

WINDSOR ONTARIO



Integrating climate risks within municipal projects

Introduction to the Local Government

Windsor, Ontario, is uniquely located as the southernmost city in Canada with a population of nearly 220, 000. The city is located within Essex County, along the Detroit River, with Lake St. Clair to the northwest. Essex County is exposed to variable lake levels, in which Windsor has the lowest percentage of forest cover of any region in Ontario.

Significant climate-related events and impacts

Over the past two decades, the city has experienced numerous severe rain events causing flooding, with the most significant flood event occurring in August 2017. Heavy, localized downpours particularly impacted the east side of Windsor and the Tecumseh area in 2016, only to be repeated in the same neighbourhoods in 2017, at which time the city center and south Windsor were also affected.

Approximately 6,000 homes were flooded in 2017 and insured damages exceeded \$124M, with the city spending \$1.7M in recovery work. Indirectly, mental health impacts resulted from the stress of the floods, particularly individuals living in the hard-hit Riverside neighbourhood.

While flooding has been a key issue in Windsor, extreme heat events are also of concern in the city, with heat-related health concerns rising significantly for every degree higher than 28°C. In addition, increasing temperatures have led to a higher risk of diseases such as West Nile and Lyme diseases in the area.

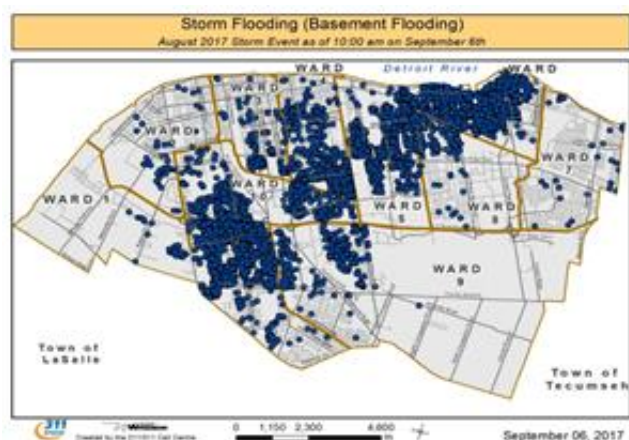


Significant flood event in 2017, impacting the east side of Windsor and the Tecumseh area.

Urban trees have also been impacted by climate events with high wind storms in 2017 and 2018, both significantly damaging trees throughout the city. Moreover, insect pests, such as the ash borer and diseases such as oak wilt, are thriving in higher temperatures and a number of tree species in the municipality are already at their upper temperature limits.

Municipal response to climate-related events

The historic 2017 flood and recent extreme heat events provided the impetus for the city to update its 2012 climate change adaptation plan. The resulting City of Windsor: Degrees of Change, Climate Change Adaptation Plan (the Plan) was published in 2020, and incorporated input from key stakeholders and the public. The Plan includes steps to accelerate adaptation actions and is accompanied by a guidance document that assists municipal employees in integrating climate risks into every council report



Map noting storm flooding (basement flooding) in 2017

Guidance Document for Risk Assessment and Adaptation & Climate Data Examined

A Climate Change Risk Section – Guidance Document was developed to assist staff in planning for adaptation (assessing and addressing climate change risks) and demonstrating greenhouse gas (GHG) mitigation in council reports on municipal projects and initiatives. The Document provides climate projections, including baseline and future variables for temperature, precipitation and water levels/temperature.

"This is an opportunity for report authors to make their projects better. If they can identify climate risks now, it will be more cost effective." Karina Richters

Data sources for the Guidance Document include climatedata.ca and research conducted by the University of Waterloo's Interdisciplinary Centre on Climate Change. The Document also references detailed municipal maps, such as basement flooding risk maps from the city's Sewer Master Plan. Down scaling of models was conducted for the Detroit River, with the future forecast considering risk for different climate futures, utilizing 1:5, 1:25 and 1:100 year storm scenarios. As more data becomes available, the models that the *Guidance Document* was based upon will be more detailed.

The Climate Change Risk Section – Guidance Document attempts to reduce barriers to considering climate risk in all municipal projects. It requires staff from across the organization to account for climate change and to place it within the public record, which allows for citizen input.

With the new adaptation plan in place, climate change risk assessment is now standard practice in the municipal process so that every decision has a climate dimension.

"We take authors through a step-by-step process to begin thinking about how their initiative is related to climate change mitigation and adaptation, and to identify opportunities." Averil Parent, Environment and Sustainability Coordinator, City of Windsor

The guidance document also provides an opportunity to highlight initiatives that contribute to GHG mitigation or showcase adaptation. Council reports from different departments will be tracked on how the climate risk section is being filled out.

To date, the Climate Change Risk Section – Guidance Document has been used for a number of projects. For example, the climate risk section in a tree trimming contract presented reduced risk from tree-fall and tree death by maintaining tree health and reducing invasive species. Another example is the upgrade of one of the City's recreation complex's considering neighbouring sites that are at a higher risk of flood, even though it is not in a flood risk area.

"We are starting with a simple version of the guidance document and as awareness increases and we build competency in identifying and reducing climate risk, we can adapt it. It's education all along the way for everyone who reads it." Karina Richters

Opportunities and challenges in developing the Guidance Document and Adaptation Plan

A number of opportunities as well as challenges arose during the development of the City of Windsor's *Guidance Document* and *Adaptation Plan*.

One of the largest challenges for the City of Windsor is education given that many municipal employees do not see how their project is susceptible to climate change impacts and/or risks. Yet by acknowledging climate risks via the

Climate Change Risk Section – Guidance Document, city staff are obligated to look beyond the project to consider broader risks on neighbouring areas and beyond. With Covid-19, less training on the Guidance Document has occurred, but online seminars have resumed. Specifically, training sessions for report authors are planned and a climate change resource compendium will be shared with them.

Next steps for the City of Windsor in Climate Adaptation

Going forward, the City of Windsor plans to develop a more streamlined guidance on the climate risk section of project reports (a climate lens) and make it as user friendly as possible for report authors. As the climate lens is rolled out across departments, greater coordination with the clerk's office will occur. Having corporate buy-in and memory of the process is also important for the continuity of the climate lens, so training new senior staff and elected officials will also be a priority. Ultimately, climate adaptation will be built into budget documents in the future.

"Other municipalities are very interested in our approach. No wonder, it's an easy win with no cost to the report author; it's an opportunity to do things better." Karina Richters



Looking for more great resources?

Check out [ChangingClimate.ca](https://www.changingclimate.ca), your one-stop-shop for examples of climate change impacts and examples of adaptation actions from across Canada.

Need climate data to support your adaptation actions?

Visit [ClimateData.ca](https://www.climatedata.ca) to access historical and future climate data, custom analysis tools, training materials, and much more.

