

**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#](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](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 Zibi) 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](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-desais-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.rncan.gc.ca/files/oeo/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#](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 CO<sub>2</sub> equivalent (MtCO<sub>2</sub>eq). 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 MtCO<sub>2</sub>e 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](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](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.*