

Area of Focus 9 - Advancing Knowledge, Research and Innovation

Area of Focus 9	Advancing Knowledge, Research and Innovation Workplan
Purpose of this Workplan	The Advancing Knowledge, Research and Innovation Workplan has been developed based on details: • provided during the community engagement; • compiled or recommended from other municipalities, academia; organizations, committees and others specializing in climate change actions; • approved by Council; and/or • recommended by City staff. The purpose of this workplan is to set an initial direction for collaborative discussion, action and measuring progress. How the workplan is operationalized will be determined in early 2022.
Climate Change Expected Results	This workplan has been designed to help make progress on expected results in all 10 workplans as partnerships with academia and businesses is fundamental to all aspects of the Climate Emergency Action Plan.
Why Does this Matter?	Education is one of the most powerful tools in preparing for the local, regional, and global challenges associated with climate change. It helps individuals, communities, businesses, and governments build the capacity, understanding, skills, and attitudes needed to engage in lowering greenhouse gas emissions and creating climate-resilient communities. Education on climate change must not be considered as an ‘add-on’; rather a key component of any plan(s) to address the effects of climate change, put into practice collaborative solutions and achieve short, medium, and long-term results and goals. Education is required to raise awareness, build capacity, change behaviours and attitudes, encourage creativity and solutions, and enable people to make informed decisions that impact others. Education and awareness about positive actions and positive results to climate change may help diminish both anxiety and apathy in response to climate change. Due to the wide-ranging impacts of climate change, education, knowledge, research, and innovation has a crucial role to play in not only raising awareness about the urgency of addressing climate change but also in implementing the solutions.

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	Formal and informal education is essential to raise awareness with residents and students of all ages. For example, educating the youngest who will be most impacted by climate change develops positive influences during the stages of an individual's early life that can contribute to a society that will require changing values, knowledge, and skills to address the causes and impacts of climate change. Educating and engaging today's older generations in London is equally important, but requires different tools and techniques to meet their needs and the adjustments required to change behaviours that may have been in place for years. Climate change education is central in making people sensitive to the local and global impacts of climate change. The term 'energy literacy' or 'climate literacy' has been used by many to demonstrate the need to foster an increased understanding of climate change and the need to take action. To ensure effective learning and deep understanding, climate change education can be further integrated into primary and secondary schools in London and region. The complexities of climate change require it to be addressed using a continuous and holistic approach that draws upon a range of disciplines and areas of expertise, including science, policy, law, ethic, sociology, economics, and culture. Opportunities exist for new ways of engaging children and youth in climate awareness by harnessing the creativity of teachers and students to develop and implement climate action projects in their homes, schools, and communities. Opportunities will also exist through clubs, organizations (e.g., Girl Guides, Scouts), City programs, etc. Local First Nations and Urban Indigenous communities are knowledge keepers and stewards of the land and routinely share experiences, history, sustainability practices and innovation. As leaders in knowledge, research and innovation, universities and colleges are in a unique position to leverage their expertise and make significant advancements in addressing climate change and the climate emergency. How these institutions operate, undertake research, and teach their students can act as a catalyst for real and lasting change.

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	In addition to the fundamentals of education, research and innovation, universities are at the forefront of data and analytics, applied research, technology development and commercialization, and creating and utilizing networks of individuals, organizations, businesses, and communities.
Background – How did we get here?	Over the last ten to twenty years, there has been a growing need for knowledge, research and innovation involving students, teachers, professors, researchers, businesses, and governments. This interest has been driven by the need for more education, awareness, and actions to address the growing impacts of climate change and the need for many adjustments and changes in lifestyle and how the economy is operated. London and area has a solid foundation of academic institutions, partnering businesses, governments and community groups and a proven track record that has developed over time. This track record includes demonstrated commitments of individuals to find solutions to the challenges presented by climate change. London and area has produced many recognizable names, projects and programs in the fields of environmental sustainability and climate change.
What has been done recently?	Over the last five years the number of small, medium, and large-scale initiatives is significant. A few would include: • Western University and Fanshawe College have numerous courses, programs and organizations that address environmental sustainability and climate change. This includes many faculty, professors, researchers and administrators involved with climate action projects in addition to corporate environmental sustainability projects and programs. A few examples include: ○ Western research and learning facilities such as the Biotron, Centre for Advanced Materials and Biomaterials Research, Fraunhofer Project Centre for Composites Research, International Composites Research Centre, Particle Technology Research Centre, Lake and Reservoir System (LARS) Research Facility, Ivey Energy and Management Policy Centre, Centre for Urban Policy and Governance, Lawrence Centre for Policy and Management, Centre for Building Sustainable Value;

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	○ Fanshawe College is using their Kestrel Court Net Zero project as a living laboratory for students to design and assess net-zero energy retrofits of existing inefficient housing stock; and ○ Western University the University of Waterloo have established the Thames River Experimental Stream Science Centre hosted at the Adelaide Pollution Control Plant to provide a research base for analysing changing local stream conditions in a changing climate. • Thames Valley District School Board and the London District Catholic School Board have focused environmental education programs and initiatives, have schools participating in the EcoSchools network, and have climate change built into several courses. In addition, corporate environmental sustainability projects and programs exist. • Businesses and business organizations have supported academic projects and programs, hired interns and summer students, many of which have led to them introducing sustainability and climate change into corporate commitments and operating practices, if not already in place. Business organizations such as Chamber of Commerce, Green Economy London, London Economic Development Corporation have held or supported various types of seminars, conferences and events. • Community groups have provided opportunities and supported projects and programs, hired interns and summer students for sustainability and climate change, and contributed to knowledge, research and innovation. Numerous workshops, seminars, movie screenings, events, etc. have occurred such as those held by London Environmental Network, Thames Region Ecological Association, ReForest London, Climate Action London, London District Renewable Energy Co-operative, to name a few. • City of London has sponsored, supported and/or invested in numerous climate change projects and programs with secondary and post-secondary institutions and collaborations with local and regional businesses such as: ○ a collaboration between the City of London, Fanshawe College, Western University (and affiliates), and Pillar Nonprofit Network that provides London's post-secondary students with opportunities to apply their skills, creativity, and

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	entrepreneurial spirit to real-world issues and challenges facing our community; ○ a Memorandum of Understanding with Western's Institute for Chemicals and Fuels from Alternative Resources to support research into the use of municipal waste to produce useful materials; ○ working with Western University's Human Environments Analysis Laboratory on a number of projects related to transportation demand management; ○ developed a Teachers Toolkit that provides London-specific information on climate change and our environment including topics of water quality, stormwater, wastewater management, and water efficiency for elementary school students to understand the value of water resources. This includes presentations, teacher's guides, and hands-on experiential workshops; and ○ working with partners such as Project Neutral to develop lesson plans built around the use of Project Neutral's carbon footprint calculator. ● Many collaborative projects have been undertaken between the organizations mentioned above, with local First Nations and Urban Indigenous communities and others. In many cases additional support has been provided from businesses, utilities, senior levels of government, for these climate change relate initiatives.
Responsible City Service Area(s)	● Led by Environment and Infrastructure, City Manager's Office and Enterprise Supports, Planning and Economic Development
Key Community Partners and Stakeholders	● Provincial and Federal Governments ● Western University ● Fanshawe College ● Thames Valley District School Board ● London Catholic District Catholic School Board ● London Chamber of Commerce ● London Economic Development Corporation ● Middlesex London Health Unit ● Local First Nations and Urban Indigenous communities ● Utilities (London Hydro, Enbridge, Enwave, Hydro One)

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	• Conservation Authorities • Community groups • Specialists in the field of climate change education, awareness and programming • Students
Key Actions (and Milestones)	1. Implement Memorandum of Understanding (MoU) with Western University for Action on Climate Change (The MoU is part of the report to the Strategic Priorities and Policy Committee report, February 8, 2022, Timeline: 2022) a. Finalize operating arrangements and logistics b. Update existing and upcoming projects c. Develop an Academic Research Agenda for Action on Climate Change that will assist with the implementation of the Climate Emergency Action Plan d. Establish objectives, metrics and timelines 2. Co-create a Partnership for Knowledge, Research and Innovation (Timeline: 2022/2023) a. Identify and invite potential partners and collaborators to a development session b. Complete a scan of existing courses, programs, educational opportunities (formal and informal) c. Identify existing relationships and connections with respect to climate change education and action d. Identify opportunities to pursue business and economic development opportunities and collaborations e. Develop a path(s) forward including objectives, metrics and timelines
Examples of Measuring Progress	These examples are very preliminary and will become a key discussion item under Key Actions • # of climate change courses being offered at the post secondary level in London • # of climate change courses being offered at the high school level in London • # of educational and awareness opportunities being offered to the community • # projects initiated • # companies and partners collaborating on projects • # signed Memorandums of Understanding (MoUs)

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	• # City climate change projects completed in collaboration with educational institutions • # community climate change projects completed in collaboration with educational institutions These measures are intended to evolve through the consultation and implementation process to ensure they are adding value to the progress of the CEAP.
Resources	• CEAP Supporting Documents • Climate Science 2050: Advancing Science and Knowledge on Climate Change (Environment and Climate Change Canada, 2020) • Council of Ontario Universities • Ontario Colleges • Learning for a Sustainable Future (including Canada, Climate Change and Education survey, 2019) • Climate Change Learning and Action in Ontario's Certified EcoSchools