

# **Hamilton's Climate Change Impact Adaptation Plan (CCIAP)**

- National leader on Climate Adaptation
- Healthy, equitable, vibrant and sustainable community that responds to the needs of all

## 13 Priority Climate Change Impacts

- Hamilton's Science of Climate Change → 70+ Corporate & Community Climate Impacts
- Climate Impacts underwent Vulnerability and Risk Assessment
- **Vulnerability:** combination of *sensitivity* and *adaptive capacity*
- **Risk:** combination of *likelihood* and *consequences* of future climate impacts



# Flooding

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- Flood protection concerns
- Wilder, wetter and more frequent

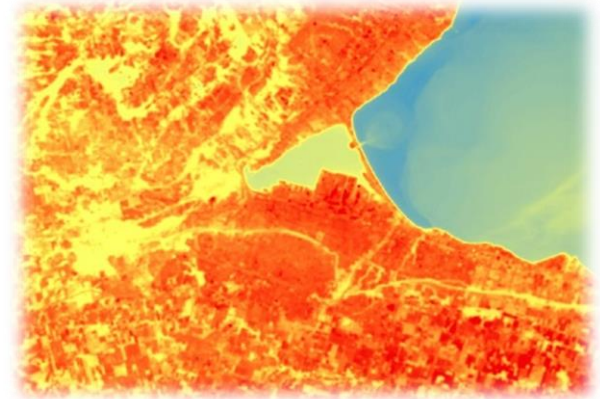


## Priority Climate Change Impacts

1. Reduce capacity of flood protection measures and water storage caused by an increase in rainfall intensity leading to flooding.
2. Changes in the frequency of extreme rainfall events will result in increased instances of flooding on private and public properties

## Extreme Heat

- 60+ days of extreme heat by 2080s
- Rising health impacts and financial costs



### Priority Climate Change Impacts

3. Increased instance of heat related issues due to extreme heat.
4. Drier, hotter and longer summers may affect the health and safety of local vulnerable populations
5. More frequent and intense heatwaves will increase instances of heat related health and safety issues, particularly for households without access to reliable air conditioning and the homeless
6. Rising summer temperatures and extreme heat will increase energy demand for air conditioning, causing a financial burden for low income households.

## Water Quality

- Increased run-off
- Water supply and demand issues



### Priority Climate Change Impacts

7. Increased intensity of rainfall leading to increasing runoff into rivers and lakes, and washing of sediment, nutrients, pollutants and other materials.

8. More intense summer precipitation combined with increasing temperatures lowering water supply as well as increasing water demand for drinking, landscaping, and irrigation. (rural)

## Health and Safety

- Greater intensity and frequent storms
- Transmission of vector borne diseases



### Priority Climate Change Impacts

9. Increased intensity and frequency of ice storms leading to increased hazardous roads, pathways and sidewalk conditions

10. Increased temperatures and changes in precipitation increasing incidences of infectious diseases and vector borne diseases as result of longer transmission periods of changes in geographic distribution of disease vectors

## Erosion & Infrastructure Damage

### Priority Climate Change Impacts

11. Changes in precipitation resulting in erosion of natural systems (i.e waterbanks, escarpment erosion) leading to washouts of bridges and roadways



Adapted from Toronto Star

## Power Outages

### Priority Climate Change Impacts

12. Prolonged power outages during winter months due to an increase in ice storms resulting in public safety concerns

## Food Insecurity

- Increase temperatures
- Decrease crop yields



### Priority Climate Change Impacts

13. Increase in average annual temperatures (especially in the summer) leading to increased food insecurity in the region (i.e decrease in local crop yield, food cost fluctuations, etc.)



# 4 Theme Areas for Climate Adaptation Actions

**THEME 1: Built Environment/Systems**



**THEME 2: People and Health**



**THEME 3: Natural Environment, Agriculture and Water**



**THEME 4: Energy and Economy**



# Climate Adaptation Actions (Built Environment)

<b>1. Incorporate climate change into future land use, development and construction.</b>	<b>1.1 (ID #1)</b>	Develop requirements for the incorporation of Low Impact Development (LID) features and green infrastructure into new development and redevelopment projects, and consider watershed and landscape scales in the development of plans and objectives
	<b>1.2 (ID #2)</b>	Develop guidelines and incentives for homeowners and landlords to improve the resilience of residential buildings to climate-related risks through upgrades and/or retrofits.
	<b>1.3 (ID #3)</b>	Conduct more studies or reviews to determine flooding and other risks throughout the City & develop plans (e.g. relocating sites where appropriate) to improve the resilience of infrastructure (i.e. buildings, roads, water/wastewater infrastructure, etc.) to climate-related risks from extreme weather and temperatures.
<b>2. Reduce transportation disruptions due to extreme weather events and improve the safety of travel on roads, sidewalks, and trails (i.e. including washouts)</b>	<b>2.1 (ID#4)</b>	Improve winter travel conditions through further expanding sidewalk clearing
	<b>2.2 (ID #5)</b>	Encourage and promote safer travel practices, choices, and alternatives through considering all users of Hamilton's transportation network (e.g. motorists, pedestrians, cyclists, transit, etc.) and working with local groups to create a communications campaign around the benefits of work-from-home

# Climate Adaptation Actions (People and Health)

<p><b>Help vulnerable populations (i.e. seniors, youth, outdoor workers, those experiencing homelessness, with pre-existing health conditions, etc.) avoid or reduce health-related impacts of extreme weather and temperatures (including flooding)</b></p>	<p><b>3.1 (ID #6)</b></p>	<p><b>Develop and implement a response program for vulnerable populations to protect residents from climate-related risks (i.e. extreme cold, extreme heat, etc.)</b></p>
	<p><b>3.2 (ID #7)</b></p>	<p><b>Consolidate existing vulnerable persons' contact lists and update/expand them to guide emergency response and/or other assistance programs</b></p>
	<p><b>3.3 (ID #8)</b></p>	<p><b>Coordinate local efforts to address excessive indoor temperatures in rental housing</b></p>
	<p><b>3.4 (ID #9)</b></p>	<p><b>Continue/Expand work to provide affordable housing to reducing climate-related impacts from extreme weather and temperatures</b></p>

## Climate Adaptation Actions (People and Health Cont'd)

<p><b>Improve community preparedness and resilience to respond to climate-related risks from extreme weather and temperatures, including flooding.</b></p>	<p><b>4.1 (ID #10)</b></p>	<p>Create an educational campaign on communicating the risks associated with climate change (i.e. health impacts, property damage, etc.) and what residents can do to prepare.</p>
	<p><b>4.2 (ID #11)</b></p>	<p>Evaluate and select programs for making emergency preparedness kits accessible to anyone, regardless of income (e.g. subsidies or free distribution campaigns)</p>
	<p><b>4.3 (ID #12)</b></p>	<p>Establish buddy systems/help-your-neighbour programs to implement during extreme weather events</p>
<p><b>Monitor and plan for the potential introduction of new vectors and increased vector-borne illnesses in the community</b></p>	<p><b>5.1 (ID #13)</b></p>	<p>Work with local partners to ensure vulnerable groups are informed and adequately protected from vector-borne diseases</p>
	<p><b>5.2 (ID #14)</b></p>	<p>In conjunction with the Biodiversity Action Plan, develop an Open Space Management Plan to guide City of Hamilton Natural Open Space Stewardship, including maintenance schedules to minimize ideal conditions for vectors (e.g. plants and animals that can bring diseases to human communities, such as ticks , gypsy moths, mosquitos) (rabies, West Nile, Lyme Disease)</p>

## Climate Adaptation Actions (People and Health Cont'd)

<p><b>Create conditions to minimize health and safety risks to outdoor workers and community members</b></p>	<p><b>6.1 (ID #15)</b></p>	<p>Continue to update existing municipal plans and policies to decrease health and safety risks associated with extreme weather and temperatures</p>
	<p><b>6.2 (ID #16)</b></p>	<p>Explore opportunities to expand current cooling &amp; warming centre programming and interventions</p>
	<p><b>6.3 (ID #17)</b></p>	<p>Improve monitoring, data collection, and notification surrounding flooding &amp; extreme weather/temperatures</p>

# Climate Adaptation Actions (Natural Environment, Agriculture and Water)

<b>Proactively conserve and protect surface water and groundwater resources</b>	<b>7.1 (ID #18)</b>	Continue to enhance the management and restoration of existing natural areas and seek opportunities to dedicate land and natural areas for conservation, potentially as part of the Open Space Master Plan
<b>Monitor, maintain and improve the diversity and resiliency of urban trees and forests</b>	<b>8.1 (ID #19)</b>	Work with local partners to continue tree planting and preservation, explore community partnerships and naturalization programs to reduce urban heat island and enhance ecosystem function
	<b>8.2 (ID #20)</b>	Implement the Urban Forest Strategy, and consider additional measures to support it or expand its impact
<b>Strengthen food security in the City</b>	<b>9.1 (ID #21)</b>	Educate and encourage community to participate in growing food locally (e.g. lot level or urban farms/gardens).
	<b>9.2 (ID #22)</b>	Expand rain water capture (i.e. rain barrels, cisterns, etc.) as an irrigation source for more localized food production (i.e. backyard farming, urban gardens, soft landscapes, etc.)
	<b>9.3 (ID #23)</b>	Engage with local agricultural leaders to understand existing resources for farmers in addressing climate adaptation, and how the City can support or expand on those efforts.
	<b>9.4 (ID #24)</b>	Develop an educational campaign directed at restaurant and grocery industries, local farms and other possible food sources to better reduce and divert food waste and explore opportunities to reduce food waste

# Climate Adaptation Actions (Energy and Economy)

<p><b>Enable local businesses and organizations to plan for climate-related risks</b></p>	<p><b>10.1 (ID #25)</b></p>	<p>Provide guidance to local businesses on how to maintain business continuity (e.g. supply chain) during extreme weather</p>
<p><b>Improve the resilience of energy infrastructure to weather-related disruptions</b></p>	<p><b>11.1 (ID #26)</b></p>	<p>Work with local partners to conduct vulnerability and risk assessments on local energy systems and identify opportunities to increase local energy generation (e.g. microgrids) to increase reliability (potentially as part of planned CEEP priority actions around identifying renewable energy generation sites within the City)</p>
	<p><b>11.2 (ID #27)</b></p>	<p>Establish low-carbon back-up power systems in all City-owned facilities to serve as community hubs during emergencies, and create a policy to support and promote the use of low- or no-carbon emergency energy supplies such as batteries or energy storage for residents and businesses</p>