability: Transdisciplinary Theory, Practice and Action conference that was held on October 16-18, 2019 in Toronto, was received.

4. Sub-Committees and Working Groups

4.1 Waste Sub-Committee Report - ACE's Response to the Green Bin Program

That it BE NOTED that the Waste Sub-Committee Report, as appended to the agenda, from J. Howell, was received.

5. Items for Discussion

5.1 Climate Emergency Action Plan

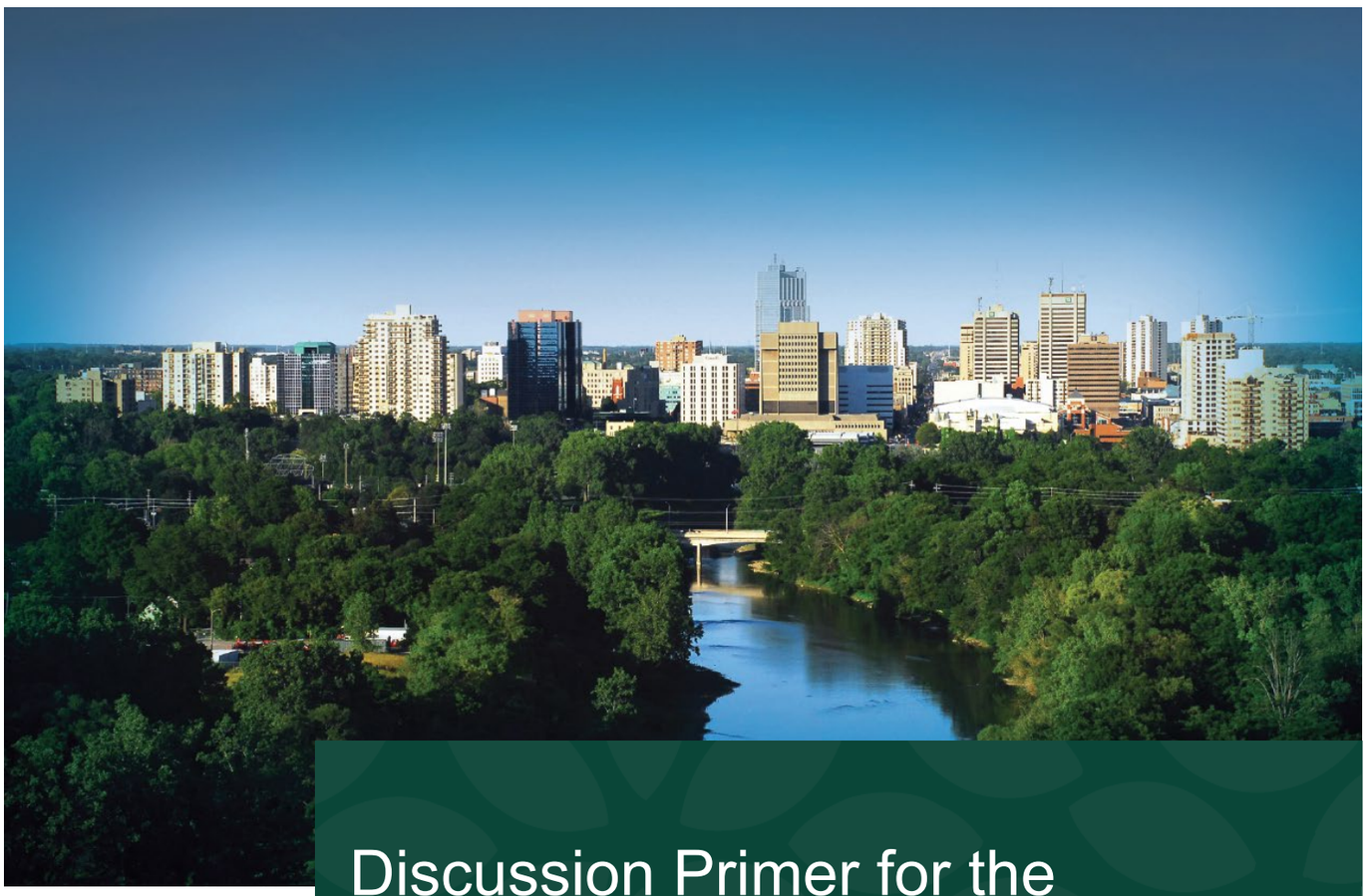
That the revised attached Discussion Primer for the Climate Emergency Action Plan - 2020 document, as approved by the members of the Advisory Committee on the Environment, BE FORWARDED to the Civic Administration for review.

5.2 Advisory Committee on the Environment Meeting Date and Time

That it BE NOTED that the Advisory Committee on the Environment (ACE) held a general discussion with respect to the meeting day and time of future meetings of the ACE.

6. Adjournment

The meeting adjourned at 1:06 PM.



Discussion Primer for the Climate Emergency Action Plan- 2020

Outline of the Discussion Primer (5 Pages plus appendices)

- Background on London's Climate Emergency Action Plan
- Climate Emergency Declaration
- The London Plan – Planning for a Green and Healthy City
- Action Required – How You Can Help
- Appendix 'A' – Part A - What your Organization Does and/or Can Do
- Appendix 'B' – Part B - Development of the Climate Emergency Action Plan including a Focus on Actions for the City of London
- Appendix 'C' – Climate Emergency Action Plan Actions for Discussion

ACTION REQUIRED

Complete Part A - Let us know what actions your organization has already planned to address the Climate Emergency (e.g., climate change mitigation or adaptation plans, sustainability plans, resiliency plans, environmental plans). This includes letting us know if there are any new ideas your organization would be interested in exploring with the City of London and other partners to address the Climate Emergency

Complete Part B - Provide ideas, comments and where your organization can assist in the delivery of actions as part of a Climate Emergency Action Plan

Background on London's Climate Emergency Action Plan

The City of London has been leading and/or collaborating on three major initiatives dealing with increasing energy efficiency, reducing greenhouse gas (GHG) generation and addressing climate change for over 20 years. Recent activities and actions are summarized in the 2014-2018 Community Energy Action Plan, the 2019-2023 Corporate Energy Conservation and Demand Management Plan (and its predecessor covering 2014-2018) and a series of actions addressing climate change adaptation that included the completion of the 2014 Vulnerability Assessment, delivery of the "Flooding Matters Program" from 2015-2018 and others. Addressing climate change is also a key component of London's Official Plan, the London Plan, as is discussed further in this document.

In addition to the City of London and its many agencies, boards & commissions, businesses, institutions, community organizations and members of the community in London have also taken action and assumed a leadership role with respect to climate change. For example, the expertise, knowledge and actions from London Hydro, Enbridge, Upper Thames River Conservation Authority, London District Energy and large energy stakeholders such as Western University, London Health Sciences Centre, Labatt, 3M, Green Economy London, and many others has been very evident. Similarly, numerous community stakeholders provide expertise as individuals through organizations like London Community Foundation, London Environmental Network, Urban League of London, London Cycle Link, Thames Region Ecological Association, Friends of Urban Agriculture, Urban Roots London, etc.

London's strength has also benefited from relationships and partnerships with the Ontario and Federal Government, Association of Municipalities of Ontario (AMO), Federation of Canadian Municipalities (FCM), Quality Urban Energy Systems of Tomorrow (QUEST), Clean Air Partnership (CAP), CDP Cities and the Global Covenant of Mayors for Climate & Energy.

On April 24, 2019, the Declaration of a Climate Emergency was approved by London's City Council "for the purposes of naming, framing, and deepening our commitment to protecting our economy, our ecosystems, and our community from climate change". As of May 2020, London is one of over 1,700 jurisdictions in 30 countries to recognize and declare a climate emergency.

On November 26, 2019 Council received staff's report for further actions to be taken in respect to the City's Climate Emergency Declaration and the next steps to further reduce energy use and increase climate change mitigation and adaptation actions during the next twelve months. These items included establishing a process to create a Climate Emergency Action Plan (CEAP). Council directed that consultation be held with stakeholders, partners, potential partners and citizens of London.

The City of London is working towards a new long-range GHG emissions reduction goal of net-zero GHG emissions in London by the year 2050. Net-zero emissions means that any remaining human-caused GHG emissions from London will need to be removed from the atmosphere by natural means or by technology. This target of net-zero GHG emissions will apply for both municipal operations and the community as a whole to mitigate and adapt to climate change. The City of London will also review its current medium-term goal to be 37 percent below 1990 GHG emissions levels by 2030.

In order to meet the 2050 target of net-zero GHG emissions, changes will be required in all sectors of London and will require significant cooperation and action from everyone. The Corporation of the City of London has direct control over only approximately four (4) percent of London's community GHG emissions (i.e., methane emissions from the W12A landfill, fossil fuel use by municipal operations, etc.). Decisions made by City Council regarding land use and transportation can potentially influence approximately 70 percent of London's community GHG emissions, but the ultimate responsibility for those emissions rests with others. For instance, the combined GHG emissions from personal vehicle use and residential energy use accounts for half of the London's local GHG emissions, and commercial buildings energy use and industrial emissions combine for roughly another quarter.

The City is committed to doing its part and working collaboratively to find the best ways to help others do their part. The CEAP is intended to be a long-term (30 year) roadmap with appropriate milestone dates for the City, businesses, institutions, other organizations and individuals to work together towards our collective goal of net-zero GHG emissions by 2050. In addition to addressing how to reduce GHG emissions, the CEAP will also identify strategies and actions that should be adopted and undertaken to improve London's physical and social resilience to withstand the impacts from our changing climate.

Considering the long time horizon that the CEAP addresses, regular periodic updates of the plan (e.g., every 4 to 5 years) will be required to ensure that it remains applicable and current as technologies, attitudes, priorities of provincial and federal governments and environmental conditions change over the next 30 years.

Climate Emergency Declaration

On April 24, 2019, the following Declaration of a Climate Emergency was approved by Municipal Council:

"Whereas climate change is currently contributing to billions of dollars in property and infrastructure damage worldwide, stressing local and international economies;

Whereas climate change is currently jeopardizing the health and survival of many species and other natural environments worldwide, stressing local and international eco systems;

Whereas climate change is currently harming human populations through rising sea levels and other extraordinary phenomena like intense wildfires worldwide, stressing local and international communities;

Whereas recent international research has indicated a need for massive reduction in carbon emissions in the next 11 years to avoid further and devastating economic, ecological, and societal loss;

Whereas the climate in Canada is warming at twice the rate of the rest of the world, as per Canada's Changing Climate report;

Whereas current initiatives such as the greening of the city's fleet and energy reduction initiatives are not sufficient to meet the targets as defined by the IPCC scientists,

Whereas an emergency can be defined as "an often dangerous situation requiring immediate action";

Whereas municipalities such as Kingston, Vancouver and Hamilton have already declared climate emergencies;

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

The London Plan – A Green and Healthy City

The London Plan, London's Official Plan, incorporates community energy planning principles within the Green and Healthy City section of City Building Policies, including but not limited to:

- 719_ Green economic sectors and job clusters will be identified and the role that the City may play in facilitating employment growth in the green economy will be explored.

- 722_ Incentives may be used to encourage the regeneration of urban business areas and to support green business practices throughout the city.

- 724_ Green mobility will be promoted by establishing a city structure that supports rapid transit, transit-oriented design, active mobility, transportation demand management, intensification, and cycling infrastructure throughout the city.

- 725_ The City will explore opportunities for collaborative efforts with the development community to achieve excellence in green development.

- 728_ Green development standards will be promoted. The City may establish its own green standards. Low impact development approaches will be used for municipal infrastructure.

- 729_ Wherever possible, new developments will be planned to be "future ready" to accommodate the future use of solar energy, electric vehicles, and (where applicable) district energy systems. Standards may be developed to require that neighbourhoods or individual buildings are developed to meet specific sustainability measures or standards.

- 731_ Bonus zoning may be applied, in conformity with the Bonus Zoning policies in the Our Tools part of this Plan, in favour of incorporating sustainable development forms, technologies and techniques.

- 732_ Financial tools will be explored to promote improvements to the environmental performance of existing buildings through retrofits. Such incentives may include local improvement charges applied by the City to assist private property owners to undertake sustainable improvements to their property.

- 738_ District energy facilities and infrastructure, including expansion of existing district energy systems, will be encouraged for larger-scale redevelopment opportunities within the Primary Transit Area and Industrial Place Types.

- 740_ Opportunities for ground-sourced thermal energy use are encouraged in an effort to reduce overall energy production costs for redevelopment initiatives, including coordinated efforts to retrofit areas of urban neighbourhoods.

- 741_ The City of London will move toward a full fleet of energy-efficient cars and the most efficient medium- and heavy-duty vehicles practical and affordable, including appropriate employee education and training programs, in an effort to reduce the City's carbon footprint, and will encourage other local fleet operators to do the same.

- 1258_ The Waste Management Resource Recovery Area Place Type may permit the following, in conformity with the policies of this Plan: 1. Landfills. 2. Related uses necessary to the function, operation and education of all aspects of waste reduction, re-use, recycling, management, resource recovery, treatment and waste disposal. 3. Eco-Industrial Parks where industries are involved in the processing, fabricating, or manufacturing of products using materials available from the Waste Management Resource Recovery Area, including alternative energy sources.

Action Required – How You Can Help

There are two actions that we would like you to take:

Complete Part A - What your Organization Does and/or Can Do

Let us know what your organization has done or what you are going to do in the future to adapt to the impacts from climate change, reduce GHG emissions and/or become more sustainable and resilient (e.g., climate change mitigation or adaptation plans, sustainability plans, resiliency plans, environmental plans). What barriers are there to taking your climate actions? What can the City of London do to assist you in taking your climate actions? This includes letting us know if there are any new ideas your organization would be interested in exploring with the City of London and other partners to address the Climate Emergency.

Complete Part B - Development of the Climate Emergency Action Plan including a Focus on Actions for the City of London

Provide ideas and comments on the proposed actions provided in Appendix C, including where your organization can assist in the delivery of these actions as part of a Climate Emergency Action Plan. Can your organization lead or co-lead any of these actions? What actions can be added to this list and undertaken by others?

Options for Providing Input for Inclusion in the Draft CEAP

1. Complete Part A and/or Part B forms and send us your response by email.
2. Send a response that meets the needs of your organization and ties back to the Discussion Primer (e.g., a Letter or Statement of Support, a Letter of Commitment, a Statement from your organization outlining what it is planning to do in the near future, etc.).
3. Send reference to an existing, publicly-available document or website that outlines actions that have been taken, progress on new initiatives, and those under consideration by your organization (e.g., your company's sustainability reporting).
4. Send us a paragraph or two from your organization that could be included within the draft CEAP.
5. Request an on-line meeting (e.g., Zoom, Microsoft Teams, etc.) or conference call to ask questions and dialogue with project team members before selecting one or more of the above actions.

We would like to hear back from you by no later than January 15, 2021.

For more information, or to discuss this further, please contact any of the following team members via ClimateAction@london.ca, or directly via:

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There are a number of other City contacts that are also available including staff from Roads & Transportation, Planning, Building, Neighbourhoods and Investment & Partnerships.

Appendix A: Part A – What your Organization Does and/or Can Do

There have been numerous actions taken by individuals and organizations across London to adapt to the changing climate and reduce GHG emissions. In many cases, these actions are simply in line with good business practices (e.g., reducing costs). In other cases, organizations and businesses have taken actions to support community initiatives, employee relationships, etc. The City is interested in capturing examples of these actions as well as getting a better understanding of the plans or directions already in place at your organization. As a city, London is not just starting on the road to address the climate emergency, so it is important to acknowledge the strong efforts that have been completed and are ongoing to properly inform our CEAP.

Question	What has your organization done, and/or what are you planning to do in the future to adapt to the impacts from climate change (e.g., intense rainfall, high winds or tornados, extreme heat, drought, ice storms)?
Answer	As an advisory committee established by the City, we understand our role on ACE is not so much to DO as it is to provide information and citizen perspectives based on research and the personal action of individual members of the committee. That said, there have been a number of initiatives and ideas advanced by ACE that have taken up by the City, not the least of which was the original Climate Emergency Declaration for the City of

Question	What has your organization done, and/or what are you planning to do in the future to reduce GHG emissions (e.g., building energy efficiency & conservation, fleet greening, renewable energy, etc.)?
Answer	ACE endorses and stands ready to assist city council in aligning its priorities and plans with Canada's commitment to the UN Sustainable Development Goals (or SDGs). The SDGs and the Federal Sustainable Development Strategy is the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.

Question	What barriers are there to taking your climate mitigation, adaptation, resiliency, sustainability actions?
Answer	Considering that the top two sources of GHG emissions are tied to the average Londoner’s lifestyle (housing and personal transportation) significant changes in the mindset and behaviour of residents will be required to make a difference. The City has a key leadership role to play and powerful policy and legislative tools it can use to exhort, cajole, compel and incent change. The City is also in a unique position to convene all the stakeholders in order to develop a common understanding, language and commitment to TAKE ACTION on climate change.

Question	What can the City of London do to assist you in taking these your Climate Emergency Plan actions? This includes letting us know if there are any new ideas your organization would be interested in exploring with the City of London and other partners to address the Climate Emergency (e.g., joint procurement, carpool coordination, etc.).
Answer	ACE encourages the City to take an integrated and strategic approach and consider the long-term resilience investment potential of the solutions proposed through the LCRN work together with the development and rollout of London’s CEAP priorities. Upfront financing solutions are required to support inclusive, equitable climate change, sustainability and resiliency solutions for a wide variety of Londoners.The City of London can provide PACE/LIC financing solutions (e.g. integrated CoVid recovery planning, loan

Appendix B: Part B – Development of the Climate Emergency Action Plan including a Focus on Actions for the City of London

The City is requesting that you and your organization review the list of potential actions and supporting actions for inclusion in the CEAP that has been provided in *Appendix C – Climate Emergency Action Plan Actions for Discussion*. Categorized actions with supporting actions have been collected to start discussions around how best to move London toward the goal of net-zero GHG emissions and improved resiliency from climate change.

The actions have been organized into the following pillars, which are borrowed and slightly modified from the extensive community engagement efforts undertaken to inform London's Official Plan update starting in 2013. The Climate Emergency impacts most parts of life in London, so these categories are meant to be helpful for organizing our thinking during CEAP development:

How We Live	Helping Londoners respond to and prepare for climate change at home
How We Green	Building a greener city by protecting and increasing natural resources in the built and natural environment
How We Move	Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region
How We Grow	Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives
How We Prosper	Ensuring a City that is prosperous, innovative and climate change resilient

The City is looking for feedback on:

- The perceived importance or significance of actions and supporting actions (e.g., how significant are these actions to your organization?)
- Supporting actions within the pillars that your organization can play a role in. Proposed roles taken on any of the supporting actions could be one of leadership, co-leadership, partnership or support.
- Other actions and/or supporting actions that your organization or others could support that would strengthen the CEAP.

For quick reference and a high-level summary, the actions provided for discussion are listed here and are further described *along with their supporting action details* in *Appendix C – Climate Emergency Action Plan Actions for Discussion*.

How We Live: Helping Londoners respond to and prepare for climate change at home

No.	Action
1	Provide ongoing education and engagement on the necessity for community-wide action on the climate emergency.
2	Support and facilitate energy conservation, energy efficiency, renewable energy, and major energy retrofits of residential buildings.
3	Support and develop collaborative approaches to end energy poverty.
4	Support and encourage resource and waste management initiatives for London households.
5	Support and encourage urban agriculture and strengthen local food systems.
6	Assess and establish strategy to improve residential neighbourhood climate resilience.
7	Work with the Middlesex London Health Unit to improve human health resilience to climate change impacts.

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment

No.	Action
1	Enhance the natural heritage system's resiliency in urban areas.
2	Enhance the natural heritage system's resiliency in rural areas.
3	Develop a land use carbon sequestration study with targets for conserving and managing natural and agricultural lands to retain and absorb greenhouse gases.
4	Advance the urban forest strategy including exploring reforestation of under-utilized agricultural land within London.
5	Collaborate with First Nations to ecologically restore lands.
6	Advance and enhance current efforts to improve the Thames River watershed health and resiliency.

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

No.	Action
1	Accelerate the expansion and improvement of active transportation infrastructure.
2	Expand and improve public transit service, including higher-order transit.
3	Encourage and incent increased active transportation, public transit use & transportation demand management.
4	Reduce freight traffic load on secondary and tertiary roads.
5	Advocate for higher frequency and reliable regional transportation services and connections.
6	Encourage and support zero emissions vehicle and electric bicycle (e-bike) adoption.
7	Continue to improve resilience of transportation infrastructure.

How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives

No.	Action
1	Ensure new developments embody complete community attributes such as different forms of housing, opportunities for work and shopping, links to transportation, and green space.
2	Encourage and incentivize climate-friendly, sustainable new development and redevelopment.
3	Ensure long-term growth planning addresses the need for urgent climate change mitigation and adaptation to address the Climate Emergency.
4	Ensure new development is energy-wise & future-ready.
5	Ensure new development is climate emergency resilient.

How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

No.	Action
1	Increase and encourage the installation of distributed renewable energy assets.
2	Improve City preparedness for dealing with extreme climate events.
3	Implement policies to improve data collection and use for improved climate monitoring, emergency response and optimization of electricity generation and distribution.
4	Advance more sustainable farming practices and increased local product consumption.
5	Continue to work with business community partners to advance sustainable business practices.
6	Work with the private sector to identify opportunities to leverage City assets and/or funds to activate private capital for climate action in the public and private sector.
7	Support and encourage resource and waste management initiatives for London businesses.

The following pages provide space to comment on each of the actions within the pillars and also provide room for additional actions and/or supporting actions to be added.

How We Live: Helping Londoners respond to and prepare for climate change at home

No.	Action			
1	**Provide ongoing education and engagement on the necessity for community-wide action on the climate emergency**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	The London Poverty Research Centre and the London Environmental Network, with logistical support from Western University, have partnered on pilot project titled "Developing Inclusive Green Economies through Property Assessed Clean Energy Incentives (PACE)". The pilot project includes the development of an online educational resource directory to educate Londoners about available programs and ideas related to home energy efficiency and conservation. This web resource is hosted by LEN. https://www.londonenvironment.net/home_retrofits			
2	**Support and facilitate energy conservation, energy efficiency, renewable energy, and major energy retrofits of residential buildings**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Action Type: Pilot Study ACE committee member Dr. Brennan Vogel (& research team collaborators from the community) are currently investigating policy and program design features to support inclusive green building retrofits. One portion of this pilot project is focusing on Property Assessed Clean Energy (PACE or LIC) financing to provide accessible and inclusive financing to support residential energy efficiency and renewable energy retrofits at the			
3	**Support and develop collaborative approaches to end energy poverty**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Action Type: Pilot Study This pilot study also focuses on the implementation of PACE programs to help to reduce energy poverty. The study aims to determine options and best practices for the policy and program designs that will allow targeted PACE programs to increase opportunities for low-income households and social housing projects to improve energy efficiency and lower energy costs, while improving energy savings and lowering GHG emissions. For more information: https://institute.smartprosperity.ca/			
4	**Support and encourage resource and waste management initiatives for London households**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Collaborate with community organizations like the Thames Regional Ecological Association (TREA) and Reimagine Co to help Londoners to live more sustainable and connected lives, through workshops, demonstrations, experiments and shared learning (1)(2). (1). Thames Regional Ecological Association, (TREA). (2021). https://www.trea.ca/how-to-workshops-2/ (2). Reimagine Co. (2021). https://reimagineco.ca/pages/about-us			

5	**Support and encourage urban agriculture and strengthen local food systems**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Work with community partners to educate and encourage Londoner's to make meals more climate-friendly: to reduce meat consumption, to purchase only sustainably caught fish, to use organic and local produce, to compost, to establish and grow vegetable gardens and community gardens, and to plant native species. The City of London's Urban Agriculture Steering Committee (UASC) can collaborate with groups like Friends of Urban Agriculture, Middlesex London Food Policy Council, Forage City London, TREA and many more community organizations.			
6	**Assess and establish strategy to improve residential neighbourhood climate resilience**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Partner with Climate Action London and Reforest London to encourage the increased naturalization of neighbourhoods, such as the planting of more trees and pollinator gardens. The ability of trees and gardens to absorb water leads to greater flood resilience and the shading qualities of trees adds to reduced urban heat island effect during the summer. Support the Pollinator Pathways Project to create gardens across the city to allow pollinators easy movement and sanctuary, as well as to provide everyone with the resources and knowledge to create their own gardens			
7	**Work with the Middlesex London Health Unit to improve human health resilience to climate change impacts**			
Perceived Significance:	Not Important ☐	Somewhat Important ☑	Important ☐	Very Important ☐
How can you support this?	The City can support the Middlesex London Health Unit by educating residents about their personal protection against air borne pathogens like the West Nile Virus, Eastern Equine Encephalitis (EEE) and other mosquito-borne viruses and the things that residents can do to prevent mosquitoes bites. Government of Canada. (2016, April 8). Prevention of West Nile virus. Retrieved from https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/prevention-west-nile-virus.html			

Are there any additional actions that you think would strengthen the CEAP related to the "How We Live" pillar? If so, please provide your input here:

Municipalities can enable the flow of private capital for PACE program rollouts through the issuance of green bonds for private equity investors - attracted by municipal loan loss guarantees and long-term returns on retrofit paybacks affixed to property taxes for commercial building operators and home owners engaged in energy & cost savings and emissions reductions through building retrofitting activities.

PACE financing models offer a proven mechanism for unlocking large amounts of private capital for green retrofitting, as well as potentially supporting a wide range of other sustainability / resilience investments that can bolster the sustainability of the local economy while reducing emissions. Since their first introduction in 2008, residential PACE programs have been growing rapidly across the United States (1). As of May 2018, US residential PACE programs have enabled 220,000 home upgrades, worth a total of over $5 billion USD. A large portion of these investments, 58%, were for energy efficiency measures, with the remainder being investments in renewable energy and water efficiency. An estimated 42,000 jobs have been created through these programs (2).

A strategic PACE policy/planning approach and working with stakeholders to develop a new green bond investment program to attract private equity stakeholders (such as TechAlliance, Libro Credit Union, the Sifton Foundation etc.) and/or stacking retrofit funding from senior levels of government can enable climate actions for municipal stakeholders.

A broader approach to leveraging PACE opportunities through supporting the development of third party administration and a private capital investment strategy, also offers larger potential for a PACE program to address a wide range of other community funding needs for sustainability and resiliency (renewable energy, efficiency, resilience, urban ag, forestry etc.). Third party, one-window administrators may offer greater program efficiency and other administration benefits for municipalities.

Building retrofitting is a key solution to deal with environmental issues related to climate change as nearly half of London's carbon footprint relates to emissions from buildings. More critically, municipal leadership to create and provide financing pathways for inclusive, equitable building retrofitting can help to frame climate actions as broader means to strategically address the deeper social and economic malaise that plagues London (among the highest working age unemployment and poverty rates in Canada). The implementation of an equitably designed PACE program can provide low/no interest loan guarantees for a wide variety of building operators and homeowners to participate in energy efficiency/conservation activities, spurred on through the mobilization of private investment capital for social good.

Yukon has a LIC/PACE program, but it is only used for installing renewable energy, and both BC and Quebec ran LIC/PACE pilot programs without enabling legislation. When comparing between provinces, Alberta's regulations provide the greatest level of guidance to program administrators, while Nova Scotia simply allows PACE programs, and Ontario falls between the two models. To meet the requirements of the Ontario regulations for LIC/PACE loans (O. Reg. 586/06), the applicant must meet the following criteria: (1) The applicant is the homeowner of the property, (2) All property owners consent to participation in the program; and (3) The property is located in the applicable municipality.

London is a partner with Clean Air Partnership (CAP) along with various Toronto municipalities that have accessed funding through the Federation of Canadian Municipalities (FCM). On Mar. 2, 2021, FCM announced the Green Municipal Fund launched its newest funding call from the Community Efficiency Financing initiative to support Canadian municipalities and partners in the delivery of home-energy upgrade financing programs. Municipalities can access grants, loans and credit enhancement to create or scale up local programs to help homeowners upgrade the energy performance

How We Green: Building a greener city by protecting and increasing natural resources in

No.	Action			
1	**Enhance the natural heritage system's resiliency in urban areas**.			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Improve flood control by providing incentives/mandates for green roofs, rain gardens, and permeable pavement. Green roofs reduce flooding by capturing rainwater to reduce the amount of flow in stormwater systems. They provide cooling that reduces the heat island effect, increase the life of the roofs and increase property value. Green roofs can generate employment, space for food production, reduce air pollution, and support biodiversity. A rain garden is a garden of native shrubs, perennials, and flowers planted in a small depression, which is generally formed on a natural slope. It is designed to temporarily hold and soak in rain water runoff that flows from roofs, driveways, patios or lawns. (1). Building parking lots, driveways and roads using permeable pavement helps to restore natural infiltration functions to the landscape and reduce impacts to watercourses			
2	**Enhance the natural heritage system's resiliency in rural areas**.			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	The City must commit to building up, not building out. Put an end to urban sprawl. Zoning policies that limit density can stimulate urban sprawl, which can depress productivity, contribute to local air pollution and encroach on surrounding ecosystems. Removing land use and building regulations that prohibit denser, mixed-use urban development can stimulate markets to make better use of land and increase the supply of housing, reducing costs and enhancing the productivity (1). Partner with local organizations and associations to preserve the City of London's cultural heritage. (1).Climate Emergency, Urban Opportunity. Coalition for Urban Transitions. (September 19, 2019). https://urbantransitions.global/en/publication/climate-emergency-urban-op			
3	**Develop a land use carbon sequestration study with targets for conserving and managing natural and agricultural lands to retain and absorb greenhouse gases.**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	This would seem to be a project led by other agencies on which the City would partner. Partner with organizations that help farmers produce ecosystem services on their land. These include cleaner air, cleaner water, flood mitigation, carbon sequestration, species at risk habitat and support for native bees and pollinators. The "Alternative Land Use Services" ALUS Middlesex program aims to help address environmental issues affecting water quality in the Great Lakes, re-establish tallgrass prairie, improve buffer areas, manage wetlands and establish other projects providing ecosystem services such as flood mitigation, carbon sequestration and pollinator support. ALUS Canada supports tens of thousands of acres of wildlife habitat, pollinator meadows, carbon capture, clean air, clean			

4	**Advance the urban forest strategy including exploring reforestation of under-utilized agricultural land within London**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	One million species risk extinction within decades. Urban forests can provide wildlife corridors for songbirds. School playgrounds and spaces alongside roads can be local natural forests with native species planted closely together. The young open structure allows sunlight to reach smaller plants and attracts local pollinators, butterflies, snails, and amphibians. Nature based solutions to climate change are an inexpensive way to lock carbon into soil. These Tiny Urban Forests Could be a Secret Weapon Against Climate Change,1t.org. (2021). https://www.1t.org/resources Partner with the Upper Thames River Conservation Authority, Nature			
5	**Collaborate with First Nations to ecologically restore lands.**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Partner with the Chippewa of the Thames First Nation, the Oneida Nation, and the Munsee-Delaware Nation to share Indigenous knowledge and practices to ecologically restore shared local lands, including local organizations like the Thames River Clear Water Revival (TRCWR). https://www.thamesrevival.ca/			
6	**Advance and enhance current efforts to improve the Thames River watershed health and resiliency**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Important partnership projects. Partner with the Thames River Clear Water Revival (TRCWR) to work with developers, conservation authorities and others to promote and support the use of green infrastructure and Low Impact Development (LID) systems for stormwater management, including clarifying and enhancing policies as well as developing green standards. Ontario's draft stormwater LID guidance manual is aimed at helping proponents implement LID and green infrastructure. The Thames River (Deshkan Ziibi) Shared Waters Approach to Water Quality and Quantity, Thames River Clear Water Revival (TRCWR). (2021). https://www.thamesrevival.ca/wp-content/uploads/2020/05/SharedWaters			

Are there any additional actions that you think would strengthen the CEAP related to the “How We Green” pillar? If so, please provide your input here:

Integrated regional planning to protect local watersheds and adjacent, undeveloped wildlands and agricultural land will be a critical long-term objective to reduce the level of GHG emissions associated with urban sprawl, while simultaneously using and supporting nature-based solutions to support adaptation and co-benefits outcomes.

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

No.	Action			
1	**Accelerate the expansion and improvement of active transportation infrastructure**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Support the use of green infrastructure and Low Impact Development (LID) systems to expand and improve the City of London's active transportation infrastructure using narrower streets, slimmer sidewalks, smaller cul-de-sacs, shorter driveways, and smaller parking lots. Green infrastructure elements are a fundamental approach to rainwater management that protects, restores, or mimics the natural water cycle while delivering environmental, social, and economic benefits. The installation of secure bike lockers at various locations throughout the city			
2	**Expand and improve public transit service, including higher-order transit**			
Perceived Significance:	Not Important ☐	Somewhat Important ☑	Important ☐	Very Important ☐
How can you support this?	London is centrally located in Southwestern Ontario along highway 401, an ideal location to establish Hydrogen Fuel Cell technology and infrastructure. The use of hydrogen as an energy carrier has the potential to reduce dependence on petroleum, diversify domestic energy sources, and decrease pollution and greenhouse gas emissions. Newflyer Xcelsior CHARGE H2™ is a battery-electric vehicle that uses compressed hydrogen as an energy source. Fuel cell electric technology is a unique and innovative way to obtain extended range operation similar to existing			
3	**Encourage and incent increased active transportation, public transit use & transportation demand management**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Offer incentives to encourage businesses and individuals to walk, bike, carpool, to use electric buses that replace diesel; add bicycle parking, bike-share with bikes available at the train and bus stations, secure bike parking at destination locations; malls, grocery stores, etc. Encourage active transportation in any form of human-powered transportation, including walking, cycling, travelling on mobility devices, rollerblading, skating, skateboarding, cross-country skiing and more. Reduce the need for cars on the roads; reducing the maintenance required to maintain			
4	**Reduce freight traffic load on secondary and tertiary roads**			
Perceived Significance:	Not Important ☐	Somewhat Important ☑	Important ☐	Very Important ☐
How can you support this?	Local municipalities with responsibilities for providing the infrastructure that services goods movement transportation hubs are examining their land-use planning and transportation master plans to find ways to better facilitate movement of goods via all modes. Nevertheless, truck transportation remains the main mode of freight transportation used in this region. Road Transportation, Transport Canada			

5	**Advocate for higher frequency and reliable regional transportation services and connections**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Provide incentives for use of electric bicycles, motorcycles, buses and fuel cell vehicles and infrastructure. Study the use of hydrogen as an energy carrier and the potential to reduce reliance on fossil fuels, diversify local energy sources, and decrease pollution and greenhouse gas emissions. Many jurisdictions are beginning to investigate or consider alternative means of financing public infrastructure, including roads and highways, such as tolls, other user charges and public-private partnerships			
6	**Encourage and support zero emissions vehicle and electric bicycle (e-bike) adoption**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	ACE supports the City providing incentives and education to encourage the electrification of personal vehicles. The City could promote this by working with businesses and dealerships. In addition, advancing the electrification of local companies' fleet vehicles would reduce GHG emissions as well as the costs to the businesses.			
7	**Continue to improve resilience of transportation infrastructure**			
Perceived Significance:	Not Important ☐	Somewhat Important ☑	Important ☐	Very Important ☐
How can you support this?	For affordable, clean and reliable vehicles and infrastructure, replace and expand the current fossil fuel fleet with new, zero-emission buses, along with new charging stations and solar power generation retrofits, leading to a reduction in greenhouse gas emissions. Study the use of wildlife corridors to connect fragmented areas of habitat for isolated animal populations to mix and migrate. Engage farmers, landowners, and gardeners to plant native flowers to benefit bees and butterflies. These Clever 'Wildlife Protecting' Corridors are Protecting Animals,1t.org.			

Are there any additional actions that you think would strengthen the CEAP related to the "How We Move" pillar? If so, please provide your input here:

While the City of London has Idling Control By-law - PH-15 for the control of idling vehicles, and the preamble includes references that the City of London is supportive of initiatives to reduce emissions that … contribute to climate change and poor air quality; the bylaw is an underused tool to advance emissions reductions through improved motor vehicle operation habits.

The ACE recommends an evergreen "idle-free | drive smart" education and awareness campaign combined with enforcement of the bylaw in order to link and underscore that idling (and more broadly poor driving habits such as speeding and jack-rabbit starts in the city) contribute to London's largest source of greenhouse gas emissions: personal vehicles; that the community's largest energy expense is gasoline, and that London's fourth largest source of emissions is from freight and fleet vehicles.

As suggested in the 2005 Primer for Canadian Municipalities on Developing and Enforcing Idling Control Bylaws (1), public education and bylaw enforcement work best in tandem in building public understanding and support, and in turn changing behaviours. ACE recognizes that the City may have limited resources for bylaw enforcement. The primer cited below outlines the elements for an effective public education and enforcement strategy.

Recognizing past education platforms from the MLHU, TREA and the City,renewed education and outreach programs would be useful to reach new drivers, newcomers to London and to remind existing drivers of the issues of vehicle idling and the City's by-law.
(1)
https://www.rncan.gc.ca/sites/www.nrcan.gc.ca/files/oee/pdf/communities-government/transportation/municipal-communities/reports/cracking-down-e.pdf

How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives

No.	Action			
1	**Ensure new developments embody complete community attributes such as different forms of housing, opportunities for work and shopping, links to transportation, and green space.**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Develop financing tools for credit enhancements and repayment mechanisms like PACE to encourage new construction and development to include passive house, net-zero new building construction and renovations. Passive house is the most inexpensive option based on all reasonable life cycle assumptions and provides specific performance outcomes and benefits. All new developments must preserve existing natural wildlife habitat to protect biodiversity.			
2	**Encourage and incentivize climate-friendly, sustainable new development and redevelopment**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Promoting and developing inward, upward growth with the enforcement of the London Plan to curb urban sprawl requires encouragement and incentives for re-development and new developments in the municipality.			
3	**Ensure long-term growth planning addresses the need for urgent climate change mitigation and adaptation to address the Climate Emergency**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Integration of the LCRN recommendations with the CEAP priorities can support long-term growth planning that is climate savvy, sustainable and resilient.			
4	**Ensure new development is energy-wise & future-ready**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Consider climate change and extreme events in long-lived infrastructure investments, including retrofits and upgrades, and investing in traditional and natural infrastructure solutions can help communities build resilience, reduce disaster risks, and save costs over the long term. Moudrak, N.; Feltmate, B. 2019. Weathering the Storm: Developing a Canadian Standard for Flood-Resilient Existing Communities. Prepared for Standards Council of Canada and National Research			

5	**Ensure new development is climate emergency resilient**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Establish policy and financing to encourage green roofs, rooftop and groundmount solar thermal hot water for pools and domestic hot water, including solar thermal with radiant floor heat for space heating, solar wall air heating, rooftop and groundmount solar photovoltaic systems, small wind and industrial size wind turbine systems with appropriate location regulations, geothermal, air source heat pumps, and green infrastructure and Low Impact Development (LID) for private developments. Establish bylaws for all development of new			

Are there any additional actions that you think would strengthen the CEAP related to the "How We Grow" pillar? If so, please provide your input here:

The City of London can send an important policy signal to the construction industry by adopting a green demolition bylaw such as is in use in metro Vancouver (cities of Vancouver, Burnaby and Surrey). The Vancouver bylaw originally targeted homes built before 1940, capturing about 40 per cent of home demolitions, or about 275 each year. The pre-1940 rule requires 75 per cent of the materials be recycled and currently diverts about 10,000 tonnes of waste from the landfill each year.

The bylaw was updated and came into force January 1 2019 and now extends to homes built pre-1950, which covers about 70 per cent of home demolitions. That is expected to increase the amount of diverted material to 18,000 tonnes a year. In 2020, the Vancouver Economic Commission published a study that delves further into the business case for deconstruction (1). It provides recommendations on how to grow the deconstruction industry beyond contractors to include home recyclers, waste haulers, trades people and others to create a circular value chain related to new home construction and renovation.

(1)
https://www.vancouvereconomic.com/research/the-business-case-for-deconstruction/

How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

No.	Action			
1	**Increase and encourage the installation of distributed renewable energy assets**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Encourage local distributed renewable energy generation of wind turbines, solar hot water (HW), solar photovoltaic (PV) and battery storage, geothermal, surplus power-to-gas hydrogen generation, Proton Exchange Membrane (PEM) hydrogen fuel cell power generation, and hydrogen fuelling transportation infrastructure. Install solar photovoltaic systems (PV) on all available municipal sites, including building rooftops on city hall, schools, police/fire, community centers, transit depots, carports, and other structures. Ground mount solar PV on appropriate			
2	**Improve City preparedness for dealing with extreme climate events**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Building retrofits provide a significant return on investment by energy savings over the life of the building and building systems that greatly exceed their upfront costs through operational savings. When compared to the long-run costs of new energy supplies, energy efficiency and carbon reduction are often far less costly. They increase the quality of our building stock and create more comfortable and healthier homes. They reduce energy costs for residents, create local good quality jobs that aren't vulnerable to outsourcing, result in local economic			
3	**Implement policies to improve data collection and use for improved climate monitoring, emergency response and optimization of electricity generation and distribution**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Smart city systems can assist in making municipal services operate more effectively, provided their uses are focused, with well-understood, and democratically approved, constraints on their consumption of various forms of urban and individual data. Smart cities will be cleaner, accessible, even more democratic, proponents say, but governments adopting new tech must contend with risks, too. John Lorinc, Atkinson Fellow. (January 4, 2021). https://www.thestar.com/news/atkinsonseries/2021/01/04/smart-cities-wil			
4	**Advance more sustainable farming practices and increased local product consumption**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Home gardens are one of the most reliable, efficient and democratic ways of producing food ever invented. Agriculture has repeatedly degraded its natural resource base and collapsed many societies in the past. Modern, industrial agriculture is not suited to these changing times and is liable to increasing breakdown within the next decade (1). The Urban League and member organizations want to help grow neighbourhood connections, and offer packages of vegetable or wildflower seeds to people starting neighbourhood pods (2). Collaborate			

5	**Continue to work with business community partners to advance sustainable business practices**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☐	Very Important ☑
How can you support this?	Significant cost reductions can result from improving operational efficiency through better management of natural resources like water and energy, as well as minimizing waste. Sustainable businesses are redefining the corporate ecosystem by designing models that create value for all stakeholders, including employees, shareholders, supply chains, civil society, and the planet. The Comprehensive Business Case for Sustainability, Tensie Whelan and Carly Fink, (October 21, 2016)			
6	**Work with the private sector to identify opportunities to leverage City assets and/or funds to activate private capital for climate action in the public and private sector**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Private sector leverage and City integration of the LCRN recommendations with the CEAP priorities can support long-term growth planning that is economically viable, climate savvy, sustainable and resilient.			
7	**Support and encourage resource and waste management initiatives for London businesses**			
Perceived Significance:	Not Important ☐	Somewhat Important ☐	Important ☑	Very Important ☐
How can you support this?	Implement the city-wide green bin program to collect compost, and the orange bag program to collect difficult to recycle plastics, as soon as possible. Considering the nutrient cycle of all food consumption and ensuring that the mechanisms are in place to transform food waste into soil will ensure the long term productivity of urban lands and reduce demand for landfill space (1). Expand cooperation with Urban Roots to accept compost; a non-profit			

Are there any additional actions that you think would strengthen the CEAP related to the "How We Prosper" pillar? If so, please provide your input here:

Ensure affordable, reliable and universal access to modern energy services; increase substantially the share of renewable energy in the energy mix; and double the global rate of improvement in energy efficiency. Renewable energy can supply two-thirds of the total global energy demand, and contribute to the bulk of the greenhouse gas emissions reduction that is needed between now and 2050 for limiting average global surface temperature increase below 2 degrees Celsius. Enabling policy and regulatory frameworks will need to be adjusted to mobilise the six-fold acceleration of renewables growth that is needed, with the highest growth estimated for wind and solar PV technologies, complemented by a high level of energy efficiency (1).

Increasingly, scientists are talking about a global carbon budget; an amount of greenhouse gases that can be emitted over a particular time while still achieving a target. Carbon budgets guide planning by providing clear and readily understandable goals that proceed incrementally towards the final emissions reduction goals. Carbon budgets foster accountability by forcing decision-makers to develop clear plans for progress towards emission reduction goals, allowing for ongoing evaluation of the success or failure of the plans (2).

The total carbon budget between the beginning of 2019 and the end of 2050 for the City of Edmonton is 155 Mtonnes CO2 equivalent (MtCO2eq). With a carbon budget superimposed over a city's projected emissions, the impact of delaying reductions in emissions becomes very clear. This makes a carbon budget a useful tool for encouraging municipal governments, which are often more agile in deploying programs than other levels of government, to act quickly. At the current rate the city will exhaust its carbon budget in 2028 (3).

Toronto's share of global emissions is 0.05% so the emissions-share of the global carbon budget is 260 MtCO2e and will be exceeded by 2042 (4).

(1). The role of Renewable Energy in the Global Energy Transformation, Science Direct Energy Strategy Reviews. (2019). https://reader.elsevier.com/reader/sd/pii/S2211467X19300082?token=4C1DFAE98E2FDE4C2EAA8CBBB09C3A447015413E8687906C8E55B7BEE87B040C0D791E1579BA96FBD2B1CE2970CA0B1E
(2). A Carbon Budget for Canada, Andrew Gage, West Coast Environmental Law. (December 2015). https://www.wcel.org/sites/default/files/publications/CarbonBudget%20(Web)_0.pdf
(3). Carbon Budget and Accounting Brief, City of Edmonton. (2019). https://www.edmonton.ca/city_government/documents/PDF/CarbonBudgetandAccountingInformation-PolicyBrief-2019-11.pdf
(4). Climate Action Now. (2021). https://climateactionnow.ca/torontos-targets

General Comments:

We welcome all comments and feedback on both the content and process of developing the CEAP. Do you have an idea for an event or outreach campaign to increase participation in the development of this plan? Please let us know!

As recommended by ACE, on April 24, 2019, the Declaration of a Climate Emergency was approved by London's City Council that includes, “Whereas recent international research has indicated a need for massive reduction in carbon emissions in the next 11 years to avoid further and devastating economic, ecological, and societal loss;”
ACE now suggests the City increase its ambition to accomplish the needed massive reduction in greenhouse gas emissions required to meet these goals.

Proposed New Targets for the City of London:

All new developments will preserve existing natural habitats by 2021

No new road locations to be built after 2022

All existing road maintenance and repair using low-impact development stormwater management practices by 2022

Provide support for scooter/bike share by 2022

At least 50% of new light-duty vehicles sold in London are electric, all new buildings provide charging stations for electric vehicles and bikes by 2024

At least 45% of new development is infill development and at least 50% of new development is medium-to-high density by 2025

Selling and purchasing of locally created carbon offsets used to support the preservation and restoration of biodiversity is a common practice by 2025

20% increase in CO2 sequestered and GHG emissions avoided due to conservation and management of natural and agricultural lands, 30% tree cover within the urban area by 2030

All new developments including new multi-family residential buildings will be net-zero energy, meaning: the building produces as much renewable energy as it uses, or positive energy, meaning: the building produces more energy than it uses or positive energy, and built with Low Impact Development (LID) features by 2030

All new multi-family residential buildings will have “shelter-in-place" capabilities (back-up power, shelter space, etc.) by 2030

Convert 20% of LTC’s bus fleet to zero-emission vehicles by 2025 and convert 100% of LTC’s bus fleet to zero-emission vehicles by 2030

At least 50% of London’s electricity needs are provided by local 100% renewable generation by 2040

All buildings will be net-zero energy, meaning: the building produces as much renewable

Appendix C – Climate Emergency Action Plan Actions for Discussion

Action Types

Potential Actions and Supporting Actions are categorized based on the following action types:

- **Study or Studies:** To conduct research or strategic planning projects to establish direction on new or emerging areas of interest.
- **Policies:** To establish or update rules and regulations or to provide direction for projects, initiatives, or programs.
- **Procedures**: To develop and implement new ways of doing business or adapt existing practices and procedures to reduce GHG emission or build resiliencies.
- **Programs:** To continue or enhance ongoing activities in a core service area to reduce GHG emission or build resiliencies.
- **Projects:** To propose a one-time action to achieve specific outcomes to reduce GHG emissions or build resiliencies.
- **Pilot Projects:** To develop a "trial run" of an action, typically preceded by a feasibility study, that has the potential to become a future program for the City of London, but needs to be tested on a smaller scale.
- **Partnerships**: To collaborate with stakeholders (both internal and external) to advance climate action for the Corporation and in the community and advocate on behalf of the City to other levels of government to advance and support local climate action.

Ability to Implement

The estimated ability to implement each action has been characterized as either straightforward, reasonable or ambitious. These categories are intended to demonstrate the overall complexity involved with implementing each action at a high level.

Any action's categorization doesn't imply that all conditions of the category are met, but that the balance of issues surrounding the ability to implement place the action in the category (e.g. an action categorized as ambitious may require significant coordination across senior levels of government and significant disruptive change, but may not require significant or new investment; an action categorized as straightforward may have a strong investment payback and little individual behaviour change, but may require little technology change).

Ability to Implement	**Description**
Ambitious (A)	Significant Additional or New Investment No investment payback Significant Disruptive Change Significant Technology Change High level of coordination with Senior Governments Significant business behaviour change Significant Individual behaviour change
Reasonable (R)	Moderate Additional or New Investment Moderate investment payback

	Moderate Disruptive Change Moderate Technology Change Moderate coordination required with Senior Government Moderate business behaviour change Moderate individual behaviour change
Straightforward (S)	Little Additional or New Investment Strong investment payback Little Disruptive Change Little or No Technology Change Little coordination required with Senior Government Little business behaviour change Little individual behaviour change

Timing

The estimated timing for starting actions is identified as short-, medium-, or long-term and/or recurring as follows:

Icon/Text	Description	Detail
▬▭▭	Short Term	(1-3 years)
▬▬▭	Medium Term	(4-7 years)
▬▬▬	Long Term	(7+ years)
Recurring	Actions which happen on an ongoing basis	N/A

Potential Outcomes

In the tables below, the potential of GHG reduction actions and potential resiliency enhancement is identified as follows:

Lower potential for GHG reductions (<1,000 tonnes per year)

Medium potential of GHG reductions (1,000 to 10,000 tonnes per year)

High potential for GHG reductions (> 10,000 tonnes per year)

Lower potential for resiliency enhancement (e.g., lowers or avoids localized property damage or personal injuries)

Medium potential for resiliency enhancement (e.g., lowers or avoids widespread property damage or personal injuries)

High potential for resiliency enhancement (e.g., lowers or avoids widespread property destruction or loss of life)

How We Live: Helping Londoners respond to and prepare for climate change at home.

The following table provides a high-level summary of the types of actions and outcomes likely required for London to achieve net-zero emissions by 2050 and to be resilient to future extreme weather events.

By 2030	By 2040	By 2050
Replacement heating systems will be net-zero energy/emission At least 10% of existing housing will be net-zero energy/emission At least 10% of existing housing will have extreme weather resiliency At least 50% of existing multi-family buildings will have “shelter-in-place" capabilities 75% diversion and recovery rate from landfill for household waste	At least 50% of existing housing will be net-zero energy/emission At least 50% of existing housing will have extreme weather resiliency All multi-family buildings will have “shelter-in-place" capabilities 80% diversion and recovery rate from landfill for household waste	All housing will be net-zero energy/emission buildings All housing will have extreme weather resiliency 90% diversion and recovery rate from landfill for household waste

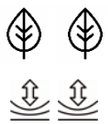
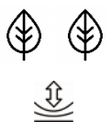
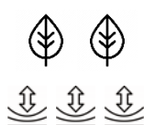
How We Live: Helping Londoners respond to and prepare for climate change at home

Action #1: Provide ongoing education and engagement on the necessity for community-wide action on the climate emergency.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Supporter
1-1	Continue to provide Londoners with the latest information on local greenhouse gas emissions and the expected impacts of climate change	Program		▬▭▭	**S**	City	
1-2	Work with community partners to develop tools and resources to help Londoners and London businesses identify their contributions to greenhouse gas emissions and prepare for extreme weather events	Partnerships		▬▭▭	**S**	City	City
1-3	Work with community partners to develop means to recognize those Londoners and London businesses who are providing local leadership on climate action	Partnerships		▬▭▭	**S**	City	City

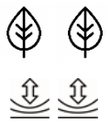
How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #2: Support and facilitate energy conservation, energy efficiency, renewable energy, and major energy retrofits of residential buildings.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Supporter
2-1	Work with community partners to develop programs that engage London homeowners on energy conservation, energy efficiency, and renewable energy climate actions	Partnerships		▬▭▭	**R**	City	
2-2	Work with energy utilities on promoting existing and innovative new energy conservation programs, including fuel-switching opportunities	Partnerships		▬▬▭	**R**	City	
2-3	Develop and test a program for the use of Local Improvement Charges for funding major energy retrofits and climate adaptation measures for single family properties as well as multi-family buildings	Pilot Project		▬▭▭	**R**	City	
2.4	Work with energy utilities to promote low/zero emission backup power and/or energy storage systems to power essential services for residential buildings so they may act as a safe haven for residents to shelter-in-place in the event of loss of power from the electricity grid.	Partnerships		▬▬▭	**A**	City	

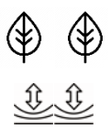
How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #3: Support and develop collaborative approaches to end energy poverty.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
3-1	Work with community partners to develop programs that promote and encourage existing and new energy utility low income support programs	Partnerships		▬▭▭	**R**		City
3-2	Explore municipal options for establishing minimum energy efficiency requirements for rental properties	Study		▬▭▭	**S**	City	
3-3	Develop and test a program for the targeted use of local improvement charges (LICs) and/or Community Improvement Plans (CIPs) for funding major energy retrofits and climate adaptation measures for lower-income single family properties as well as multi-family buildings	Pilot Project		▬▭▭	**R**	City	

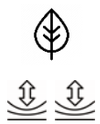
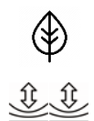
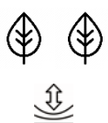
How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #4: Support and encourage resource and waste management initiatives for London households.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
4-1	Implement waste diversion and minimization activities as per the 60% Waste Diversion Action Plan	Plan			**R**	City	
4-2	Continue to work with community partners to implement food waste reduction initiatives	Partnerships			**S**	City	
4-3	Work with partners to develop tools and resources to help Londoners reduce their resource and material consumption and move towards a circular economy versus waste disposal (e.g., focus on local economy, projects such as the London Waste to Resources Innovation Centre)	Partnerships			**R**	City	
4-4	Explore opportunities to support equipment share co-op and shared ownership models for common equipment in residential communities	Partnerships			**S**	City	

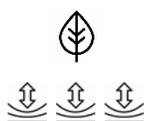
How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #5: Support and encourage urban agriculture and strengthen local food systems.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
5-1	Work with partners to develop tools and resources to help Londoners grow their own food	Partnerships		▬▭▭	**S**		City
5-2	Continue to implement and promote the Urban Agriculture Strategy	Partnerships		▬▭▭	**S/R**	City	
5-3	Promote and support Middlesex London Health Unit and community partners championing climate-friendly diets	Partnerships		▬▭▭	**S**		CIty

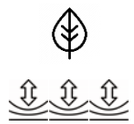
How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #6: Assess and establish strategy to improve residential neighbourhood climate resilience.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
6-1	Work with partners to develop, design and promote the benefits of neighbourhood climate resilience including how to prepare for extreme weather events	Partnerships		▬▭▭	**R**	City	
6-2	Review and expand existing City downspout disconnection, sump pump & sewer backflow valve programs	Programs, Projects, Pilot Projects		▬▭▭	**R**	City	
6-3	Identify, communicate and promote homeowner-lead climate resilience improvements (e.g., hurricane clips, basement window well upgrades, grade adjustment for drainage, etc.)	Procedure		▬▭▭	**S**	City	
6-4	Revise the Vital Services Bylaw to address changed heating and cooling requirements in apartment buildings due to the changing climate	Procedure		▬▭▭	**R/A**	City	

How We Live: Helping Londoners respond to and prepare for climate change at home.

Action #7: Work with the Middlesex London Health Unit to improve human health resilience to climate change impacts.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
7-1	Support the Middlesex London Health Unit in implementing recommendations from the *Assessment of Vulnerability to the Health Impacts of Climate Change in Middlesex-London* report (2014)	Partnerships		▬▬▭	**S**		City
7-2	Work with the Middlesex London Health Unit to review and update the human health impacts of climate change	Partnerships		▬▬▭	**S**		City

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

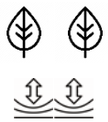
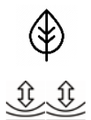
The following table provides a high-level summary of the types of actions and outcomes likely required in order for London to achieve net-zero emissions by 2050 and to be resilient to future extreme weather events.

By 2030	By 2040	By 2050
10% increase in CO_2 sequestered & GHG emissions avoided due to conservation and management of natural and agricultural lands	20% increase in CO_2 sequestered & GHG emissions avoided due to conservation and management of natural and agricultural lands	30% increase in CO_2 sequestered & GHG emissions avoided due to conservation and management of natural and agricultural lands
28% tree cover within the urban area	30% tree cover within the urban area	32% tree cover within the urban area
Steady improvements in subwatershed health categories* (i.e. water quality, forest condition, land perviousness)	Improve subwatershed water quality score* by one grade (e.g. D to C, C to B)	Improve all subwatershed health categories* by one grade

*Using criteria from the 2017 UTRCA Watershed Report Card baseline report for the London subwatersheds with a minimum 50% subwatershed area within London

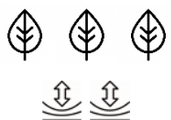
How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #1: Enhance the natural heritage system's resiliency in urban areas.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
1-1	Review City property for potential tree-planting and natural habitat improvement opportunities	Study		▬▬▭	**S**	City	
1-2	Review natural heritage connection / corridor requirements for new development	Policies		▬▭▭	**R**	City	
1-3	Assess the need, opportunity and implementation of septic system phase-out within urban boundary to improve water quality	Study		▬▭▭	**S**	City	

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #2: Enhance the natural heritage system's resiliency in rural areas.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
2-1	Create and implement protection and "set-aside" programs (ecological reserves, forests, woodlots, shelterbelts and wetlands) to increase the carbon component of land and encourage natural pest control near agricultural lands	Policies			**R**	City	

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #3: Develop a land use carbon sequestration study with targets for conserving and managing natural and agricultural lands to retain and absorb greenhouse gases (GHGs).

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
3-1	Create and regularly update estimates for carbon sequestration rates from trees, environmentally significant areas and other natural areas, and agricultural lands on both public and private land for inclusion in the community GHG emissions inventory	Procedure	N/A	▬▬▭	**R**	City	
3-2	Assess through measurement connectivity, ecosystem health and area of the natural heritage system	Study	N/A	▬▭▭	**S**	City	
3-3	Assess, track and improve the permeability of urban lands through Low Impact Development (LID) and de-paving initiatives	Study		▬▭▭	**S**	City	

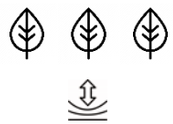
How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #4: Advance the urban forest strategy including exploring reforestation of under-utilized agricultural land within London.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
4-1	Increase tree planting targets for the City's TreeMe program	Program			**R**	City	
4-2	Reduce frequency and area of lands being mowed, and restore with native species	Procedure			**S**	City	
4-3	Enhance the resiliency and connectivity of the natural heritage System through ecological restoration with a focus on potential naturalization areas (including those identified on London Plan Map 5 - Natural Heritage)	Procedure			**S/R**	City	
4-4	Work with partners to develop and test the reforestation of under-utilized agricultural land, or portions thereof, outside of the urban growth boundary.	Pilot Project			**S**	City	

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #5: Collaborate with First Nations to ecologically restore lands.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
5-1	Consult with First Nations and Indigenous Partners to investigate the potential use of Traditional Ecological Knowledge and practices in developing and implementing restoration plans	Partnership			**S/R**		

How We Green: Building a greener city by protecting and increasing natural resources in the built and natural environment.

Action #6: Advance and enhance current efforts to improve the Thames River watershed health and resiliency.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
6-1	Improve watershed health and resiliency by implementing recommendations regarding watershed health (e.g., forest cover, groundwater and surface water) as identified in Watershed Studies, Strategies and Report Cards	Partnerships			**A**	City	
6-2	Implement recommendations from the River Management Plan (One River EA), the Shared Waters Approach (Thames River Clear Water Revival) and the Thames Valley Corridor Action Plan	Procedure			**R/A**	City	
6-3	Advance the management of priority invasive species with a focus on the Thames River corridor	Procedure			**S/R**	City	
6-4	Improve water quality in the Thames River by continuing implementation of recommendations of the Pollution Prevention and Control Master Plan and Combined Sewer Separation Program	Procedure			**R/A**	City	
6-5	Improve water quality in the Thames River (and Kettle Creek) and reduce carbon emissions by increasing uptake of no till and cover crop farming practices	Procedure			**R**		

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit

The following table provides a high-level summary of the types of actions and outcomes likely required in order for London to achieve net-zero emissions by 2050 and to be resilient to future extreme weather events.

By 2030	By 2040	By 2050
At least 50% of new light-duty vehicles sold in London are electric All new buildings provide charging stations for electric vehicles and bikes At least 10% fewer personal vehicles per capita than 2020 At least 20% of daily trips made by transit At least 15% of daily trips made by walking & biking No more than 60% of daily trips made by personal vehicles All transit vehicles are zero-emission vehicles All vehicles-for-hire are zero-emission vehicles At least 25% of heavy-duty vehicles and off-road equipment are zero-emission At least 5% of inter-urban trips made by passenger rail or bus All new roads built using low-impact development stormwater management practices	All new light-duty vehicles sold in London are electric At least 30% fewer personal vehicles per capita than 2020 At least 30% of daily trips made by transit At least 25% of daily trips made by walking & biking No more than 40% of daily trips made by personal vehicles At least 50% of heavy-duty vehicles and off-road equipment are zero-emission At least 25% of inter-urban trips made by passenger rail or bus At least 50% of existing roads built using low-impact development stormwater management practices.	All light-duty vehicles in London are electric At least 50% fewer personal vehicles per capita than 2020 At least 40% of daily trips made by transit At least 35% of daily trips made by walking & biking No more than 20% of daily trips made by personal vehicles All heavy-duty vehicles and off-road equipment are zero-emission At least 50% of inter-urban trips made by passenger rail or bus All existing roads built using low-impact development stormwater management practices

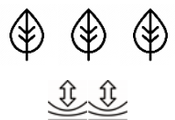
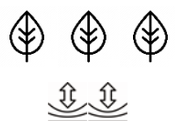
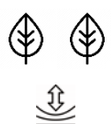
How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit

Action #1: Accelerate the expansion and improvement of active transportation infrastructure.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
1-1	Accelerate the expansion of the City-wide shared use off-road pathway system (e.g., Thames Valley Parkway) system	Partnerships			**R/A**	City	
1-2	Develop and deploy publicly accessible secure bike storage facilities in major destinations (e.g., Downtown London, Old East Village, and along the higher-order transit corridors, etc.)	Program, Projects, Pilot Projects			**R**	City	
1-3	Establish requirements for new commercial and multi-family buildings to provide secure bike storage facilities for their tenants	Procedure			**R**	City	
1-4	Accelerate completion of a connected, city-wide all ages & abilities (AAA) cycling network as provided in the City's Cycling Master Plan.	Programs and Projects			**R/A**	City	
1-5	Ensure that all residential streets have dual-side sidewalks, as required for street (re)development (as per LP349), in a manner that preserves existing street boulevard trees	Procedure, Programs and Projects			**S/R**	City	
1-6	Revise winter maintenance practices to place a higher service level for snow and ice clearing on sidewalks, transit stops, and AAA cycling infrastructure	Procedure			**R/A**	City	

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and is connected to the region.

Action #2: Expand and improve public transit service, including higher-order transit.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
2.1	Convert 100% of LTC's bus fleet to zero-emission vehicles (based on study results, LTC approval and City approval)	Study Partnerships		▬▬▭	**R/A**	LTC	
2-2	Implement a network of higher-order transit and high-frequency express bus routes as envisioned as part of the City's Transportation Master Plan	Program		▬▭▭	**R/A**	City LTC	
2-3	Establish transit priority lanes and other on-road prioritization measures to support higher-order transit and high-frequency express bus routes	Program		▬▭▭	**R/A**	City	
2-4	Identify and implement first/last mile connectivity solutions for under-served areas, with a focus on active transportation	Pilot Project		▬▬▭	**R**	City LTC	

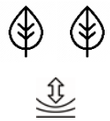
How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

Action #3: Encourage and incent increased active transportation, public transit use & transportation demand management as envisioned by the City's Transportation Master Plan and Cycling Plan.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
3-1	Provide support for micro-mobility (e.g., e-scooter/bike share) service(s)	Partnerships		▬▭▭	**R**	City	
3-2	Establish a Transportation Management Association(s) for London employers to promote telework, bike/walk to work, transit, carpooling	Programs		▬▭▭	**S/R**	City	
3-3	Develop programs to attract new riders to public transit	Programs		▬▭▭	**R**	LTC	City
3-4	Support implementation of gateway parking and transit connection(s)	Partnerships		▬▬▭	**R**	City	
3-5	Explore the use of time-specified car-free periods in high-volume pedestrian areas such as Dundas Place and/or school zones	Pilot Project		▬▭▭	**S**	City	

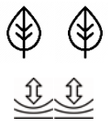
How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

Action #4: Reduce freight traffic load on secondary and tertiary roads.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
4-1	Create a Goods Movement Strategy to foster a safe, convenient, efficient, multi-modal, sustainable, and integrated goods movement transportation system	Study Partnerships		▬▬▭	**R/A**		
4-2	Encourage and support the use of zero-emission delivery services	Partnerships		▬▬▭	**S**		

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

Action #5: Advocate for higher frequency and reliable regional transportation connections.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
5-1	Advocate for a regional transportation system that supports London as a regional transit hub and provides frequent and reliable connections to the Greater Toronto Area, Waterloo Region and Windsor-Detroit	Partnerships		---	A		

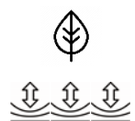
How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

Action #6: Encourage and support zero emissions vehicle and electric bicycle (e-bike) adoption.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
6-1	Revise the Vehicle-for-Hire By-Law to mandate the use of hybrid, electric, or other zero-emission vehicles	Procedure		▬▭▭	**R**	City	
6-2	Provide public electric vehicle and e-bike charging at major community facilities	Program		▬▭▭	**R**	City	
6-3	Establish minimum electric vehicle and e-bike charging requirements for new multi-family and commercial buildings	Policy		▬▭▭	**R**	City	

How We Move: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.

Action #7: Improve resilience of transportation infrastructure.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
7-1	Explore the use of roadway construction materials and practices that are more sustainable and tolerant to climatic conditions as well as reduce the urban heat island effect	Study		▬▭▭	**S**	City	
7-2	Explore the use of technical reviews and assessments for major projects to ensure that infrastructure is built to be resilient and sustainable over its lifespan	Procedures		▬▭▭	**S/R**	City	
7-3	Increase incentives for the adoption of LIDs and permeable materials (public and private lands) for improved stormwater management of transportation infrastructure (e.g. changes to the stormwater rate structure)	Procedures		▬▭▭	**R/A**	City	
7-4	Review flooding potential on roads (slope and topography) with a focus on primary roads and emergency routes	Study		▬▭▭	**S**	City	

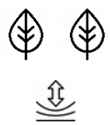
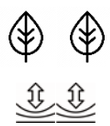
How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

The following table provides a high-level summary of the types of actions and outcomes likely required in order for London to achieve net-zero emissions by 2050 and to be resilient to future extreme weather events.

By 2030	By 2040	By 2050
All **new** housing will be net-zero energy/emission or net-zero ready The majority of **new** multi-family residential buildings will have “shelter-in-place" capabilities (back-up power, shelter space, etc.) All new developments will be net zero energy/emissions or net-zero ready The majority of new developments built with Low Impact Development features All new developments will preserve existing natural habitats At least 35% of new development is infill development At least 35% of new development is medium-to-high density	All **new** housing will be net-zero energy/emission All **new** multi-family residential buildings will have “shelter-in-place" capabilities (back-up power, shelter space, etc.) All new developments will be net zero energy/emissions All new developments built with Low Impact Development features At least 45% of new development is infill development At least 50% of new development is medium-to-high density	At least 60% of new development is infill development At least 75% of new development is medium-to-high density

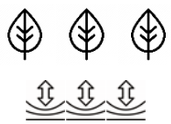
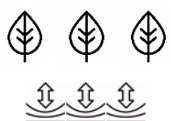
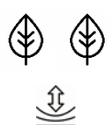
How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

Action #1: Ensure new developments embody complete community attributes such as different forms of housing, opportunities for work and shopping, links to transportation, and green space.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Contribute
1-1	Require a development-specific transportation demand management plan with any new development application, with level of effort based upon size of the development being proposed	Policy			**R**	City	
1-2	Provide guideline documents to assist with the implement of the mixed-use development requirements	Procedure			**S**	City	

How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

Action #2: Encourage and incentivize climate-friendly, sustainable new development and redevelopment.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
2-1	Create Green Development Standards, an implementation checklist, and establish administrative triggers for Standards application	Policy		▬▬▭	**R/A**	City	
2-2	Explore and test potential financial & administrative incentives to promote adoption of Green Development Standards	Pilot Project		▬▬▭	**R**	City	
2-3	Engage with local real estate stakeholders to encourage adoption of the EnerGuide home energy rating system in real estate listings	Partnerships		▬▬▭	**S**		City
2-4	Explore area rating development charges to incent ‘inward and upward’ development (denser, and more compact)	Study		▬▬▭	**S**	City	

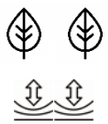
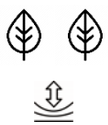
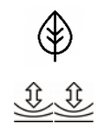
How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

Action #3: Ensure long-term growth planning addresses the need for urgent climate change mitigation and adaptation to address the Climate Emergency.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
3-1	Update the London Plan's analysis of growth scenarios to reflect climate emergency mitigation and adaptation considerations	Study	N/A	▬▬▭	**S**	City	
3-2	Increase intensification target (35% intensification by 2030, increasing thereafter)	Policy		▬▭▭	**R/A**	City	
3-3	Maintain urban growth boundary to protect agricultural lands	Policy		▬▭▭	**R/A**	City	

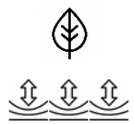
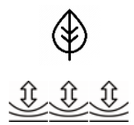
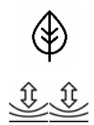
How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

Action #4: Ensure new development is energy-wise & future-ready.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
4-1	Establish requirements for a development-specific energy management plan with any new development application and compliance with Green Development Standards	Policy		▬▬▭	**R/A**	City	
4-2	Create guideline for satisfying development-specific energy management planning requirement	Study		▬▬▭	**S**	City	
4-3	Create policies for new developments to include EV charging and renewable energy generation (future-ready)	Policy		▬▬▭	**R**	City	

How We Grow: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives.

Action #5: Ensure new development is climate emergency resilient.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
5-1	Create guidelines to encourage severe weather-resilient building construction (e.g., roof hurricane clips, sewer back-up valves, prohibition on downspout connection to municipal sewers, etc.)	Policy		▬▭▭	**S/R**		
5-2	Incorporate on-site infiltration and/or storage and use of stormwater (e.g., Low Impact Development) in Site Plan Design Manual	Procedure		▬▬▭	**R/A**		
5-3	Maximize retention and enhancement of existing natural heritage features for their ecological goods and services	Policy		▬▬▬	**S**		

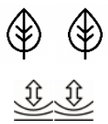
How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

The following table provides a high-level summary of the types of actions and outcomes likely required in order for London to achieve net-zero emissions by 2050 and to be resilient to future extreme weather events.

By 2030	By 2040	By 2050
At least 10% of London's electricity needs provided by local renewable generation	At least 30% of London's electricity needs provided by local renewable generation	At least 50% of London's electricity needs provided by local renewable generation
At least 5% of London's natural gas needs provided by "green gas" (e.g., biomethane, hydrogen)	At least 15% of London's natural gas needs provided by "green gas" (e.g., biomethane, hydrogen)	At least 50% of London's natural gas needs provided by "green gas" (e.g., biomethane, hydrogen)
"Smart grid" technology used by marketplace leaders	"Smart grid" technology use is widespread	Residual use of natural gas is offset by a mix of local and global carbon sequestration and/or carbon capture and storage projects
Zero-emission Connected & Automated Vehicle (CAV) service providers in pilot phase	Zero-emission CAV service providers integral part of London's public transportation network	Urban food production is widespread
Local pilot projects for creating and selling carbon offsets from local projects	Selling and purchasing of locally created carbon offsets is a common practice	90% diversion rate from landfill for business waste
Local pilot projects for engineered carbon capture and storage	Engineered carbon capture and storage used by some large local users of natural gas	
60% diversion rate from landfill for business waste (e,g,, London Waste to Resources Innovation Centre	75% diversion rate from landfill for business waste	
Larger-scale urban food production in pilot phase	Circular economy is integral part of London's economy (e.g., London Waste to Resources Innovation Centre)	
Food rescue programs from grocery stores and restaurants is common practice	Urban food production is common	
Opportunities for other local environmental investments and levels of recognition and reward	Food rescue programs from grocery stores and restaurants is widespread	

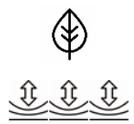
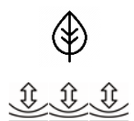
How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #1: Increase and encourage the installation of distributed renewable energy assets.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
1-1	Review London's electricity distribution system to identify areas with capacity for additional renewable electricity generation.	Study	N/A	▬▭▭	**S/R**		City
1-2	Review London's gas distribution system to identify areas with capacity for additional "green gas" (i.e., biomethane and/or hydrogen) gas injection.	Study	N/A	▬▭▭	**S/R**		City
1-3	Explore programs to encourage distributed renewable electricity generation and green gas investment in areas with system capacity.	Pilot Project		▬▬▭	**S/R**		

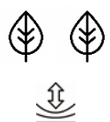
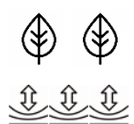
How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #2: Improve City preparedness for dealing with extreme climate events.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
2-1	Explore potential for formal neighbourhood-scale emergency preparedness and response group support	Partnerships		▬▭▭	**S/R**	City	
2-2	Review readiness of City emergency response process to address extreme weather emergencies	Procedures		▬▬▭	**S**	City	

How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #3: Implement policies to improve data collection and use for improved climate monitoring, emergency response and optimization of electricity generation and distribution.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
3-1	Advance a data collection and use strategy for London that incorporates climate change mitigation and adaptation actions.	Plan		▬▬▭	**S**	City	
3-2	Complete strategy for connected and automated vehicles that discourages single-occupancy use, encourages shared ownership/service models, complements London's public transportation system, prioritizes pedestrian and cyclist road users, and employs zero-emission vehicles	Plan		▬▬▭	**S**	City	
3-3	Work with energy utilities to implement smart grid strategies to support climate resiliency, such as EV-to-grid connectivity, solar PV and battery storage, surplus power-to-gas hydrogen generation	Pilot Projects		▬▬▬	**S**		City

How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

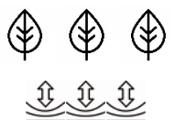
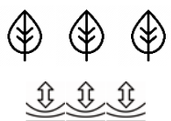
Action #4: Advance more sustainable farming practices and increased local product consumption.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
4-1	Review & revise zoning by-law Z-1 to ensure smaller, family-run farms are not discouraged	Policy		▬▭▭	**S**	City	
4-2	Engage regional stakeholders to review food processing infrastructure and potential needs for increased agricultural development	Study		▬▬▬	**S**		City

* Refer also to How We Green Actions 2-1, 4-4 and 6-5

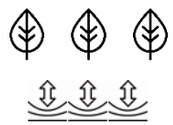
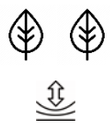
How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #5: Continue to work with business community partners to advance sustainable business practices.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
5-1	Continued promotion and advancement of Green Economy London and other environmental initiatives for businesses	Procedure		▬▭▭	**S**		City
5-2	Define and encourage the growth of employment in the green products and services sector in London	Partnership		▬▬▭	**S**		City

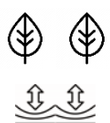
How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #6: Work with the private sector to identify opportunities to leverage City assets and/or funds to activate private capital for climate action in the public and private sector.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
6-1	Explore green bonds and green revolving funds as potential financing options for increased investment in climate-resilient infrastructure and CEAP initiatives	Study		▬▬▭	**S**		
6-2	Explore the feasibility of creating and facilitating local carbon offset projects to provide funding support	Partnerships		▬▭▭	**R**	City	

How We Prosper: Ensuring a City that is prosperous, innovative and climate change resilient

Action #7: Support and encourage resource and waste management initiatives for London businesses.

Supporting Actions		Action Type	Potential Impacts	Timeline	Ability to Implement	Responsibilities	
						Lead/Co-lead	Partner/Support
7-1	Implement waste diversion and minimization activities that support the 60% Waste Diversion Action Plan	Plan			**R/A**	City	
7-2	Continue to work with community business partners to implement food waste reduction initiatives at grocery stores and restaurants	Partnerships			**S**	City	
7-3	Work with partners to develop tools and resources to help London businesses reduce their use of packaging	Partnerships			**S**	City	
7-4	Support and promote London businesses playing a role in developing local circular economy solutions (e.g., London Waste to Resources Innovation Centre)	Partnerships			**S**	City	

Discussion – ACE DRAFT Response to City of London Climate Emergency Action Plan Mar. 5, 2021

Part A – London Climate Actions

What has your organization done, and/or what are you planning to do in the future to adapt to the impacts from climate change (e.g., intense rainfall, high winds or tornados, extreme heat, drought, ice storms)?

As an advisory committee established by the City, we understand our role is not so much to DO as it is to provide information and citizen perspectives based on research and the personal actions of individual members of the committee. That said, there have been a number of initiatives and ideas advanced by ACE that have been taken up by the City, not the least of which was the original Climate Emergency Declaration for the City of London prepared in 2019.

What has your organization done, and/or what are you planning to do in the future to reduce GHG emissions (e.g., building energy efficiency & conservation, fleet greening, renewable energy, etc.)?

ACE endorses and stands ready to assist city council in aligning its priorities and plans with Canada's commitment to the UN Sustainable Development Goals (or SDGs). The SDGs and the Federal Sustainable Development Strategy is the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.
Draft Climate Caucus Handbook. (2021).
https://docs.google.com/document/d/1pUJC4HSbhXJGIMC7npDxj1Ox0DCyQeduZrHty_dNB8I/edit#

What barriers are there to taking your climate mitigation, adaptation, resiliency, sustainability actions?

Considering that the top two sources of GHG emissions are tied to the average Londoner's lifestyle (housing and personal transportation) significant changes in the mindset and behaviour of residents will be required to make a difference. The City has a key leadership role to play and powerful policy and legislative tools it can use to exhort, cajole, compel and incent change. The City is also in a unique position to convene all the stakeholders in order to develop a common understanding, language and commitment to TAKE ACTION on climate change.

Upfront financing solutions are required to support inclusive, equitable climate change, sustainability and resiliency solutions for Londoners.

What can the City of London do to assist you in taking these Climate Emergency Plan actions? This includes letting us know if there are any new ideas your organization would be interested in exploring with the City of London and other partners to address the Climate Emergency (e.g., joint procurement, carpool coordination, etc.).

ACE encourages the City to take an integrated and strategic approach and consider the long-term resilience investment potential for the solutions proposed through the LCRN work with the development and rollout of London's CEAP priorities. Upfront financing solutions are required to support inclusive, equitable climate change, sustainability and resiliency solutions for a wide variety of Londoners.

The City of London can provide PACE/LIC financing solutions (e.g. integrated CoVid recovery planning, loan loss guarantee reserve funding, one-window financing solutions, support for a 3rd party service

provider, capacity building & awareness campaigning etc.) to support inclusive, equitable climate change, sustainability and resiliency solutions for a wide variety of Londoners.

How We Live: Helping Londoners respond to and prepare for climate change at home

1 Provide ongoing education and engagement on the necessity for community-wide action on the climate emergency.

The London Poverty Research Centre and the London Environmental Network, with logistical support from Western University, have partnered on a pilot project titled "Developing Inclusive Green Economies through Property Assessed Clean Energy Incentives (PACE)". The pilot project includes the development of an online educational resource directory to educate Londoners about available programs and ideas related to home energy efficiency and conservation. This web resource is hosted by LEN.

https://www.londonenvironment.net/home_retrofits

2 Support and facilitate energy conservation, energy efficiency, renewable energy, and major energy retrofits of residential buildings.

Action Type: Pilot Study

ACE committee member Dr. Brennan Vogel (& research team collaborators from the community) is currently investigating policy and program design features to support inclusive green building retrofits. One portion of this pilot project is focusing on Property Assessed Clean Energy (PACE or LIC) financing to provide accessible and inclusive financing to support residential energy efficiency and renewable energy retrofits at the municipal / regional scale.

3 Support and develop collaborative approaches to end energy poverty.

Action Type: Pilot Study

This pilot study also focuses on the implementation of PACE programs to help to reduce energy poverty. The study aims to determine options and best practices for the policy and program designs that will allow targeted PACE programs to increase opportunities for low-income households and social housing projects to improve energy efficiency and lower energy costs, while improving energy savings and lowering GHG emissions.

For more information: https://institute.smartprosperity.ca/InclusiveRecoveryRetrofits

4 Support and encourage resource and waste management initiatives for London households.

Collaborate with community organizations like the Thames Regional Ecological Association (TREA) and Reimagine Co to help Londoners to live more sustainable and connected lives, through workshops, demonstrations, experiments and shared learning (1)(2).

(1). Thames Regional Ecological Association, (TREA). (2021). https://www.trea.ca/how-to-workshops-2/

(2). Reimagine Co. (2021). https://reimagineco.ca/pages/about-us

5 Support and encourage urban agriculture and strengthen local food systems.

Work with community partners to educate and encourage Londoners to make meals more climate-friendly: reduce meat consumption, purchase sustainably caught fish, use organic and local produce, compost, establish and grow vegetable gardens and community gardens, and to plant native species. The City of London's Urban Agriculture Steering Committee (UASC) can collaborate with groups like Friends of Urban Agriculture, Middlesex London Food Policy Council, Forage City London, TREA and many more community organizations.

6 Assess and establish strategy to improve residential neighbourhood climate resilience.

Partner with Climate Action London and Reforest London to encourage the increased naturalization of neighbourhoods, such as the planting of more trees and pollinator gardens. The ability of trees and gardens to absorb water leads to greater flood resilience and the shading qualities of trees adds to reduced urban heat island effect during the summer. Support the Pollinator Pathways Project to create gardens across the city to allow pollinators easy movement and sanctuary, as well as to provide everyone with the resources and knowledge to create their own gardens.

Pollinator Pathways Project. (2021). https://www.pollinatorpathwaysproject.com/about

7 Work with the Middlesex London Health Unit to improve human health resilience to climate change impacts.

The City can support the Middlesex London Health Unit by educating residents about their personal protection against air borne pathogens like the West Nile Virus, Eastern Equine Encephalitis (EEE) and other mosquito-borne viruses and the things that residents can do to prevent mosquitoes bites.

Government of Canada. (2016, April 8). Prevention of West Nile virus. Retrieved from

https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/prevention-west-nile-virus.html

Additions:

Municipalities can enable the flow of private capital for PACE program rollouts through the issuance of green bonds for private equity investors - attracted by municipal loan loss guarantees and long-term returns on retrofit paybacks affixed to property taxes for commercial building operators and home owners engaged in energy & cost savings and emissions reductions through building retrofitting activities.

PACE financing models offer a proven mechanism for unlocking large amounts of private capital for green retrofitting, as well as potentially supporting a wide range of other sustainability / resilience investments that can bolster the sustainability of the local economy while reducing emissions. Since their first introduction in 2008, residential PACE programs have been growing rapidly across the United States (1). As of May 2018, US residential PACE programs have enabled 220,000 home upgrades, worth a total of over $5 billion USD. A large portion of these investments, 58%, were for energy efficiency measures, with the remainder being investments in renewable energy and water efficiency. An estimated 42,000 jobs have been created through these programs (2).

A strategic PACE policy/planning approach and working with stakeholders to develop a new green bond investment program to attract private equity stakeholders (such as TechAlliance, Libro Credit Union, the Sifton Foundation etc.) and/or stacking retrofit funding from senior levels of government can enable climate actions for municipal stakeholders.

A broader approach to leveraging PACE opportunities through supporting the development of third party administration and a private capital investment strategy, also offers larger potential for a PACE program to address a wide range of other community funding needs for sustainability and resiliency (renewable energy, efficiency, resilience, urban ag, forestry etc.). Third party, one-window administrators may offer greater program efficiency and other administration benefits for municipalities.

Building retrofitting is a key solution to deal with environmental issues related to climate change as nearly half of London's carbon footprint relates to emissions from buildings. More critically, municipal leadership to create and provide financing pathways for inclusive, equitable building retrofitting can help to frame climate actions as broader means to strategically address the deeper social and economic malaise that plagues London (among the highest working age unemployment and poverty rates in Canada). The implementation of an equitably designed PACE program can provide low/no interest loan guarantees for a wide variety of building operators and homeowners to participate in energy efficiency/conservation activities, spurred on through the mobilization of private investment capital for social good.

Yukon has a LIC/PACE program, but it is only used for installing renewable energy, and both BC and Quebec ran LIC/PACE pilot programs without enabling legislation. When comparing between provinces, Alberta's regulations provide the greatest level of guidance to program administrators, while Nova Scotia simply allows PACE programs, and Ontario falls between the two models. To meet the requirements of the Ontario regulations for LIC/PACE loans (O. Reg. 586/06), the applicant must meet the following criteria: (1) The applicant is the homeowner of the property, (2) All property owners consent to participation in the program; and (3) The property is located in the applicable municipality.

London is a partner with Clean Air Partnership (CAP) along with various Toronto municipalities that have accessed funding through the Federation of Canadian Municipalities (FCM). On Mar. 2, 2021, FCM announced the Green Municipal Fund launched its newest funding call from the Community Efficiency Financing initiative to support Canadian municipalities and partners in the delivery of home-energy upgrade financing programs. Municipalities can access grants, loans and credit enhancement to create or scale up local programs to help homeowners upgrade the energy performance of their homes.(3)

The Halifax Solar City PACE program is expanding to include energy retrofits to provide greater equity to citizens to have access to the program and builds on the Halifax Climate Emergency Plan which provides a workable template for the City of London to implement Local Improvement Charge (LIC) financing.

(1). Accelerating Home Energy Efficiency Retrofits Through Local Improvement Charge Programs: A Toolkit for Municipalities. Clean Air Partnership (CAP). (2020). https://www.cleanairpartnership.org/wp-content/uploads/2020/05/FINAL-LIC-TOOLKIT-Accelerating-Home-Energy-Efficiency-Retrofits-Through-LIC-Programs-2020-1.pdf

(2). PACENation. (2019). PACENation building the clean energy economy. Retrieved from https://pacenation.us

(3). Federation of Canadian Municipalities (FCM). (2021). https://fcm.ca/en/funding/gmf/capital-program-loan-credit-enhancement-local-home-energy-upgrade-financing-program

***How We Green**: Building a greener city by protecting and increasing natural resources in the built and natural environment*

1 Enhance the natural heritage system's resiliency in urban areas.

Improve flood control by providing incentives/mandates for green roofs, rain gardens, and permeable pavement.

Green roofs reduce flooding by capturing rainwater to reduce the amount of flow in stormwater systems. They provide cooling that reduces the heat island effect, increase the life of the roofs and increase property value. Green roofs can generate employment, space for food production, reduce air pollution, and support biodiversity.

A rain garden is a garden of native shrubs, perennials, and flowers planted in a small depression, which is generally formed on a natural slope. It is designed to temporarily hold and soak in rain water runoff that flows from roofs, driveways, patios or lawns. (1). Building parking lots, driveways and roads using permeable pavement helps to restore natural infiltration functions to the landscape and reduce impacts to watercourses by allowing rainwater to slowly infiltrate into the ground. (2).

(1). Groundwater Foundation. (2021). https://www.groundwater.org/action/home/raingardens.html

(2). Sustainable Technologies Evaluation Program (STEP). (2021). https://sustainabletechnologies.ca/home/urban-runoff-green-infrastructure/low-impact-development/permeable-pavement/

2 Enhance the natural heritage system's resiliency in rural areas.

The City must commit to building up, not building out; putting an end to urban sprawl.

Zoning policies that limit density can stimulate urban sprawl, which can depress productivity, contribute to local air pollution and encroach on surrounding ecosystems. Removing land use and building regulations that prohibit denser, mixed-use urban development can stimulate markets to make better use of land and increase the supply of housing, reducing costs and enhancing the productivity (1). Partner with local organizations and associations to preserve the City of London's cultural heritage.

(1). Climate Emergency, Urban Opportunity. Coalition for Urban Transitions. (September 19, 2019). https://urbantransitions.global/en/publication/climate-emergency-urban-opportunity/

3 Develop a land use carbon sequestration study with targets for conserving and managing natural and agricultural lands to retain and absorb greenhouse gases.

This would seem to be a project led by other agencies on which the City would partner.

Partner with organizations that help farmers produce ecosystem services on their land. These include cleaner air, cleaner water, flood mitigation, carbon sequestration, species at risk habitat and support for native bees and pollinators. The "Alternative Land Use Services" ALUS Middlesex program aims to help address environmental issues affecting water quality in the Great Lakes, re-establish tallgrass prairie, improve buffer areas, manage wetlands and establish other projects providing ecosystem services such as flood mitigation, carbon sequestration and pollinator support. ALUS Canada supports tens of

thousands of acres of wildlife habitat, pollinator meadows, carbon capture, clean air, clean water, and other ecosystem services.

ALUS. (2021). https://alus.ca/

4 Advance the urban forest strategy including exploring reforestation of underutilized agricultural land within London.

One million species risk extinction within decades. Urban forests can provide wildlife corridors for songbirds. School playgrounds and spaces alongside roads can be local natural forests with native species planted closely together. The young open structure allows sunlight to reach smaller plants and attracts local pollinators, butterflies, snails, and amphibians. Nature based solutions to climate change are an inexpensive way to lock carbon into soil.

These Tiny Urban Forests Could be a Secret Weapon Against Climate Change,1t.org. (2021). https://www.1t.org/resources

Partner with the Upper Thames River Conservation Authority, Nature London (McIlwraith Field Naturalists), Thames Talbot Land Trust (TTLT), and other knowledgeable, local organizations to study best practices to implement conservation, restoration, and reforestation projects in the City of London, also known as the "Forest City". Forests are some of the best carbon sponges, trapping and storing carbon dioxide, CO2.

5 Collaborate with First Nations to ecologically restore lands.

Partner with the Chippewa of the Thames First Nation, the Oneida Nation, and the Munsee-Delaware Nation to share Indigenous knowledge and practices to ecologically restore shared local lands, including local organizations like the Thames River Clear Water Revival (TRCWR).

https://www.thamesrevival.ca/

6 Advance and enhance current efforts to improve the Thames River watershed health and resiliency.

Important partnership projects.

Partner with the Thames River Clear Water Revival (TRCWR) to work with developers, conservation authorities and others to promote and support the use of green infrastructure and Low Impact Development (LID) systems for stormwater management, including clarifying and enhancing policies as well as developing green standards. Ontario's draft stormwater LID guidance manual is aimed at helping proponents implement LID and green infrastructure.

The Thames River (Deshkan Ziibi) Shared Waters Approach to Water Quality and Quantity, Thames River Clear Water Revival (TRCWR). (2021). https://www.thamesrevival.ca/wp-content/uploads/2020/05/SharedWatersApproach-Dec2019finaldraft.pdf

Additions:

Integrated regional planning to protect local watersheds and adjacent, undeveloped wildlands and agricultural land will be a critical long-term objective to reduce the level of GHG emissions associated with urban sprawl, while simultaneously using and supporting nature-based solutions to support adaptation and co-benefits outcomes.

***How We Move**: Supporting low/no emission transportation choices and a transportation network that makes London easy to get around through active transportation and transit and is connected to the region.*

1 Accelerate the expansion and improvement of active transportation infrastructure.

Support the use of green infrastructure and Low Impact Development (LID) systems to expand and improve the City of London's active transportation infrastructure using narrower streets, slimmer sidewalks, smaller cul-de-sacs, shorter driveways, and smaller parking lots. Green infrastructure elements are a fundamental approach to rainwater management that protects, restores, or mimics the natural water cycle while delivering environmental, social, and economic benefits. The installation of secure bike lockers at various locations throughout the city will improve the connections between the public transit system and cycling trails, which will provide better access for transit users.

Draft Low Impact Development (LID) Stormwater Management Guidance Manual, Draft – Version 1.0. (April 20, 2017). https://municipalclassea.ca/files/7_DRAFT_MOECC_LID%20SWM%20Manual.pdf

2 Expand and improve public transit service, including higher-order transit.

London is centrally located in Southwestern Ontario along highway 401, an ideal location to establish innovative Hydrogen Fuel Cell technology and infrastructure. The use of hydrogen as an energy carrier has the potential to reduce dependence on petroleum, diversify domestic energy sources, and decrease pollution and greenhouse gas emissions. Newflyer Xcelsior CHARGE H2™ is a battery-electric vehicle that uses compressed hydrogen as an energy source. Fuel cell electric technology is a unique and innovative way to obtain extended range operation similar to existing transit vehicles with a fully zero emission solution.

New Flyer Industries Canada ULC. (2021). https://www.newflyer.com/buses/

ACE encourages the City to consider a pilot of on-demand technology to run the bus service. *Pantonium* is a Canadian AI software platform that coordinates city-wide bus fleets according to demand. Pilot projects in Belleville, Stratford and Chatham have demonstrated the on-demand service helps optimize bus fleets in real-time, grows transit accessibility and coverage, and improves convenience for the ridership.

https://pantonium.com/

https://www.theglobeandmail.com/business/rob-magazine/article-on-demand-transit-how-remi-desa-is-reimagining-public-mobility/

3 Encourage and incent increased active transportation, public transit use & transportation demand management.

Offer incentives to encourage businesses and individuals to walk, bike, carpool, to use electric buses that replace diesel; add bicycle parking, bike-share with bikes available at the train and bus stations, secure bike parking at destination locations; malls, grocery stores, etc. Encourage active transportation in any form of human-powered transportation, including walking, cycling, travelling on mobility devices, rollerblading, skating, skateboarding, cross-country skiing and more. Reduce the need for cars on the roads; reducing the maintenance required to maintain existing roads and the need to build new roads.

4 Reduce freight traffic load on secondary and tertiary roads

Local municipalities with responsibilities for providing the infrastructure that services goods movement transportation hubs are examining their land-use planning and transportation master plans to find ways to better facilitate movement of goods via all modes. Nevertheless, truck transportation remains the main mode of freight transportation used in this region.

Road Transportation, Transport Canada. (2021). https://tc.canada.ca/en/corporate-services/policies/road-transportation?pedisable=true

5 Advocate for higher frequency and reliable regional transportation services and connections

Provide incentives for use of electric bicycles, motorcycles, buses and fuel cell vehicles and infrastructure. Study the use of hydrogen as an energy carrier and the potential to reduce reliance on fossil fuels, diversify local energy sources, and decrease pollution and greenhouse gas emissions.

Many jurisdictions are beginning to investigate or consider alternative means of financing public infrastructure, including roads and highways, such as tolls, other user charges and public-private partnerships.

Road Transportation, Transport Canada. (2021).

https://tc.canada.ca/en/corporate-services/policies/road-transportation?pedisable=true

6 Encourage and support zero emissions vehicle and electric bicycle (e-bike) adoption.

ACE supports the City providing incentives and education to encourage the electrification of personal vehicles. The City could promote this by working with businesses and dealerships.

In addition, advancing the electrification of local companies' fleet vehicles would reduce GHG emissions as well as the costs to the businesses.

7 Continue to improve resilience of transportation infrastructure.

For affordable, clean and reliable vehicles and infrastructure, replace and expand the current fossil fuel fleet with new, zero-emission buses, along with new charging stations and solar power generation retrofits, leading to a reduction in greenhouse gas emissions.

Study the use of wildlife corridors to connect fragmented areas of habitat for isolated animal populations to mix and migrate. Engage farmers, landowners, and gardeners to plant native flowers to benefit bees and butterflies.

These Clever 'Wildlife Protecting' Corridors are Protecting Animals,1t.org. (2021). https://www.1t.org/resources

Additions:

While the City of London has Idling Control By-law - PH-15 for the control of idling vehicles, and the preamble includes references that the City of London is supportive of initiatives to reduce emissions that contribute to climate change and poor air quality; the bylaw is an underused tool to advance emissions reductions through improved motor vehicle operation habits.

The ACE recommends an evergreen “idle-free | drive smart” education and awareness campaign combined with enforcement of the bylaw in order to link and underscore that idling (and more broadly poor driving habits such as speeding and jack-rabbit starts in the city) contribute to London’s largest source of greenhouse gas emissions: personal vehicles; that the community’s largest energy expense is gasoline, and that London’s fourth largest source of emissions is from freight and fleet vehicles.

As suggested in the 2005 Primer for Canadian Municipalities on Developing and Enforcing Idling Control Bylaws (1), public education and bylaw enforcement work best in tandem in building public understanding and support, and in turn changing behaviours. ACE recognizes that the City may have limited resources for bylaw enforcement. The primer cited below outlines the elements for an effective public education and enforcement strategy.

Recognizing past education platforms from the MLHU, TREA and the City, renewed education and outreach programs would be useful to reach new drivers, newcomers to London and to remind existing drivers of the issues of vehicle idling and the City's by-law.

(1). https://www.rncan.gc.ca/sites/www.nrcan.gc.ca/files/oee/pdf/communities-government/transportation/municipal-communities/reports/cracking-down-e.pdf

***How We Grow**: Ensuring London becomes a mixed-use compact city using green development and redevelopment standards and incentives*

1 Ensure new developments embody complete community attributes such as different forms of housing, opportunities for work and shopping, links to transportation, and green space.

Develop financing tools for credit enhancements and repayment mechanisms like PACE to encourage new construction and development to include passive house, net-zero new building construction and renovations. Passive house is the most inexpensive option based on all reasonable life cycle assumptions and provides specific performance outcomes and benefits. All new developments must preserve existing natural wildlife habitat to protect biodiversity.

2 Encourage and incentivize climate-friendly, sustainable new development and redevelopment.

Promoting and developing inward, upward growth with the enforcement of the London Plan to curb urban sprawl requires encouragement and incentives for re-development and new developments in the municipality.

3 Ensure long-term growth planning addresses the need for urgent climate change mitigation and adaptation to address the Climate Emergency.

Integration of the LCRN recommendations with the CEAP priorities can support long-term growth planning that is climate savvy, sustainable and resilient.

4 Ensure new development is energy-wise & future-ready.

Consider climate change and extreme events in long-lived infrastructure investments, including retrofits and upgrades, and investing in traditional and natural infrastructure solutions can help communities build resilience, reduce disaster risks, and save costs over the long term.

Moudrak, N.; Feltmate, B. 2019. Weathering the Storm: Developing a Canadian Standard for Flood-Resilient Existing Communities. Prepared for Standards Council of Canada and National Research Council of Canada. Intact Centre on Climate Adaptation, University of Waterloo). (2019). https://www.intactcentre.ca/wp-content/uploads/2019/01/Weathering-the-Storm.pdf

5 Ensure new development is climate emergency resilient.

Establish policy and financing to encourage green roofs, rooftop and ground mount solar thermal hot water for pools and domestic hot water, including solar thermal with radiant floor heat for space heating, solar wall air heating, rooftop and ground mount solar photovoltaic systems, small wind and industrial size wind turbine systems with appropriate location regulations, geothermal, air source heat pumps, and green infrastructure and Low Impact Development (LID) for private developments. Establish bylaws for all development of new construction to be net-zero energy operation and maintenance with energy performance guarantees.

Additions:

The City of London can send an important policy signal to the construction industry by adopting a green demolition bylaw such as is in use in metro Vancouver (cities of Vancouver, Burnaby and Surrey). The Vancouver bylaw originally targeted homes built before 1940, capturing about 40 per cent of home demolitions, or about 275 each year. The pre-1940 rule requires 75 per cent of the materials be recycled and currently diverts about 10,000 tonnes of waste from the landfill each year.

The bylaw was updated and came into force January 1 2019 and now extends to homes built pre-1950, which covers about 70 per cent of home demolitions. That is expected to increase the amount of diverted material to 18,000 tonnes a year. In 2020, the Vancouver Economic Commission published a study that delves further into the business case for deconstruction (1). It provides recommendations on how to grow the deconstruction industry beyond contractors to include home recyclers, waste haulers, trades people and others to create a circular value chain related to new home construction and renovation.

(1). https://www.vancouvereconomic.com/research/the-business-case-for-deconstruction/

***How We Prosper**: Ensuring a City that is prosperous, innovative and climate change resilient*

1 Increase and encourage the installation of distributed renewable energy assets.

Encourage local distributed renewable energy generation of wind turbines, solar hot water (HW), solar photovoltaic (PV) and battery storage, geothermal, surplus power-to-gas hydrogen generation, Proton Exchange Membrane (PEM) hydrogen fuel cell power generation, and hydrogen fuelling transportation infrastructure. Install solar photovoltaic systems (PV) on all available municipal sites, including building rooftops on city hall, schools, police/fire, community centers, transit depots, carports, and other structures. Ground mount solar PV on appropriate land such as rights of way, infill, and brownfields. Make these projects available for community cooperative investments.

2. Improve City preparedness for dealing with extreme climate events

Building retrofits provide a significant return on investment by energy savings over the life of the building and building systems that greatly exceed their upfront costs through operational savings. When compared to the long-run costs of new energy supplies, energy efficiency and carbon reduction are often far less costly. They increase the quality of our building stock and create more comfortable and healthier homes. They reduce energy costs for residents, create local good quality jobs that aren't vulnerable to outsourcing, result in local economic development opportunities, and build resilience to extreme weather events.

Draft Climate Caucus Handbook. (2021).
https://docs.google.com/document/d/1pUJC4HSbhXJGIMC7npDxj1Ox0DCyQeduZrHty_dNB8I/edit#

3. Implement policies to improve data collection and use for improved climate monitoring, emergency response and optimization of electricity generation and distribution.

Smart city systems can assist in making municipal services operate more effectively, provided their uses are focused, with well-understood, and democratically approved, constraints on their consumption of various forms of urban and individual data.

Smart cities will be cleaner, accessible, even more democratic, proponents say, but governments adopting new tech must contend with risks, too. John Lorinc, Atkinson Fellow. (January 4, 2021).
https://www.thestar.com/news/atkinsonseries/2021/01/04/smart-cities-will-be-cleaner-accessible-even-more-democratic-proponents-say-but-governments-adopting-new-tech-must-contend-with-risks-too.html

4. Advance more sustainable farming practices and increased local product consumption.

Home gardens are one of the most reliable, efficient and democratic ways of producing food ever invented. Agriculture has repeatedly degraded its natural resource base and collapsed many societies in the past. Modern, industrial agriculture is not suited to these changing times and is liable to increasing breakdown within the next decade (1).

The Urban League and member organizations want to help grow neighbourhood connections, and offer packages of vegetable or wildflower seeds to people starting neighbourhood pods (2). Collaborate to encourage community gardening with groups like London Middlesex Master Gardeners and others.

(1). The Role of Home Gardens in Feeding the World and Sequestering Carbon, Michael Pilarski, Founder and Director of Friends of the Trees Society. (January 1, 2009). https://cityfarmer.info/the-role-of-home-gardens-in-feeding-the-world-and-sequesteringcarbon/

(2). The Urban League. (2021). https://www.urbanleague.ca/neighbourhood-pods

5 Continue to work with business community partners to advance sustainable business practices.

Significant cost reductions can result from improving operational efficiency through better management of natural resources like water and energy, as well as minimizing waste. Sustainable businesses are redefining the corporate ecosystem by designing models that create value for all stakeholders, including employees, shareholders, supply chains, civil society, and the planet.

The Comprehensive Business Case for Sustainability, Tensie Whelan and Carly Fink. (October 21, 2016).
https://hbr.org/2016/10/the-comprehensive-business-case-for-sustainability

Energy-Saving Tips for Commercial Businesses:

Boiler: Make sure buildings have annual combustion testing and boiler tune-ups. Install or improve existing insulation on your boilers. Consider an economizer to recover waste heat. Consider installing multiple small boilers. If building loads are highly variable—and this is often the case in commercial buildings—multiple boilers are a good option.

Building Design: Use whole-building design techniques that consider all building energy components and systems, starting early in the design process for best results.

Building Energy Modeling: Develop an energy model of the building using simulation software. Modeling helps in making critical decisions about a building's design early in the process. Commercial reference buildings can be used as starting points with simulation software.

Lighting: Replace the bulbs and ballasts of T12 (1.5" diameter) bulbs fluorescent fixtures, with High Performance (HP) T8 (1" diameter) bulbs and electronic ballasts. HP T8 systems provide better quality light, last 25% longer and can save you 20 - 40% in energy usage.

Carpooling: Offer employees incentives to use public transportation, encourage carpooling, reduce unnecessary travel, and choose fuel-efficient shipping methods.

Cars: Install low-rolling resistance tires which improve the fuel economy of your vehicle, keep vehicle engine properly tuned, properly inflate vehicle tires, when traveling, use cruise control to save gas; vehicle rooftop luggage racks, kayak holders, and ski racks add weight, reduce aerodynamics and decrease fuel efficiency. Consider purchasing a fuel-efficient hybrid vehicle. Research the miles per gallon rating before purchasing a vehicle. Increase telecommuting where possible to minimize driving.

Ceiling Fan: When possible, turn off the air conditioner and open the windows at night or install and ENERGY STARR ceiling fan. Ceiling fans can help reduce the need for air conditioning.

Commercial Clothes Washers: Install high-efficiency commercial clothes washers, which can cut energy costs up to 50% and last five to ten years longer than standard, top-loading machines.

Commercial Food Equipment: Purchase ENERGY STAR qualified commercial food service equipment. Qualified refrigerators and freezers can save over 45% of the energy used by conventional models.

Computer: Consider buying a laptop for your next computer upgrade. They use less energy than desktop computers.

Commercial Cooking: Turn off backup fryers and ovens during low production periods.

Dampers: Verify that outside air dampers are closed completely during unoccupied periods.

Doors: To save energy, keep your exterior and freight doors closed as much as possible. Install door bottoms, threshold, or door “shoes” to seal gaps beneath exterior doors.

Drapes/Shades: In cold weather, take advantage of the sun's warmth by keeping drapes open during daylight hours. In hot weather, keep your shades down and the drapes drawn during the hottest time of the day and open them at night.

Dryer: Keep your clothes dryer's outside exhaust clean. A clogged exhaust lengthens drying time and increases energy use.

Exhaust Systems: Turn off exhaust systems when not needed. Add variable frequency drives to fan motors.

Commercial Freezers: Install automatic door-closers and strip curtains on walk-in freezers or coolers.

Holiday Lights: Set holiday lights on a programmable timer or a photosensor that detects dawn and dusk.

HVAC: Tune up your heating, ventilating and air conditioning (HVAC) system annually.

Light Switches: Color code or mark light switches and circuit breakers that can be turned off when not needed.

Lighting: Replace incandescent light bulbs with ENERGY STAR qualified LED light fixtures. LEDs last 35 to 50 times longer than incandescent lighting and 2 to 5 times longer than fluorescent lighting. When possible, incorporate daylighting into your total lighting approach. Daylighting technology, including photosensors and dimming ballasts, have come down in price in recent years, making the opportunity to incorporate daylighting a more cost-effective solution than in the past. Install a motion sensor and/or a photosensor to prevent outdoor lights from operating during daylight hours. Use occupancy sensors in private offices and conference spaces so they are not lit when vacant. Install switch plate manual-on, auto-off occupancy sensors in proper locations to automatically turn off lighting when no one is present.

Motors: Maintain equipment motors and use the right-size motor for the application. Install variable frequency drives for fluctuating loads, and replace old motors with NEMA premium efficiency motors.

Office Equipment: Set copiers, printers, fax machines and other office products to standby mode when not in use. Turn off office equipment during non-production periods.

Pools/Hot Tubs: Install solar water heating systems for pools/hot tubs, extending seasonal use from April to October from May to September. Use covers when the area is closed.

Power Strip: Plug your TV, computer, and other electronics into a power strip to centrally “turn off” all appliances and save energy.

Printers: Default all printers to double-sided printing. Use ink-jet printers. They consume 90% less energy than laser printers.

Refrigerators: Make sure the refrigerator seals around the door are airtight. If not, replace them.

Commercial Refrigerators: Service large and walk-in refrigeration systems annually, including cleaning, refrigerant top off, lubrication of moving parts, and adjustment of belts to ensure efficient operation and longer equipment life.

Staff Lounges: Provide centralized staff lounges for cooking/kitchen equipment.

Steam: If your facility uses steam, maintain steam traps regularly and know how to identify non-performing traps. Repair/replace faulty steam valves and repair leaks.

Stove: Make sure oven doors fit tightly by adjusting door latches, and that gaskets are in good condition.

Toilet: Avoid installing automatic flushers which waste water and energy, use low-flow toilets; single-flush, dual-flush or pressure-assist toilets.

Train Staff: Develop a program to educate and motivate employees on ways to save in the office. Train maintenance staff and occupants on energy-efficient and renewable energy technologies.

Water Fixtures: Typical hotels use 218 gallons of water per day per occupied room. Water-efficient fixtures can reduce water and sewer bills by up to 30%. Low-flow showerheads, sinks, toilets can reduce water and sewer bills by 53%.

Water Heaters: Buy an ENERGY STAR-qualified water heater. In areas of infrequent use, consider tankless water heaters to reduce standby storage costs and waste. Consider a solar hot water system to produce needed domestic hot water services based on the site location.

Water Usage (Schools): Reduce water consumption by 25%–75% with water conservation fixtures, implementing greywater or rainwater catchment systems and using xeriscape practices.

Whole Room Switches (Hotels): Install whole room switches (often turned on/off by card, reducing lost cards) (1). The device is a master switch that turns everything off as you take your key out and leave the room (2).

(1). New York State Energy Research and Development Authority. (2021). https://www.nyserda.ny.gov/Business-and-Industry/Energy-Saving-Tips

(2). A Common Energy-Saving Device that I've Never Seen in the US, Catherine Wolfram. (October 6, 2014). https://energyathaas.wordpress.com/2014/10/06/a-common-energy-saving-device-that-ive-never-seen-in-the-us/

6 Work with the private sector to identify opportunities to leverage City assets and/or funds to activate private capital for climate action in the public and private sector.

Private sector leverage and City integration of the LCRN recommendations with the CEAP priorities can support long-term growth planning that is economically viable, climate savvy, sustainable and resilient.

7 Support and encourage resource and waste management initiatives for London businesses.

Implement the city-wide green bin program to collect compost, and the orange bag program to collect difficult to recycle plastics, as soon as possible.

Considering the nutrient cycle of all food consumption and ensuring that the mechanisms are in place to transform food waste into soil will ensure the long term productivity of urban lands and reduce demand for landfill space (1).

Expand cooperation with Urban Roots to accept compost; a non-profit organization that revitalizes underused land in the City of London for agriculture by: producing high-quality, organic vegetables and herbs, distributing produce locally, directly to consumers and to private and social enterprises and developing agricultural opportunities for the neighbourhood, social enterprises, and community organizations within the City of London (2).

Promote the lifestyle of living in London with focus on simple pleasures such as exploring nature and spending time with loved ones; providing purpose, belonging and happiness. Promote sharing, making, fixing, reuse, repurposing, and composting (3). Support and promote independent local repair shops

(1). The Urban Farmer. (2021). http://www.theurbanfarmer.ca/urban-agriculture

(2). Urban Roots. (2021). https://urbanrootslondon.ca/

(3). HalifACT for Homes. (2021). https://www.halifax.ca/about-halifax/energy-environment/tackling-climate-change/climate-mitigation

Additions:

Ensure affordable, reliable and universal access to modern energy services; increase substantially the share of renewable energy in the energy mix; and double the global rate of improvement in energy efficiency. Renewable energy can supply two-thirds of the total global energy demand, and contribute to the bulk of the greenhouse gas emissions reduction that is needed between now and 2050 for limiting average global surface temperature increase below 2 degrees Celsius. Enabling policy and regulatory frameworks will need to be adjusted to mobilise the six-fold acceleration of renewables growth that is needed, with the highest growth estimated for wind and solar PV technologies, complemented by a high level of energy efficiency (1).

Increasingly, scientists are talking about a global carbon budget; an amount of greenhouse gases that can be emitted over a particular time while still achieving a target. Carbon budgets guide planning by providing clear and readily understandable goals that proceed incrementally towards the final emissions reduction goals. Carbon budgets foster accountability by forcing decision-makers to develop clear plans for progress towards emission reduction goals, allowing for ongoing evaluation of the success or failure of the plans (2).

The total carbon budget between the beginning of 2019 and the end of 2050 for the City of Edmonton is 155 Mtonnes CO2 equivalent (MtCO2eq). With a carbon budget superimposed over a city's projected emissions, the impact of delaying reductions in emissions becomes very clear. This makes a carbon budget a useful tool for encouraging municipal governments, which are often more agile in deploying programs than other levels of government, to act quickly. At the current rate the city will exhaust its carbon budget in 2028 (3).

Toronto's share of global emissions is 0.05% so the emissions-share of the global carbon budget is 260 MtCO2e and will be exceeded by 2042 (4).

(1). The role of Renewable Energy in the Global Energy Transformation, Science Direct Energy Strategy Reviews. (2019). https://reader.elsevier.com/reader/sd/pii/S2211467X19300082?token=4C1DFAE98E2FDE4C2EAA8CBBB09C3A447015413E8687906C8E55B7BEE87B040C0D791E1579BA96FBD2B1CE2970CA0B1E

(2). A Carbon Budget for Canada, Andrew Gage, West Coast Environmental Law. (December 2015). https://www.wcel.org/sites/default/files/publications/CarbonBudget%20(Web)_0.pdf

(3). Carbon Budget and Accounting Brief, City of Edmonton. (2019). https://www.edmonton.ca/city_government/documents/PDF/CarbonBudgetandAccountingInformation-PolicyBrief-2019-11.pdf

(4). Climate Action Now. (2021). https://climateactionnow.ca/torontos-targets

General Comments:

As recommended by ACE, on April 24, 2019, the Declaration of a Climate Emergency was approved by London's City Council that includes, "Whereas recent international research has indicated a need for massive reduction in carbon emissions in the next 11 years to avoid further and devastating economic, ecological, and societal loss;"

There needs to be increased ambition to accomplish the needed massive reduction in greenhouse gas emissions required to meet these goals.

Proposed Targets for the City of London:

All new developments will preserve existing natural habitats by 2021

No new road locations to be built after 2022

All existing road maintenance and repair using low-impact development stormwater management practices by 2022

Provide support for scooter/bike share by 2022

At least 50% of new light-duty vehicles sold in London are electric, all new buildings provide charging stations for electric vehicles and bikes by 2024

At least 45% of new development is infill development and at least 50% of new development is medium-to-high density by 2025

Selling and purchasing of locally created carbon offsets used to support the preservation and restoration of biodiversity is a common practice by 2025

20% increase in CO2 sequestered and GHG emissions avoided due to conservation and management of natural and agricultural lands, 30% tree cover within the urban area by 2030

All new developments including new multi-family residential buildings will be net-zero energy, meaning: the building produces as much renewable energy as it uses, or positive energy, meaning: the building produces more energy than it uses or positive energy, and built with Low Impact Development (LID) features by 2030

All new multi-family residential buildings will have “shelter-in-place" capabilities (back-up power, shelter space, etc.) by 2030

Convert 20% of LTC’s bus fleet to zero-emission vehicles by 2025 and convert 100% of LTC’s bus fleet to zero-emission vehicles by 2030

At least 50% of London’s electricity needs are provided by local 100% renewable generation by 2040

All buildings will be net-zero energy, meaning: the building produces as much renewable energy as it uses, or positive energy, meaning: the building produces more energy than it uses by 2050

100% of London’s electricity needs are provided by 100% renewable generation by 2050

Prepared by the Advisory Committee on the Environment for the City of London; March 2021.