



DRAFT Climate Change Adaptation Plan: Degrees of Change

November 15th 2019





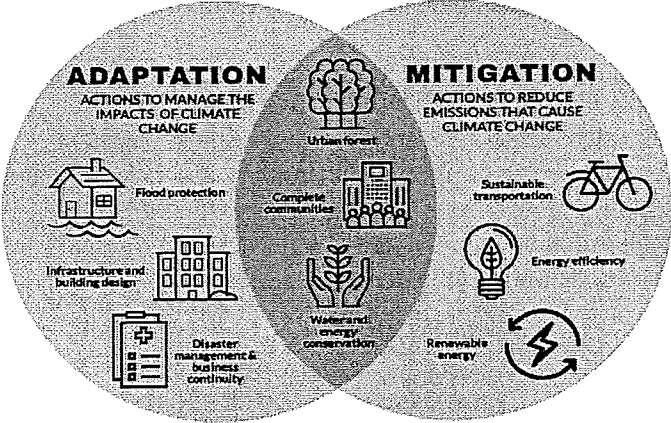
windsor environmental master plan



DRAFT
City of Windsor
DEGREES OF CHANGE
Climate Change Adaptation Plan

Climate Change Planning





ADAPTATION
ACTIONS TO MANAGE THE IMPACTS OF CLIMATE CHANGE

- Flood protection
- Infrastructure and building design
- Disaster management & business continuity

MITIGATION
ACTIONS TO REDUCE EMISSIONS THAT CAUSE CLIMATE CHANGE

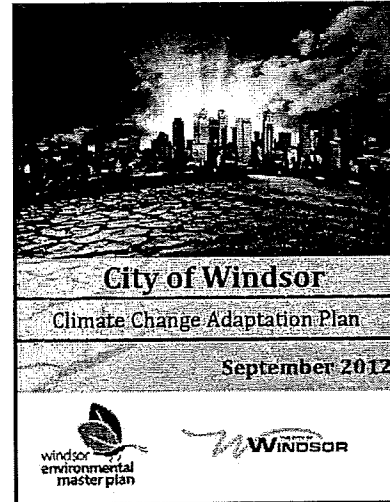
- Urban forest
- Complete communities
- Water and energy conservation
- Sustainable transportation
- Energy efficiency
- Renewable energy

Actions to address Climate Change Adaptation and Mitigation

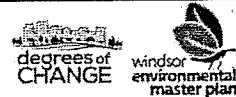
Original Plan - 2012



- Council Approval in November 2012.
- Increase of Temperature and Precipitation are major concerns in plan.
- Short-listed 22 Recommended Actions to be undertaken in Short-term.



Outcomes ICLEI Adaptation Changemakers



- Opportunity to participate in this project with 8 other municipalities.
- Develop a community-wide adaptation strategy that includes actionable elements for all participating stakeholders:
 - Identified locally relevant climate change impacts
 - Completed organizational vulnerability and risk assessments
 - Established long-term adaptation vision and goals
 - Identified relevant adaptation actions
 - Developed implementation action plans



Community Task Force

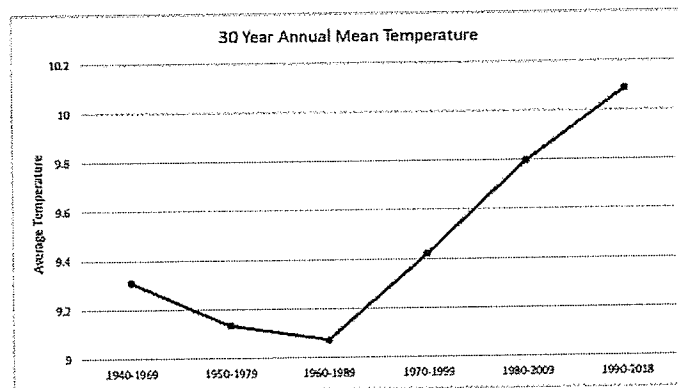


| | |
|--|--|
| o The University of Windsor | o Great Lakes Institute for Environmental Research |
| o County of Essex | o Essex Region Conservation Authority |
| o Enbridge (formally Union Gas) | o Citizen Environment Alliance |
| o St. Clair College | o Windsor Regional Hospital |
| o Windsor Essex Community Housing Corporation | o Windsor Essex County District School Board |
| o Windsor Essex County Health Unit | o Windsor Women Working with Immigrant Women |
| o Windsor Essex Local Immigration Partnership | o Enwin |
| o Greater Essex County District School Board | o Windsor Port Authority |
| o Windsor Essex Catholic District School Board | o Walpole First Nations |
| o Detroit River Canadian Cleanup | o Essex County Field Naturalists' Club |
| o Downtown Mission | o Hotel-Dieu Grace Healthcare |
| o Friends of Ojibway Prairie | o Canadian Red Cross |

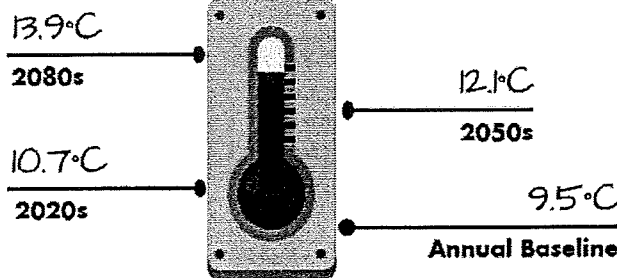
Corporate & Community

- o All City of Windsor departments were consulted throughout the development of this Plan
- o Community Task Force developed

Historical Annual Temperatures



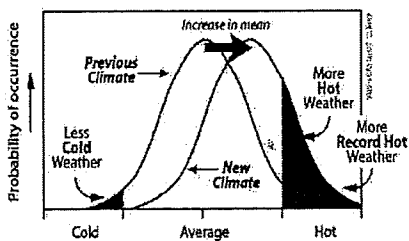
Climate Projections: Annual Mean Temperatures



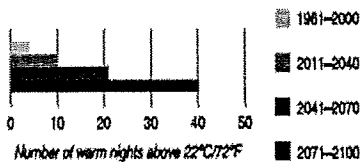
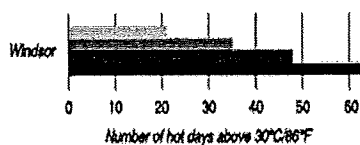
Baseline: 1971-2000
Source: Canadian Climate Data and Scenarios
SR-A2 – 20 ensemble model



Climate Projections: Temperature Highs



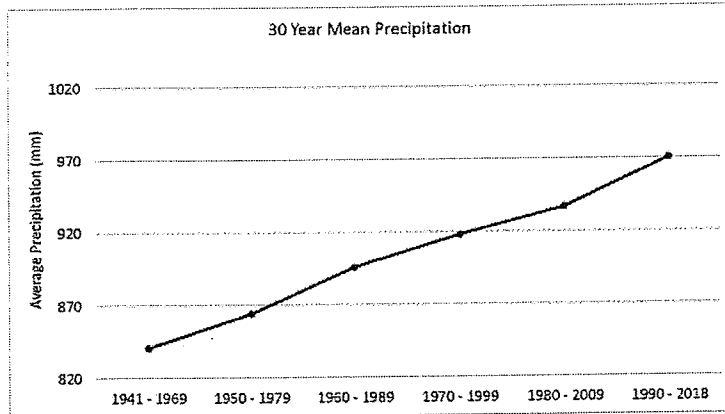
DAYS ABOVE 30°C



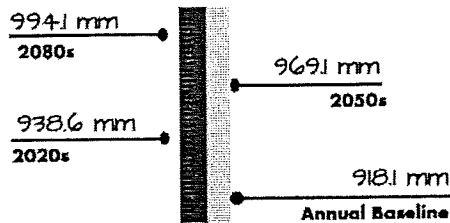
Source: Casati, B. & Yagouti, A.



Historical Annual Precipitation



Climate Projections: Annual & Extreme Precipitation



ANNUAL MEAN PRECIPITATION

Annual precipitation is expected to increase. Winter and Spring are projected to get significantly wetter, with a slight decline in the Summer.



10-year storms

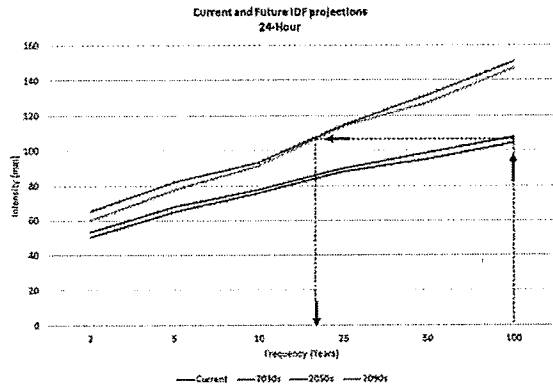


100-year storms

*Storm intensity may increase in by the above percentages (50th percentile, 10%-90% range)



Climate Projections: Extreme Weather



A 1-in-100 year storm today is projected to be 1:20 year storm by mid-century.



How would we be impacted by these projections?



Impacts to Community Health and Safety



Impacts to Building and Property Damage



Impacts to Infrastructure Services



Impacts to Ecosystem Function

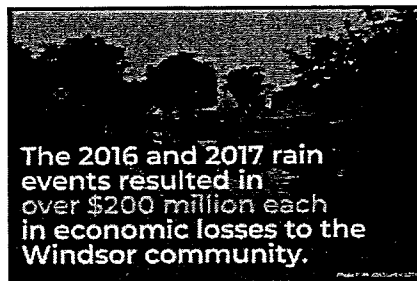


Impacts to Community Services



Impacts Quality of Life

Corporate
&
Community



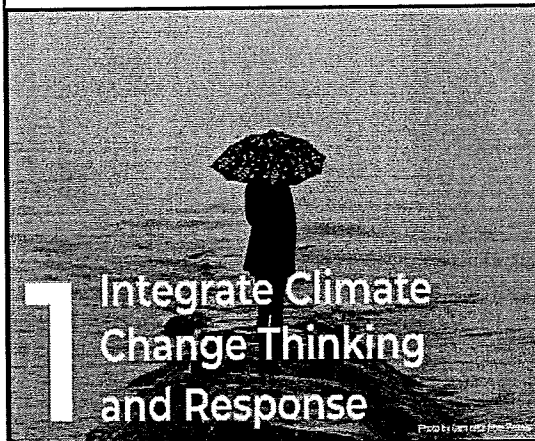
Adaptation Objectives



1. Integrate Climate Change Thinking and Response
2. Protect Public Health and Safety
3. Reduce Risk to Buildings and Property
4. Strengthen Infrastructure Resilience
5. Protect Biodiversity and Enhance Ecosystem Functions
6. Reduce Community Service Disruptions
7. Build Community Resilience

Action 1.1 - Incorporate climate change considerations into Municipal Decision Making

Action 1.2 - Increase community level of knowledge on Climate Change.



Action 1.3 - Build financial support for unforeseen impacts of climate change

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



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

Action 2.2 - Develop an emergency response procedure for extreme flooding events

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

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

Action 2.5 - Enhance protection of outside workers during extreme heat conditions

Action 2.6 - Continue to protect indoor air quality

Action 2.7 - Develop an Air Quality Health Index (AQHI) Response Plan



Action 2.8 - Decrease public and private contributions to air quality contaminants

Action 2.9 - Enhance monitoring for vector borne diseases and new infections diseases

Action 2.10 - Enhance community safety during icy conditions

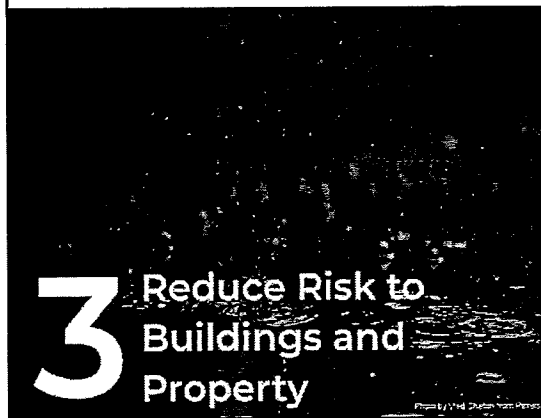
Action 2.11 - Enhance surveillance for blue-green algae in our surface water bodies

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

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

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

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



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

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



Action 4.1 - Implement the Sewer Master Plan overall recommendations

Action 4.2 - Increase City of Windsor staff resources to respond to infrastructure issues during extreme weather

Action 4.3 - Incorporate climate change considerations into infrastructure design, development, maintenance and renewal

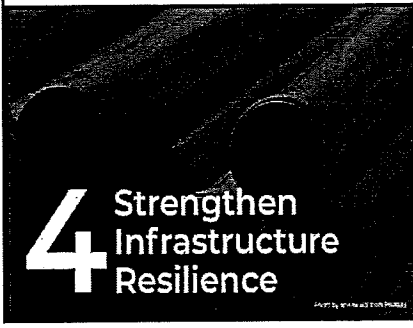
Action 4.4 - Implement the recommendations of the East Riverside Flood Risk study to reduce overland flooding risk

Action 4.5 - Continue to monitor Little River overland flooding risk

Action 4.6 - Complete infrastructure projects that received funding as part of the Disaster Mitigation & Adaptation Fund grant

Action 4.7 - Continue to invest in stormwater and sewer infrastructure

Action 4.8 - Protect and improve roads from flooding damage



4 Strengthen Infrastructure Resilience

Action 4.9 - Promote green infrastructure options for drainage issues on public and private property

Action 4.10 - Review design standards and maintenance practices as they relate to newest climate projections

Action 4.11 - Explore options for increased electrical power generation from City of Windsor infrastructure (generators) to supplement Ontario' s electrical grid as warranted

Action 5.1 -Protect and enhance the management of natural areas to improve climate change resilience

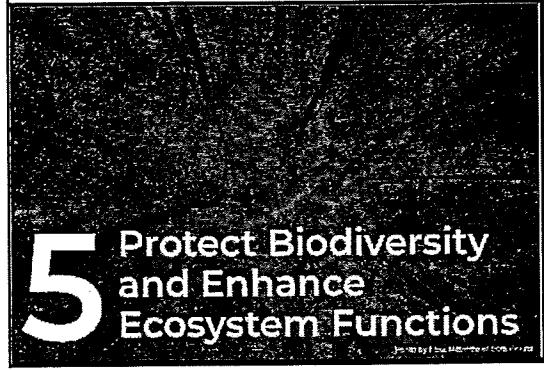
Action 5.2 - Investigate the potential for natural areas to enhance flood attenuation

Action 5.3 - Enhance linkages between and among natural heritage features

Action 5.4 - Implement an Invasive Species Program

Action 5.5 - Complete an Urban Forest Management Plan


Action 5.6 - Improve climate resilience of trees in urban forests, parks and in the public right-of-way



5 Protect Biodiversity and Enhance Ecosystem Functions

Action 5.7 - Enhance Detroit River shoreline protection measures along Windsor' s riverfront and Peche Island

Action 5.8 - Increase community level of knowledge on the benefits of natural areas



- Action 6.1 - Improve communications from Transit Windsor to the public
- Action 6.2 - Develop extreme weather contingency plans for Transit Windsor
- Action 6.3 - Improve design standards for new recreational facilities to ensure they are more climate resilient
- Action 6.4 - Identify strategies to minimize cancellations of recreational rentals at existing recreation facilities
- Action 6.5 - Enhance inspections of Special Events Facilities and roads to identify infrastructure deficiencies for upcoming events

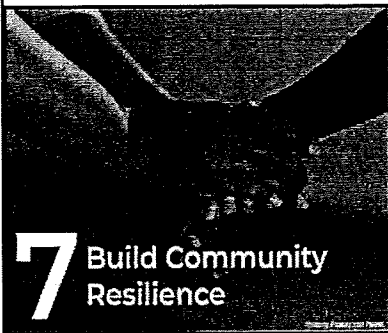


Action 6.6 - Evaluate and enhance recreational uses along Windsor's shoreline

Action 6.7 - Replace Lakeview Marina docks with floating docks that are more resilient to varying water levels



- Action 7.1 - Improve stormwater design standards for future climate change precipitation projections
- Action 7.2 - Explore options to implement stormwater financing mechanisms
- Action 7.3 - Enhance the use of low impact development in both private and public areas to reduce storm water impacts
- Action 7.4 - Enhance education to the public about the risk of high surface water levels
- Action 7.5 - Develop communications campaign with messaging to residents on lot-level resiliency actions
- Action 7.6 - Consider Thermal Comfort and the Urban Heat Island effect in development project design
- Action 7.7 - Enhance protections from heat and UV rays at sport fields and outdoor pools
- Action 7.8 - Provide UV Protection in public spaces and at public events
- Action 7.9 - Enhance communication and education around the impacts of extreme heat on human health



Action 7.10 - Implement the Community Energy Plan (including but not limited to the following)

Action 7.11 - Incorporate native and/or drought tolerant plants into public and private landscaping

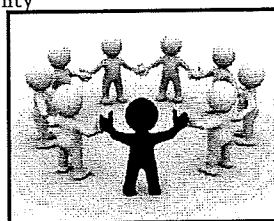
Action 7.12 - Collaborate with the Essex Region Conservation Authority and the Windsor-Essex County Health Unit on their climate change mitigation and adaptation planning

Action 7.13 - Assess new opportunities for different forms of business and tourism as a result of a changing climate

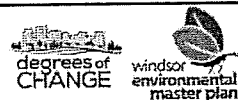
Implementation & Governance



- City Administration
 - Plan will sit with Environment & Climate Change staff
 - Departments will be responsible for implementation (Appendix B)
- Community Task Force
 - Will continue to meet and aid with community actions
 - Advocate for the Plan within the community
- Community Partnerships
 - External agencies
 - School boards
 - Private sector
 - Developers
 - Post secondary institutions



Implementation & Governance



- Community Education & Outreach
 - Will be enhanced as much as possible
 - Presentations/open houses, special events, workshops, online engagement, advertising etc.
- Funding
 - Internal and external funding sources described in Plan
- Monitoring and Review
 - Climate projections, corporate and community vulnerability and risk assessments will be reviewed every 5 years
 - Update report to Windsor City County and Community Task Force bi-annually
- Indicators
 - Many high level indicators have been recommended to track progress over time (Appendix C)

Next Steps



- Draft of the Plan will go to the Environment, Transportation & Public Safety Standing Committee Nov 20th
- Will be tabled for 60 days for public comment
- Environment & Climate Change staff will be in the community and online gathering feedback
- Opportunity for WECEC to provide comments
- Comments will be incorporated by staff and Final Plan will go back to Council in the spring of 2020

