

Adaptation Plans – Experiences and Lessons Learned on Plan Development and Implementation

March 24th 10 am – 12 pm



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We are thankful to be able to join you from the traditional lands of the Mississaugas of the Credit, the Anishinaabe, the Haudenosaunee and the Wendat.

[Native Land Map](#)



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Agenda

- 10:00** **Scan of municipal Adaptation Plans**
- 10:30** **Methods, lessons learned and implementation – 10 min/each**
- Town of Ajax, Cameron Richardson and Jade Schofield (formally with Ajax, now with Town of Whitby)
 - City of Windsor, Karina Richters
 - City of Mississauga, Leya Barry
 - Peel Region, Jeremy Schembri
- 11:30** **Roundtable Discussion - Break Out Rooms**
- 11:50** **Next Steps**



Scan of Adaptation Plans based on:

- Ajax Climate Risk & Resiliency Implementation Strategy
- Calgary's Climate Resilience Strategy - Mitigation & Adaptation Action Plans
- Mississauga Climate Change Action Plan – Adaptation and Mitigation
- Peel Region Climate Change Master Plan – Be Prepared
- Toronto Resilience Strategy
- Vancouver Climate Adaptation Strategy
- Windsor's Climate Change Adaptation Plan



Adaptation Plan Value

- Help integrate climate change into decision-making and set medium-to-long-term, multi-dimensional, and multi-sectoral task to manage the potential impacts of climate change.
- Resulting in reducing risk and vulnerability to the impacts of climate change, by building adaptive capacity and resilience.



Steps to Adaptation

1. Research & Engagement

- Climate Projections Models
- Risk & Vulnerability Studies
- Gather input on the lived experiences of vulnerable groups (equity)
- Economic analysis/economic cost of climate change
- Cost of doing nothing analysis

2. Plan Development

- Identify Goals, Objectives, and Actions
- Identify Responsibility, Timeline, Monitoring, KPIs

3. Implementation

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Components of Adaptation Plan

- Introduction/Story/Background on Climate Change Impacts
- Plan Development/ Strategy Process
- Climate Change Studies and Projections
- Objectives and Goals
- Actions
- Implementation Table/Milestones



Components of Adaptation Plan	Description
Introduction/Story/Background on Climate Change impacts	<p>Provides background on climate change and its effect on global and local scale.</p> <ul style="list-style-type: none"> • Introduction to resilience and the quality of a resilient city, • Resilience stories of people and communities, pilot projects, existing projects
Plan Development/ Strategy Process	<p>Provides the scope and process of developing the plan/strategy.</p> <ul style="list-style-type: none"> • Roadmap of existing policy/plans (aligned with climate actions) connection within departments, stakeholders, and partnerships • Community engagement - communication, education, and outreach • Identified challenges • Identified principles • Identified pathways/focus areas/phases
Climate Change Studies and Projections	<p>Provides more in-depth technical studies, projections and analysis on local impacts of climate change and extreme weather events.</p> <ul style="list-style-type: none"> • <u>Risk and vulnerability assessment studies</u> • <u>Future climate change projections and scenarios</u> • Economic analysis/measure of economic cost of climate change • Cost of doing nothing analysis
Objectives and Goals	<p>Sets goals and objectives for each pathways/ focus area</p>
Actions	<p>Sets actions for each objective + <u>prioritize actions</u></p>
Implementation Table/Milestones	<p>Provides clear identification of roles, responsibilities, timeframe, cost, level of effort or status, and indicators to measure the success of the Plan</p>

Common Focus Areas/Themes

- Community Resilience, Health and Safety
- Infrastructure & Service
- Energy & Buildings
- Mobility and Transportation
- Leading City - Mainstreaming effectively



Common Focus Areas	Description
Community Resilience, Health and Safety	<ul style="list-style-type: none"> • Support communities to be equitably integrated • Provide equity of access to housing/ housing affordability • Strengthen community collaboration and engagement via education and awareness • Ensure community participation in shaping the future of their neighbourhoods • Protect public health and safety/ vulnerable communities against the impacts of climate change
Infrastructure & Service	<ul style="list-style-type: none"> • Enhance community level resilience and preparedness for known climate risks, including flooding, extreme heat, wind, and ice storms • Adopt the use of natural green infrastructure • Protect biodiversity and enhance ecosystem functions • Coordinate investments to adapt infrastructure to future climate conditions
Energy & Buildings	<ul style="list-style-type: none"> • Increase the use and supply of renewable energy • Advance of low carbon community energy systems • Ensure new buildings can withstand climate change impacts - Adopt GDS • Coordinate investments to support residents to prepare/adapt/response to risks; to retrofit their homes to energy efficiency
Mobility and Transportation	<ul style="list-style-type: none"> • Provide multiple reliable, affordable, accessible, and safe mobility options • Support active transportation • Accelerate the adoption of zero emissions vehicles • Decrease GHG from the City's corporate and transit fleet and equipment
Leading City - Mainstreaming effectively	<ul style="list-style-type: none"> • Incorporate climate change considerations into Municipal Decision Making • Begin incorporating climate-related financial disclosure in City financial planning • Enhance the ability to collect and share climate change related data • Work with planners to increase understanding of new floodproofing guidelines and related zoning regulation changes

Common Actions

Common Focus Areas	Actions
Community Resilience, Health and Safety	<ul style="list-style-type: none">• Identify priority locations for implementation of cooling and shading infrastructure/ programs• Update management plans to respond to high risk/extreme weather events• Develop an emergency response procedure for extreme weather events• Reduced airborne emissions from high-impact sources• Enhance the capacity of neighborhoods to prepare for and recover from shocks through grassroots action, network building, community hubs/centers, local food production, etc.• Enhance public education to increase personal preparedness & reduce health risks associated with extreme weather• Design public spaces and bike routes with natural or built shade



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Common Actions

Common Focus Areas	Actions
Infrastructure & Service	<ul style="list-style-type: none">• Prioritize specific upgrades, new backup power systems, or plans to provide mobile power in response to power outages• Complete integrated modeling of water in the city (pipe system, surface water and groundwater)• Incorporate climate change considerations into infrastructure design, development, maintenance and renewal (into Asset Management Plan)• Develop GIS based inventory, and monitoring assets with a particular focus on the impact of climate change over time• Increase City departments' capability to manage a business disruption in the event of an emergency



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Common Actions

Common Focus Areas	Actions
Energy & Buildings	<ul style="list-style-type: none">• Introduce requirements for, or facilitate an increase in application of green roofs• Support homeowners and renters to prepare their homes for shocks (education, subsidies, retrofit financial programs)• Explore models to finance investment in renewable capacity to meet City facility needs• Streamline the heat pump permitting process and provide clarity on requirements• Adopt Green Development Standards for new buildings• Explore opportunities for district energy – conduct feasibility study



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Common Actions

Common Focus Areas	Actions
Mobility and Transportation	<ul style="list-style-type: none">• Identify priority risk areas and develop a Plan to respond to flooding of transit infrastructure, disruption of service and infrastructure damage to terminals, shelters, benches, bus stop pads etc.• Encourage and enable micro-mobility systems and establish a policy framework for shared micro-mobility systems (e.g., bike share)• Incorporate Complete Street Design in roadway development and re-development• Expand bicycle lanes• Identify Zero Emission Zones• Reduce Emissions from the City's Corporate and Transit Fleet



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Common Actions

Common Focus Areas	Actions
Leading City	<ul style="list-style-type: none">• Incorporate climate change language into the City's Official Plan, Zoning By-Law, and any implementation guidelines• Develop a climate change decision-making framework or policy to guide municipal decision making• Begin incorporating climate-related financial disclosure in City financial planning• Increase knowledge of the projections and engage staff with respect to other climate projections and tools that would be useful• Add climate projections and information to multi-hazards risk assessment in the new engineering asset management framework



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Example Implementation Table

Supporting Actions	Action Type	Timeline	Cost	Status	Responsibility		Additional Stakeholders
					Lead	Support	
18-4	Prioritize active transportation improvements in roadway development and re-development	Program/ Project	Recurring	\$\$	Underway	Infrastructure Planning and Engineering Services (Transportation Infrastructure Management)	
18-5	Install electric vehicle charging infrastructure at City-owned properties (e.g. city hall) for use by employees and the general public	Program/ Project	▬▬▬	\$	Underway	Parks, Forestry & Environment (Environment)/ Traffic Management and Municipal Parking* *Co-Lead	Facilities & Property Management Utilities
18-6	Work with industry partners and other levels of government to promote innovative technologies and pursue alternative fuels initiatives in the goods movement sector	Partnerships and Engagement	Recurring	-	Underway	Parks, Forestry & Environment (Environment)	Economic Development Office Other levels of government, Mississauga Board of Trade
18-7	Develop transportation demand management requirements for new developments in line with Recommendation #4 in the City's Transportation Demand Management Strategy and Implementation Plan	Policy	▬▬▬	\$\$	Planned	Infrastructure Planning and Engineering Services (Transportation Infrastructure Management)	
18-8	Identify and address gaps and inconsistencies in the pedestrian network, consistent with Action 14 of the City's Transportation Master Plan	Program/ Project	▬▬▬	\$	Planned	Infrastructure Planning and Engineering Services (Transportation Planning)	

[Mississauga
Climate Change
Action Plan](#)

Example Measurements

Objective	Measurements	Reporting	Lead
Plan Progress Indicator	<ul style="list-style-type: none"> Per cent of action items in the Adaptation Plan implemented Strategy/Plan that have been initiated 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> Sustainable/Cli mate Change; Asset Planning
Enhance the long-term health and vigor of green spaces, trees and biodiversity	<ul style="list-style-type: none"> Per cent canopy cover increased Street tree density in neighbourhoods with higher measured heat and vulnerability to heat 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> Parks; Planning
Community Resilience, Health and Safety	<ul style="list-style-type: none"> Number of sites offering free tap water Number of human cases of vector borne diseases Heat related emergency room visits Number of shade structures at sports fields and parks 	<ul style="list-style-type: none"> Annually/ 2-years 	<ul style="list-style-type: none"> Health Unit; Parks
Strengthen Infrastructure Resiliency	<ul style="list-style-type: none"> Number of claims against the city for flood damage Number of infrastructure failures due to extreme temperatures 	<ul style="list-style-type: none"> Annually/5 Year Plan Review 	<ul style="list-style-type: none"> Operations

Scan Summary Analysis

Adaptation Plans' components

- Not having a component does not make the plan better or not
- ½ ✓ - indicates that there is some level
- Cost analysis may exist but not be attached to the Adaptation Plan

Adaptation Plan from municipality	Focus Areas linked with existing Strategies/Programs	Cost Analysis	Estimated Cost Indicators	Responsible Roles	Timeline	Indicators /Metrics	Equity	Evaluation Cycle
Ajax			✓	✓	✓			2 years
Calgary	✓	1/2 ✓		✓		✓		4 years
Mississauga	✓		✓	✓	✓	✓		5 years
Peel Region		✓						1 year
Toronto	✓			✓	✓		✓	
Vancouver	✓			✓	✓	✓	1/2 ✓	5 years
Windsor	✓	✓	✓	✓	✓	✓		5 years

Summary Analysis

- Some actions are vague
- Inconsistence of components
 - actions, responsibilities, associated policy/plan, timeframe, cost, level of effort, status
- Missing measure of success – KPIs



Roundtable Discussion – Break Rooms

Group 1 – Interdepartmental Communication/Collaboration

How does your municipality facilitate interdepartmental collaboration?
What works? What needs improvement?

Group 2 - From Objectives into Actions

How to ensure that adaptation plans clearly identify the actions undertaken to achieve the objectives of the plan?
Challenges/Opportunities

Group 3 – Cost

How can we work together to identify the cost of not advancing the adaptation plan (i.e. cost of doing nothing)?

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Actions Required for Pro-Active Leadership

- Clearly identify actions and timeframes and implementation leads/partners
- Integrate equity lens considerations into decision making
- Integrate climate change considerations into decision making (climate lens)
- Ensure cross-departmental understanding of city's climate actions in regular basis (involvement in risks assessment)
- Include cost analysis of “doing nothing”
- Set KPIs and Plan Measurements

*Inequity impacts the entire
city's resilience*

Integrate equity lens considerations into decision-making

- Evaluation of the most vulnerable communities/neighborhoods
- Engage with those to determine their priority vulnerabilities/needs and how it relates to climate change
- Create a framework to help the City consider how decisions will impact those who are most marginalized
- Funding/prioritization of projects in disadvantaged and low-income communities be prioritized
- Partner with community-based organizations and compensate them for their time and expertise
- Consider tailored adaptation solutions for different groups
- Acknowledge that housing is a human right and that lack of adequate housing has costs associated with it

Integrate climate change considerations into decision-making

- Incorporate climate change language into the City's Official Plan, Zoning By-Law, and implementation Plans
- Regular interdepartmental meetings on climate change impacts and vulnerability risks
 - Representative from each department to form climate change team
 - Each Department to self-identify risk of climate change
 - Climate/GHG emissions questions in Council Reports
 - Score Card – tracking departmental GHG emissions
 - Climate lens tools
- Leverage climate change data to be included in municipal decision making

Challenges:

- Setting up targets for adaptation
- Measures of success/Indicators of success for adaptation/KPIs
- Limited access to financial support - funding for the plan
- Calculating costing to implement projects
- No access of insurance claims
- Dealing with multiple sectors (conservation authorities, private, utilities)



Lessons learned and implementation municipal and regional experience – 10 min each

- Town of Ajax, Cameron Richardson and Jade Schofield (formally with Ajax, now with Town of Whitby)
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- City of Mississauga, Leya Barry
- Peel Region, Jeremy Schembri



Roundtable Discussion – Break Rooms

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Next Steps

- More sharing of experience across municipalities re Adaptation Plans (more sharing of lessons learned re development and implementation)
- CAP facilitating of working group on development/implementation of Adaptation Plan (cohort)
- Others?



Thank you!

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Examples actions

Action 1.1 Incorporate climate change considerations into Municipal Decision Making.

- Incorporate climate change language into the City's Official Plan, Zoning By-Law, and any implementation guidelines;
- Integrate climate change considerations into Windsor's new and existing Plans and Policies, as well as Administrative and Consultant reports.

Action 1.2 Increase community level of knowledge on Climate Change.

- Enhance climate change education and awareness initiatives for Windsor residents and City staff;
- Collaborate with the University, College and local school boards to enhance climate change training and development;
- Continue to consult and engage local First Nations to further climate action based on traditional knowledge, insights and experience;
- Engage with professional agencies to develop and enhance local climate change knowledge and experience;
- Continue to share relevant climate change data on Open Data Catalogue
- Investigate the creation of a City Lab in Windsor - an innovation hub bringing together students, academia and civic leaders to work towards climate action.

Action 1.3 Build financial support for unforeseen impacts of climate change

- Develop a Municipal severe weather reserve fund to address funding deficits due to emergency response.

Action 1.4 Enhance the ability to collect and share climate change related data

- Leverage climate change data to be included in municipal decision making;
- Automate notifications and triggers to assist with adaptation actions;
- Use data to monitor the implementation of *Degrees of Change*;
- Share data to empower the community to support climate change planning;
- Use data to inform education campaigns.

Action 2.1 Update Community Development and Health Services (CDHS) Emergency Response Plan

- Consult with County stakeholders to discuss regional approaches;
- City of Windsor staff training for emergency response;
- Conduct exercises to test opening emergency shelters in times of crisis;
- Develop a notification system for the public on what to do and where to go in an emergency.

Action 2.2 Develop an emergency response procedure for extreme flooding events

- Ensure open communication among City of Windsor staff and first responders before, during and after the event;
- Identify vulnerable roads and areas prone to overland and extreme rain event flooding and have appropriate plans in place to address them;
- Consult and collaborate with first responders to prepare road closure protocols;
- Develop a safe access standard for road evaluations;
- Continue to coordinate emergency response with the Local Health Integration Network (LHIN) to decrease risk to vulnerable populations.

Action 2.3 Enhance public education to increase personal preparedness & reduce health risks associated with extreme weather

- Produce targeted messaging for at risk populations including seniors and persons with limited mobility as well as their caregivers;
- Enhance supports for Community Development and Health Services clients;
- Educate the public on when to call 911 or 311.

Action 2.4 Review the 2011 Heat Alert and Response Plan and Update as required

- Determine emergency conditions that require opening community reception centres or emergency shelters;
- Ensure all public facilities have access to an air conditioned space;
- Encourage the public to seek relief from extreme heat in public spaces;
- Identify privately owned places that could be used as cooling centres during Heat Alerts;
- Promote access to free tap water through programs such as Blue W or the Windsor Essex County Health Units Water app;
- Increase access to water bottle re-fill stations at public buildings;
- Review the 2011 Vulnerability to Extreme Heat in Windsor report and update where possible.

Action 3.1 Increase education to the public on how to reduce their personal risk of basement flooding

- Hire a coordinator to conduct public education and outreach to highlight responsibilities of the property owner and promote lot level storm water controls. These include but are not limited to rainbarrels, rain gardens and down spout disconnections;
- Develop outreach programs to teach residents what they can do to reduce snowmelt flooding on their property;
- Provide education to private market and social housing landlords and business owners outlining precautions, insurance options and responsibilities for tenants and landlords;
- Provide education on cleaning and fixing damaged property after a flooding event to prevent mould growth.

Action 3.2 Develop a media notification system to prepare residents for large storm events

- Provide information on what to do before, during and after extreme rain events in real time.

Action 3.3 Continue and enhance the Basement Flooding Subsidy Program and incentivize other methods of protecting property

- Include a subsidy for sewer lateral video surveillance and subsequent repair or replacement as part of the Basement Flooding Subsidy Program;
- Continue to subsidize rainbarrels.

Action 3.4 Continue and enhance tree pruning programs to develop proper tree health and limit future damage

- Enhance tree pruning and maintenance programs on City of Windsor trees using the City's updated Tree Inventory;
- Implement an outreach program for private tree care and maintenance.

Action 3.5 Review and improve policies and procedures to prepare for overland flooding

- Identify vulnerable roads and areas prone to overland flooding and have appropriate plans in place to address them;
- Continue to provide sandbags to vulnerable properties when required;
- Continue to sandbag critical infrastructure when required;
- Install high water detection equipment at critical infrastructure to monitor surface water levels.

Action 3.6 Promote public and private building standards and maintenance practices which protect buildings and HVAC units from damage due to increased cooling demand

- Consider new design and replacement standards for building Heating, Ventilation and Air Conditioning (HVAC) units;
- Enhance preventative maintenance for building HVAC units;

Windsor's Climate Change Adaptation Plan

	Action & Supporting Actions	Associated Municipal Plan/Policies	Timelines	Estimated Costs	Level of Effort
1.1	<p>Incorporate climate change considerations into Municipal Decision Making - Incorporate climate change into the City's Official Plan; Integrate climate change considerations into Windsor's new and existing Plans and Policies, as well as Administrative and Consultant reports.</p> <p>Lead: ESCC. Supporting Role: All Departments.</p>	All municipal Plans and Policies	On-going	\$	Low
1.2	<p>Increase community level of knowledge on Climate Change - Enhance climate change education and awareness initiatives for Windsor residents and City staff; Collaborate with the University, College and local school boards to enhance climate change training and development, Engage with professional agencies to develop and enhance local climate change knowledge and experience; Continue to share relevant climate change data on Open Data Catalogue; Investigate the creation of a City Lab in Windsor - an innovation hub bringing together students, academia and civic leaders to work towards climate action.</p> <p>Lead: ESCC. Supporting Role: Communications; IT; All departments; WEC Health Unit; ERCA; Citizen Environment Alliance.</p>	Environmental Master Plan, Parks Master Plan, Active Transportation Master Plan, Landscape Manual, Official Plan	On-going	\$	Medium
1.3	<p>Build financial support for unforeseen impacts of climate change - Develop a Municipal severe weather reserve fund to address funding deficits due to emergency response.</p> <p>Lead: Finance.</p>	Capital Budget/Asset Management Plan	Short-Term with annual contributions	\$\$\$\$	Low
1.4	<p>Enhance the ability to collect and share climate change related data; Leverage climate change data to be included in municipal decision making; Automate notifications and triggers to assist with adaptation actions; Use data to monitor the implementation of <i>Degrees of Change</i>; Share data to empower the community to support the plan; Use data to inform education campaigns.</p> <p>Lead: IT. Supporting Role: All Departments.</p>	Information Management Policy	On-going	\$\$\$\$	Medium

Indicators to measure the success of the Plan

Vancouver Climate Adaptation Strategy

OBJECTIVE	MEASUREMENT COMPONENT OR INDICATOR	REPORTING FREQUENCY
Explanatory Indicators	Number of summer days annually with a special weather statement (heat-related) or heat alert	To the extent possible use Emergency Management's Information System, VanORCA, to track and report. Partner with OEM and Environment and Climate Change Canada where information is needed. Report at five-year Strategy review cycle Report at five-year Strategy review cycle
	Number of summer days annually with a special weather statement (smoke-related) or air quality advisory or both	
	Number of days annually with a special weather statement or alert for heavy rainfall	
	Number of street tree or park trees lost to a climate related impact (wind, drought, snow load, etc.)	
Progress Indicator	Per cent of action items in the Adaptation Strategy that have been initiated	Report annually with Greenest City Action Plan updates

OBJECTIVE	MEASUREMENT COMPONENT OR INDICATOR	REPORTING FREQUENCY
Minimize rainfall related flooding and consequences	Adopt upcoming Rain City Strategy indicators and targets where appropriate	Reported with Rain City Strategy Report at five-year Strategy review cycle
	Indicator: Number of claims against the city for flood damage Target: To be set at next review	Report at five-year Strategy review cycle
Design robust built form to do well in a range of climates while providing co-benefits such as seismic resilience, energy efficiency, accessibility and supporting health and well-being	Indicator: Floor area of newly permitted buildings that are near zero emissions Target: ZEB target of 100 per cent floor area in newly permitted buildings near-zero-emissions by 2030	Report at five-year Strategy review cycle
Increase resilience to coastal and riverine flooding	Indicator: Number of residents and prop owners engaged or receiving applicable information from the City	
	Indicator: Per cent of coastal projects using SLR information and adaptation actions Indicator: rate of new development employing flood proofing measures in floodplain areas	

