REPORT TO COUNTY COUNCIL

Climate Change in Oxford County: Current State and Next Steps

To: **Warden and Members of County Council**

From: **Chief Administrative Officer**

RECOMMENDATION

1. **That Council receive Report CAO 2024-06 for information and circulate it to Area Municipalities, Zero Waste Oxford, Smart Energy Oxford and the Woodstock Environmental Advisory Committee.**

REPORT HIGHLIGHTS

- The provincial government released the *Ontario Provincial Climate Change Impact Assessment* in August 2023, which details the wide-reaching impacts that climate change will have on our communities, critical infrastructure, economy and natural environment.
- The province describes climate change as “one of the greatest challenges of our time”, which will require both “rapid and deep reductions in greenhouse gas emissions *and* proactive and planned measures to adapt to current and imminent future changes.”
- Any opportunities projected from a warming world are likely to be offset by the negative impacts associated with extreme hot days and extreme precipitation, with risks highest amongst our most vulnerable populations and the severity of these risks expected to increase into the end of this century.
- A Climate Action Plan – anticipated completion in 2025 – will identify some of the localized risks, with collaborative implementation projects subject to annual budget approval.

IMPLEMENTATION POINTS

Following acceptance of this report, staff will continue to engage with Area Municipalities, local stakeholders and the broader community. This engagement strategy will help to inform the anticipated Climate Action Plan, which is a goal established within the 2023-2026 Strategic Plan.

The Climate Action Plan will be a significant document with two main areas of focus:

1. Community-led climate mitigation (i.e. reducing emissions to prevent further change); and,
2. Climate adaptation, particularly regarding the County's service delivery and infrastructure (i.e. preparing for current and future change while building resiliency), and supporting community-led initiatives

It is the intent that this Plan will be a living document that encourages ongoing collaboration, with updates expected on a five-year basis to reflect up-to-date climate projections, burgeoning technology, and available funding.

This Plan will not replicate the 100% Renewable Energy Plan, the Renewable Energy Action Plan, the Official Plan, nor the Asset Management Plan, but will support and complement existing goals with the added, much-needed focus of climate adaptation and resilience.

Financial Impact

There are no financial impacts associated with the acceptance of this report. The creation of the Climate Action Plan will be led by internal staff, with implementation projects expected to begin in 2026, subject to annual Business Plan and Budget approvals. CAO Office staff will work with Finance staff to ensure the 2025 Asset Management Plan and the 2025 Climate Action Plan complement and support one another while avoiding overlap.

Furthermore, staff will work to ensure that any available external funding opportunities are explored and strategically utilized, including but not limited to the Green Municipal Fund and federal grants.

Communications

The communication strategy for the Climate Action Plan will be significant, wide-reaching and with multiple milestones. Preliminarily, staff will engage with, Area Municipalities, community groups and other local stakeholders to begin the discussion of what climate change means to them and how it may impact their services, business models and well-being. This, along with a community engagement campaign that will include an online survey on *Speak Up, Oxford!*, will help determine areas of concern and knowledge gaps within the community and will serve as the foundation for the future Climate Action Plan.

Engagement will continue through both the creation and the implementation phases of the Climate Action Plan, including the potential for focus groups in 2025. Moreover, following the acceptance of the Climate Action Plan, staff will promote the plan and its initiatives throughout the community, including via social media and in-person at events, such as the Oxford County Library branches and Canada's Outdoor Farm Show.

2023-2026 STRATEGIC PLAN

Oxford County Council approved the 2023-2026 Strategic Plan on September 13, 2023. The Plan outlines 39 goals across three strategic pillars that advance Council's vision of "Working together for a healthy, vibrant, and sustainable future." These pillars are: *(1) Promoting community vitality, (2) Enhancing environmental sustainability, and (3) Fostering progressive government*.

The recommendation in this report supports the following strategic goals.

Strategic Plan Pillars and Goals

PILLAR 1	PILLAR 2	PILLAR 3
		
Promoting community vitality	**Enhancing environmental sustainability**	**Fostering progressive government**
Goal 1.2 – Sustainable infrastructure and development Goal 1.3 – Community health, safety and well-being	Goal 2.1 – Climate change mitigation and adaptation Goal 2.2 – Preserve and enhance our natural environment	Goal 3.2 – Collaborate with our partners and communities

See: Oxford County 2023-2026 Strategic Plan

DISCUSSION

Background

The *Ontario Provincial Climate Change Impact Assessment*, written in January 2023 and subsequently released in August of that year – Executive Summary included as Attachment 1 – was created to aid both government and public and private institutions to better understand how climate change will impact communities, critical infrastructure, economies and the natural environment. This report is organized by areas of focus: food and agriculture, business and economy, infrastructure, natural environment, and people and communities. Risks are rated from "low" to "very high", with projections for today, 2050 and 2080. The experiences across the province will vary, but the remainder of this report will highlight the risks identified for southwestern Ontario, specifically. This data, along with other localized reports including Southwestern Public Health's *Assessment for Health Vulnerability from Climate Change* report – Executive Summary included as Attachment 2 – will inform the future Climate Action Plan and

its initiatives. Summaries of findings will be shared with Council in this format as more detailed reports and projections are released.

It is critical to note that climate change is expected to be a significant and unavoidable financial burden on municipalities, with the Federation of Canadian Municipalities estimating a cost of $5.3 billion annually. Moreover, studies show that investments in resilient infrastructure have a return on investment of $6 in future losses averted, for every $1 proactively spent. Weather-related disasters are expected to have a direct negative impact on national GDP by mid-century and, as stated by the Canadian Climate Institute, “investing in proactive adaptation is smart economic policy that pays substantial dividends.”

Two of the largest threats to southwestern Ontario are extreme heat and extreme precipitation, both of which are already being experienced and will continue to increase in severity. Extreme heat is defined as a mean air temperature that exceeds 30 degrees, which is expected to be an average of 60 days annually by 2080. Meanwhile, extreme precipitation is most prevalent in southwestern Ontario and is expected to have “devastating consequences”. Winter rain is also a significant threat for the region, as rain-on-snow events are “particularly problematic for infrastructure” due to rapid melting and icy conditions.

Food and Agriculture

Central and southwestern Ontario are considered to be the richest agricultural regions in all of Canada. Foundationally, agriculture depends on the weather and, more broadly, a predictable climate to ensure productivity and consistent yields, which is already being impacted by climate change. Moreover, while growing seasons are expected to increase in length, these benefits “will likely be offset by negative impacts, resulting in declining productivity, crop failures and livestock fatalities.”

Several commodities, including corn, cereals, soy, grapes and field vegetables will be at very high risk by 2080. The dairy industry will also be impacted, as prolonged heat waves are expected to result in decreased milk production and lower fertility in dairy cows while also lowering their immunity and increasing the likelihood of mortality by 27%. Pig farms will be impacted, as pigs have the lowest heat tolerance of any livestock. Due to their heat sensitivity, heat waves are expected to reduce meat quality and increase deaths during transport, resulting in lower yields. The egg industry will also see significant changes in yields, as every one-degree increase in temperature above 23°C will result in a 1% reduction in egg productions, with hens expected to never recover.

In addition to these direct impacts, it is also predicted that farmers will experience negative impacts to water availability, soil health and the prevalence of agricultural pests, diseases and non-native species, all of which will contribute to worsening health and well-being for the farming community.

Infrastructure

The replacement value of infrastructure owned by municipalities in Ontario is $484.2 billion, with 82% of this being roads, bridges, water, storm and wastewater infrastructure. In addition, 68%

of the social/affordable housing stock in Ontario is owned by municipalities. Oxford County's infrastructure portfolio is, on its own, currently valued at $3.73 billion based on the 2024 *Asset Management Plan* and will continue to increase due to both growth and inflation. Moreover, the 2025 iteration of the *Asset Management Plan* will also include natural assets. The majority of these assets are expected to be at risk due to extreme precipitation and flooding, with flooding categorized as the costliest natural hazard in the province.

Additionally, extreme heat and frequent temperature variations may result in road networks requiring earlier or additional maintenance, which is a significant burden on Public Works resources and the annual budget planning process. Another significant area of concern is existing storm infrastructure because as rain events increase in severity and frequency, it will continue to have significant impacts on both the timing and size of the infrastructure's replacement requirements. While the anticipated 2025 *Asset Management Plan* will take into consideration climate risks, it is important to note that according to the provincial findings, the adaptive capacity for both housing and transportation is expected to be low based on a lack of funding available for climate resiliency initiatives.

Natural Environment

The impacts of climate change on the natural environment will be "widespread, multi-faceted and inextricably linked to the well-being of human communities and regional economies." Based on the province's findings, by 2050 southwestern Ontario's natural environments will see:

> *Very serious, widespread and potentially permanent/irreversible damage or loss to populations demographics and/or habitats occurring due to deterioration in habitat conditions, reduced food availability, etc. [which will lead to] catastrophic disruptions affecting the entire province or beyond and leading to permanent changes in systems.*

Aquatic ecosystems are particularly vulnerable because once degraded, they lose functionality and can have "detrimental effects" on aquatic life. The loss of a keystone species like the beaver for example, could lead to:

> *Significant impacts on the flow and reliable supply of ecosystem services, including reduced contributions to global climate regulation, the loss of nutrient filtering from agricultural runoff, loss of flood protection during major precipitation events putting more pressure on built infrastructure, and loss of recreational fishing and nature-based recreation.*

Moreover, the decline in pollinator populations will amplify these effects over time due to the anticipated negative impacts to local flora and fauna.

It is critical to reflect on how these changes will impact the people in our community, whether they live, work or are visiting here. As identified in the provincial report:

> *There is a direct link between… ecosystem quality and human activity and well-being. Ecosystem cultural services, like recreation in the outdoors, are a key part of Canadian culture. There is robust evidence linking the importance of nature-based recreation and health and well-being, with ecological integrity playing a major role in the restorative outcomes.*

Some of these impacts are already being experienced such as summer camps having to pivot planned outdoor activities due to extreme heat. This could also impact local tourism, as people choose to avoid outdoor activities during the hottest months of the year.

People and Communities

The rapidly changing climate threatens, both directly and indirectly, the health and well-being of all people and communities, with some groups disproportionally impacted, including seniors, infants and children, socially disadvantaged individuals, people with disabilities or pre-existing conditions and emergency response workers. Moreover, the risks to mental health are expected to be "significant and long-lasting," whether that be exacerbating existing conditions or introducing new ones, including depression, PTSD, anxiety and grief. For example, as found by Southwestern Public Health, extreme heat will increase rates of Lyme and West Nile disease locally, increase emergency room visits for those with schizophrenia, cause an upsurge in violent incidents (including domestic violence), increase the risk of heat stroke for the unhoused as well as increase the rate of anxiety and depression in those working in the agricultural sector. It is important to note that these findings focus solely on extreme heat and do not begin to consider additional climate impacts, such as extreme precipitation and flooding, nor does it address how existing disparities and inequities will amplify as we face an overlap of crises/emergencies, as none of these impacts will be experienced singularly.

Business and Economy

The province is predicting that extreme precipitation will be the greatest risk to business and the economy, with severe weather already posing risks to the global supply chains that manufacturing depends on. It is reasonable to assume that this focus area is the least insulated, as no economy operates in a silo and is always contingent on a wide range of interconnected linkages, including supply chains, GDP, global financial stability, insurance rates, etc. While we may not have much control over the economy and how it will be impacted by climate change, choosing to invest in adaptation will allow the County to become more resilient to fluctuating economic conditions. Moreover, a key piece of the Climate Action Plan will be engagement with the broader community, providing an opportunity to work with local businesses and industry to ensure that climate risks are built into their business models.

Comments

Many of the risks associated with climate change, some of which have been described in this report, extend beyond the jurisdiction and scope of services delivered by Oxford County. However, it is important to recognize these risks and their potential impact in order to make informed decisions about the future of our services, infrastructure and the broader community. Regularly reviewing climate-related risks and planning for adaptation and resiliency is in line with the practices of other municipalities, such as the City of Windsor, Region of Waterloo, Brant County, Perth County and City of London. Moreover, CAO Office staff will continue to work with Public Works, Finance and Community Planning and others to ensure a collaborative effort that supports the goals and objectives of existing plans including the Asset Management Plan, the Water and Wastewater Master Plan, the Emergency Response Plan and the Official Plan, while recognizing that none of our service areas will be left untouched by the climate crisis.

CONCLUSIONS

The focus areas identified above can be considered interdisciplinary in nature, in that they are cross-sectoral and will impact not just the environment, but the economy and community as well. With so much of our critical infrastructure and service delivery relating to the themes explored in this report, it is imperative that the County take action in collaboration with other community support agencies, such as Southwestern Public Health and other levels of government. Moreover, much is to be learned from the local indigenous community in terms of their approaches to both stewardship and resiliency. As municipalities across Canada are forced to confront the climate crisis – whether that be forest fires in Jasper, wastewater treatment failure in Merritt, extreme heat leading to preventable deaths in Montreal or, most recently, vehicles being stranded in floodwaters in Mississauga, it is important that we take a proactive approach in acknowledging that we are not impervious to climate change, nor does it stop at the County boundary line.

A culmination of interdisciplinary mitigation and adaptation strategies in the coming years will be identified through future engagement efforts to align the County with other municipalities while reconfirming our commitment to the community and the people that call Oxford home. By engaging with area municipalities, internal staff, community stakeholders, local agencies and indigenous communities, the 2025 Climate Action Plan will be a significant local and collaborative step in addressing the crisis that will continue to impact both our services and infrastructure for generations to come.

SIGNATURES

Report author:

Original signed by

Chelsea Martin, BES, CAPM
Coordinator of Community Environmental Sustainability

Approved for submission:

Original signed by

Benjamin R. Addley
Chief Administrative Officer

ATTACHMENTS

Attachment 1 *Ontario Provincial Climate Change Impact Assessment, Technical Report* – Executive Summary, January 2023

Attachment 2 *Assessment of Health Vulnerability from Climate Change for Oxford County, Elgin County and the City of St. Thomas* – Executive Summary, May 2024