Climate Ready Ottawa

Ottawa's Climate Resiliency Strategy and Action Plan

November 2025

Ottawa

Contents

Executive summary 4

1.0 Introduction 8

1.1 The need to act now 8

1.2 A City Council priority 11

2.0 Climate Ready Ottawa strategic framework 13

2.1 Vision and principles 14

2.2 Strategy overview 14

2.3 Five-year action plan 17

3.0 Background: How did we get here? 19

3.1 Climate projections (2020) 19

3.2 Climate Vulnerability and Risk Assessment (2022) 20

3.3 Strategy development (2022–2025) 21

3.4 Early actions to build resiliency 23

4.0 Climate Ready Ottawa priority areas 24

4.1 Resilient Communities 24

4.1.1 Top risks 24

4.1.2 Long-term objectives 25

4.1.3 Five-year action plan—Resilient Communities 29

4.2 Resilient Infrastructure 36

4.2.1 Top risks 36

4.2.2 Long-term objectives 39

4.2.3 Five-year action plan—Resilient Infrastructure 40

4.3 Resilient natural environment 45

4.3.1 Top risks 45

4.3.2 Long-term objectives 46

4.3.3 Five-year action plan—Natural environment 47

4.4 Extreme weather preparedness and response 50

4.4.1 Top risks 50

4.4.2 Long-term objectives 51

4.4.3 Five-year action plan—Extreme weather 53

5.0 Governance, implementation, and integration 56
5.1 Governance and accountability 56
5.2 Implementation and prioritization 57
5.3 Integration into City planning and decision-making 58
5.4 Monitoring, evaluation, reporting, and renewal 59
5.5 Budget and funding strategy 60
5.6 Conclusion 62

6.0 Appendix one: Top climate risks from Ottawa's Climate Vulnerability and Risk Assessment 63
Introduction 63
Resilient communities 63
Resilient infrastructure 65
Resilient natural environment 66
Emergency preparedness and response 67

7.0 Appendix two: Climate Ready Ottawa 2026–2030 five-year action plan summary 68

8.0 Appendix three: Performance measurement 74
1.0 Resilient communities 75
2.0 Resilient infrastructure 77
3.0 Resilient natural environment 79
4.0 Extreme weather preparedness and response 80
5.0 Climate resiliency integration 82
6.0 External trends 83

9.0 Appendix four: Summary of public engagement: 2023–2025 . . . 84
Engagement Summary 84
Conclusions and Key Takeaways 86

10.0 Appendix five: Glossary 88

Endnotes 91

Executive summary

Climate Ready Ottawa is the City's strategy to address the top climate risks facing Ottawa and prepare for a warmer, wetter, and more unpredictable climate.

Ottawa is already experiencing the costly impacts of climate change, from rising heat-related illnesses to severe storms that damage infrastructure and disrupt essential services. These impacts harm residents' health and safety, strain City services, and drive-up costs.

Climate Ready Ottawa is the City's overarching plan for building resilience to changing climate conditions and achieving the goal of a climate-resilient Ottawa by 2050. It serves as a roadmap to protect residents, critical infrastructure, and municipal services, and provides the vision, priorities, and governance for all City policies, plans, and programs on climate resilience. It is accompanied by a five-year action plan outlining priority actions for 2026–2030.

Climate Ready Ottawa aligns with Council's 2023–2026 Strategic Plan and advances the green and resilient strategic objectives on extreme weather and climate change, and to grow and preserve the tree canopy.

Strategy Development

Climate Ready Ottawa has been developed through a phased approach that started with climate projections (2020) and a Climate Vulnerability and Risk Assessment (2022). The strategy was informed by a review of best practices and extensive input from City departments to ensure evidence-based, actionable priorities. A draft long-term strategy was released on Engage Ottawa in 2024.

Public consultation played a central role, with residents, community groups, and interest holders providing input and feedback that demonstrated strong support for proactive climate action. The strategy reflects a collaborative approach, engaging multiple city departments, local partners, and external organizations to ensure coordinated planning, implementation, and resource alignment.

The strategy shifts the City from an isolated project-by-project response to a proactive, risk-based approach that protects people, infrastructure, and services while reducing long-term costs and disruptions. A risk-based approach involves assessing the escalating risks to public health and safety, municipal infrastructure and services, and the natural environment. It considers the increased likelihood and severity of impacts as well as existing adaptive measures to identify the most serious threats. Actions are focused on areas where the City has the greatest potential to effect change, within its jurisdiction and influence.

While the City has many programs, policies, and plans in place to prepare for climate change and extreme weather—including investment in water and wastewater plants to protect critical services, and strong emergency management—more action is needed to manage escalating risks.

Key risks include more frequent flooding that damage homes, roads, and utilities; heat waves that strain health and energy systems; and cascading failures across water, power, and transportation networks. Without early adaptation, costs will rise, services will be disrupted, and there will be heightened vulnerability of communities, particularly low-income and marginalized residents who bear the impacts due to exposure to climate hazards or systemic barriers based on social inequities.

Proactive adaptation reduces costs, safeguards critical services, and strengthens resilience. Extreme weather cost the City more than $35 million between 2017 and 2023. The City has already taken steps to address climate risks to its water and wastewater plants, prioritizing investments in flood protection and back-up power. Additional risk assessments will be completed for remaining critical infrastructure as part of Climate Ready Ottawa. The Ontario Financial Accountability Office projects climate change will add $4.1 billion annually to provincial infrastructure costs. Ottawa's 2025 Asset Management Plans identified that incremental needs to adapt transportation, water, and building assets as part of lifecycle renewal are expected to add an estimated $680 million (2025 dollars) over the next 10 years. Research shows that every dollar invested in proactive adaptation can avoid $13–$15 in recovery costs. Adapting Ottawa's transportation, water, and building assets during lifecycle renewal is estimated to save four per cent or $36 million by 2100.

Climate Ready Ottawa strategy and Five-year action plan

Climate Ready Ottawa sets out long-term objectives for resilient communities, buildings and infrastructure, the natural environment, and extreme weather preparedness and response. It is supported by a five-year action plan that address Ottawa's key climate challenges: safeguarding public health and safety; protecting critical infrastructure and ensuring continuity of services; protecting natural assets; and embedding climate resilience across City policies and planning.

Climate Ready Ottawa provides a coordinated plan to prepare for more frequent and severe climate impacts—protecting residents and critical assets, reducing service disruptions and avoiding higher future costs from emergency response, repairs, and claims. The strategy aims to safeguard community health and safety, building community preparedness, and supporting populations who face disproportionate risks.

The strategy does this by:

- Identifying clear, prioritized actions to address highest remaining risks to lives, property, and critical services
- Enhancing governance and coordination across departments and partners to ensure clear accountabilities, roles, and responsibilities, improving efficiency, and addressing gaps

- Assessing risk and vulnerabilities of remaining critical municipal infrastructure to identify where investments are needed to ensure continued operations and services during extreme weather
- Supporting innovation by testing and piloting new technologies and approaches, identifying cost savings and avoided costs, developing business cases, and integrating the findings into capital planning and operations.
- Scaling up existing programs to see results more quickly, such as in flood preparedness and tree protection and growth.
- Leveraging existing programs and partnerships, to support most at-risk populations
- Serve as the overarching strategy to guide the integration of climate resiliency into updates of City policies and plans

The 2026–2030 five-year action plan focuses on seven priority programs:

1. Flood Preparedness—Reduce flood risks and protect vulnerable neighbourhoods through infrastructure upgrades, community response plans, and community education and support.
2. Cooling Strategy—Expand public cooling features, support heat-vulnerable populations, and integrate cooling in parks, housing, and city-wide planning.
3. Community Climate Preparedness—Equip residents and communities to better respond to adverse effects of climate change, including extreme weather, with localized programs, resilient home initiatives, and support to at-risk populations.
4. Critical Infrastructure Protection—Safeguard essential services such as water and wastewater treatment from flooding and power outages, and identify and address risks to other critical infrastructure to ensure continued services.
5. Climate-Ready Infrastructure—Ensure new and renewed infrastructure is built to withstand climate impacts through enhanced design standards, innovative pilots, and greater integration of nature-based solutions.
6. Tree and Natural Asset Management—Strengthen the urban forest and protect natural assets with targeted planting, maintenance, and erosion control.
7. Extreme Weather Preparedness and Response—Enhance emergency preparedness and response with specialized plans, training, and partnerships to improve resiliency against severe weather events, especially for those most at-risk.

Additional cross-cutting actions integrate climate resiliency into City planning, operations, and budgeting.

Governance and Implementation

Climate Ready Ottawa is a city-wide strategy that embeds climate preparedness across all departments and with community partners. It is a coordinated approach that leverages core competencies and expertise with clear accountabilities, roles, and responsibilities to accelerate implementation and address risks and vulnerabilities facing Ottawa and its residents.

The Strategic Initiatives Department provides overall leadership and accountability, including monitoring and reporting to ensure timely implementation. Multiple departments will lead implementation of specific programs and projects. Performance metrics have been identified to track both strategy delivery and effectiveness. A five-year refresh will be undertaken to ensure the strategy manages new and emerging risks and remains effective over time.

The plan includes $25 million in financial needs over five years, in addition to prioritized support through rate funding for flood and water-related projects and programs. Budget pressures will be brought forward through the annual budget process, starting in 2026, and considered as part of the Tax Supported Long Range Financial Plan (LRFP).

Conclusion

Climate Ready Ottawa marks a significant advancement in the City's approach to planning for and responding to climate risks. Under the leadership of the Strategic Initiatives Department, the strategy reflects a coordinated city-wide commitment to building resilience and proactive climate action.

Climate Ready Ottawa represents the City's commitment to safeguarding its communities, infrastructure, and natural environment. By translating climate projections, risk assessments, public input, and cross-departmental collaboration into a clear framework of action, Climate Ready Ottawa positions Ottawa to adapt to the increasing adverse effects of an already changing climate. At its core, the strategy shifts the City from reacting to climate impacts to a proactive approach that reduces risks to health and safety, protects critical infrastructure, and ensures the continuity of essential services, while strengthening the city's overall resilience and reducing long-term costs.

The strategy identifies concrete measures to address immediate risks and supports prudent longer-term investments using a systematic risk-based approach focused on critical services. This balance allows the City to deliver immediate improvements to address the most pressing risks and generate evidence to prioritize and expand resilience investments over time. By providing a unified framework across departments and collaborating with community partners, interest holders, and residents, Climate Ready Ottawa strengthens the City's collective capacity to build climate resilience and create a safer, healthier, and more climate-resilient Ottawa for the future.

1.0 Introduction

Climate Ready Ottawa is the City's strategy to address the top climate risks facing Ottawa and prepare for a warmer, wetter, and more unpredictable climate.

Climate Ready Ottawa responds to Council's direction to complete a climate vulnerability and risk assessment and develop a climate resiliency strategy to reduce the impacts of a changing climate.

1.1 The need to act now

The Intergovernmental Panel on Climate Change is clear: as global temperatures rise, extreme weather events become more frequent and severe.[1] Rapid, deep emission reductions and faster adaptation are essential this decade to limit risks. The World Meteorological Organization confirmed 2024[2] as the warmest year on record with exceptional ocean heat and greenhouse gas concentrations.[3]

On average, Canada has already warmed about twice as fast as the global rate, with even higher warming in the North.[4] This results in more intense and more frequent heatwaves, wildfires, and flooding. Rising human and economic costs are already evident. The 2021 heat dome caused more than 600 deaths.[5] In 2023, an estimated 15 million hectares burned nationwide, with smoke affecting tens of millions of people.[6]

Ontario's Financial Accountability Office projects that extreme rainfall, heat, and freeze—thaw cycles will add about $4.1 billion per year to public infrastructure costs.[7] Municipalities will bear most of the climate-related infrastructure costs because they manage over 70 per cent of the assets. Proactive adaptation reduces lifecycle costs,

service disruptions, and risk to communities. Environment and Climate Change Canada estimates that every dollar spent on proactive adaptation saves $13 to $15 in avoided recovery costs.[8] Adapting Ottawa's transportation, water, and building assets during lifecycle renewal is estimated to save four per cent or $36 million by 2100[9].

Average annual daily temperatures in Ottawa have risen by more than 1.3°C since the 1940s.[10] In recent years, Ottawa has experienced numerous extreme weather events that have impacted residents, businesses, and municipal infrastructure. These events come with significant service disruptions, financial costs, as well as serious mental and physical health impacts. Ottawa Public Health surveys indicate widespread concern among adults and students: in 2023, nearly half of students in grades 7–12 reported feeling sad or worried about climate change, while about 80 per cent of adults were alarmed or concerned.[11]

The impacts are already visible in Ottawa as floods, heatwaves, severe storms, wildfire smoke, and drought.

Flooding: Severe flooding along the Ottawa River in 2017 and 2019 caused extensive property damage along the river, restricted access to some communities, and threatened access to the Britannia water purification plant. The Chaudière Bridge closed in 2019 disrupting interprovincial transportation and affecting the local economy. Heavy rainfall events have also caused widespread damage. For example, on August 10, 2023, Ottawa received at least 50 mm of rain in just 90 minutes, flooding roads and properties across the city.

Image 1: Sandbagging operations

Image 2: Thermometer

Extreme heat: Heatwaves are now a regular occurrence. In September 2023, a five-day heatwave with humidex values over 40°C led to a peak in heat-related emergency department visits.[12] In July 2025, Environment Canada had already issued the city's fourth heat warning of the summer. The first, in June, recorded the year's hottest temperature at 35.2°C with a humidex of 46°C. By mid-August 2025, Ottawa had already seen 21 days over 30°C this year, nearly double the annual average of 12.[13]

Image 3: Storm damage

Severe storms: Since 2016, Ottawa has experienced multiple tornadoes and extreme wind storms, extended freezing rain events, and extreme flooding. The May 2022 derecho storm was one of the most destructive storms in Canadian history, killing 10 people and causing catastrophic damage to electrical grids, leaving hundreds of thousands without power for days. The storm caused approximately $1 billion dollars in damages in Ontario and Quebec.[14]

Image 4: Wildfire smoke

Wildfire smoke: In June 2023 smoke from northern Ontario and Québec wildfires affected local air quality. Similar impacts were experienced in June and August 2025 when drifting smoke from Western Canada pushed the Air Quality Health Index in Ottawa to 10+.[15]

Ottawa's residents, infrastructure, and services are already experiencing the consequences of a warming climate. Acting now is crucial to protect people, infrastructure, reduce costs, and limit the worsening impacts of climate change. These events come with growing financial, social, and health costs, showing that delayed action will only make the impacts and costs worse.

1.2 A City Council priority

In April 2019, Ottawa City Council declared a climate emergency. The declaration called for city-wide effort to reduce greenhouse gas emissions, prepare for climate impacts, and embed climate considerations into all City decisions.

In 2020, Council approved the Climate Change Master Plan, the City's overarching framework for how Ottawa will both mitigate and adapt to climate change. The Plan outlines two complementary approaches:

Mitigation: reducing greenhouse gas emissions (through initiatives such as Energy Evolution); and

Adaptation: preparing for and responding to the impacts of a changing climate and building climate resiliency across Ottawa.

Council's 2023–2026 Strategic Plan includes "A city that is green and resilient" as one of four strategic priorities. This priority includes adapting to a changing climate and ensuring Ottawa's future liveability.

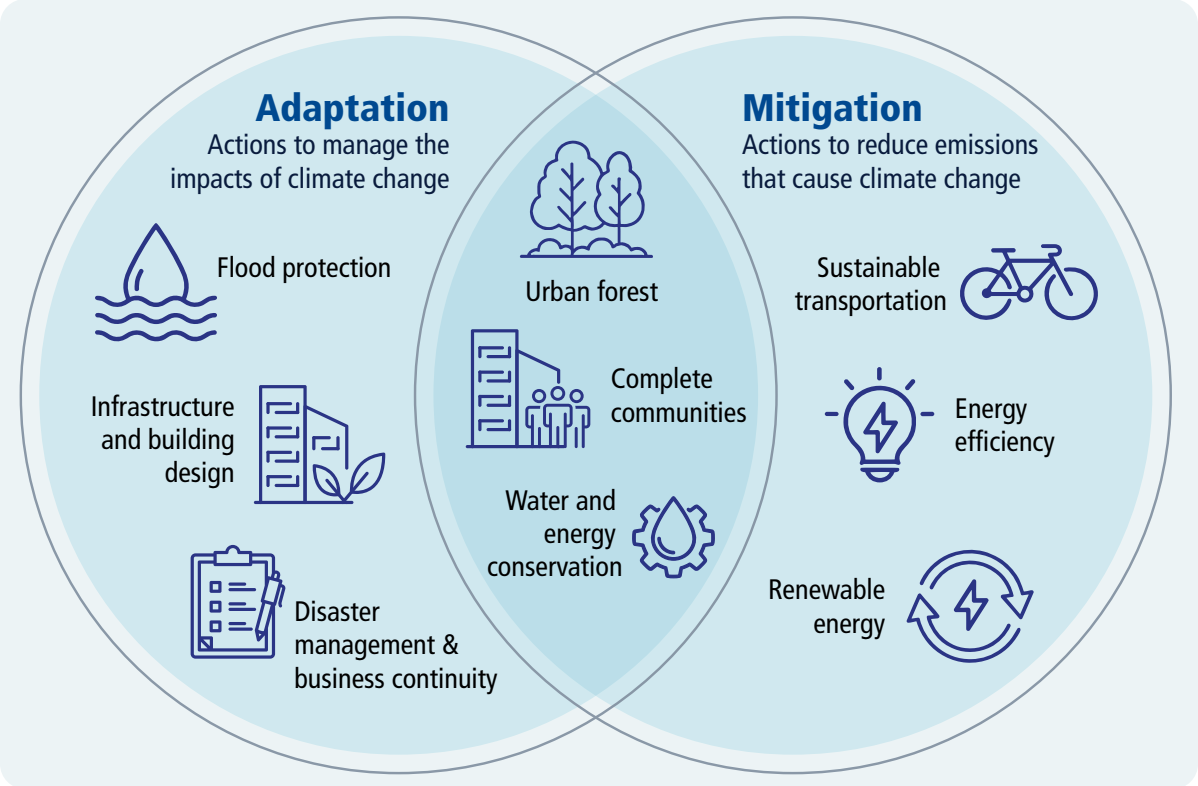


Image 5: Venn diagram of climate adaptation and mitigation

Climate Ready Ottawa advances two Strategic Objectives under this priority:

Strategic Objective 19—
Extreme weather & climate resilience:

- Strengthened community capacity for climate preparedness and emergency response
- Improved the resilience of City's infrastructure
- Responded to extreme weather events

Support Strategic Objective 18—
Grow and preserve the tree canopy:

- Increased tree canopy in neighbourhoods with low tree cover

In April 2024, the City created the Strategic Initiatives department to deliver on Council's top priorities while responding to evolving needs. Climate Change and Resiliency Services leads the City's adaptation and mitigation work, advancing the Climate Change Master Plan, Energy Evolution, Climate Resiliency Strategy, and Urban Forest Management Plan.

Construction worker drinking water on a hot day.

2.0 Climate Ready Ottawa strategic framework

Climate Ready Ottawa is the long-term strategy to prepare Ottawa for changing climate conditions and meet the 2050 goal of a resilient Ottawa. The strategy is supported by a five-year action plan that identifies priority actions for 2026–2030.

Climate Ready Ottawa is a city-wide strategy that embeds climate preparedness throughout the organization and with community partners. It leverages expertise across departments with clear accountabilities, roles, and responsibilities to accelerate implementation and address risks facing the city and its residents.

While the City has taken many steps to prepare for climate change and reduce risks from extreme weather, more action is needed to address the most pressing risks and prepare for the escalating frequency and severity of extreme weather.

Climate Ready Ottawa provides this coordinated plan to protect residents and critical assets, reduce service disruptions, and avoid higher future costs from emergency response, repairs, and claims. The strategy aims to safeguard community health and safety, building community preparedness, and supporting populations who face disproportionate risks.

The strategy will be delivered in collaboration across multiple departments through shared accountability and with partners such as conservation authorities, utilities, community and social service organizations, other government agencies and other partners.

2.1 Vision and principles

Climate Ready Ottawa contributes to the Climate Change Master Plan vision:

"Ottawa takes unprecedented, collective action to transition Ottawa to a clean, renewable, resilient city by 2050."

Applying and equity lens

Not all residents experience climate impacts equally. Climate Ready Ottawa actions prioritize populations and neighbourhoods who are most at-risk. This approach helps ensure that adaptation efforts are inclusive, accessible, and responsive to the diverse needs of Ottawa's communities.

Image 6: Equity lens

Guiding principles:

The strategy is guided by the principles in the Climate Change Master Plan:

- **Responsibility:** everyone has a responsibility to manage energy consumption and mitigate risks
- **Collaboration:** all levels of government, utilities, interest holders, and the broader community, including residents and businesses, must work together to effect change and develop joint solutions
- **Municipal leadership:** the City needs to take a lead role to ensure an integrated and comprehensive approach across the corporation and the community
- **Coordination:** all the City's long-term plans need to be coordinated to ensure a strategic and harmonized approach
- **Equity & inclusion:** all decision-making processes, plans, and actions must incorporate equity and inclusion considerations

2.2 Strategy overview

Climate Ready Ottawa is organized around four interconnected priority areas:

Resilient communities: Supporting residents and communities to be better prepared for climate risks such as increased flooding, extreme heat, and emerging health risks.

Resilient infrastructure: Designing, upgrading and maintaining City buildings, transportation, water systems to withstand changing climate conditions and provide continued services.

Resilient natural environment: Protecting and enhancing trees and natural systems.

Extreme weather preparedness and response: Enhancing Ottawa's readiness to respond to increasingly frequent and severe climate events.

Climate Ready Ottawa includes long-term objectives and short-term actions to address the highest priority risks. Actions focus on all stages of climate risk prevention, mitigation, preparedness, response, and recovery,

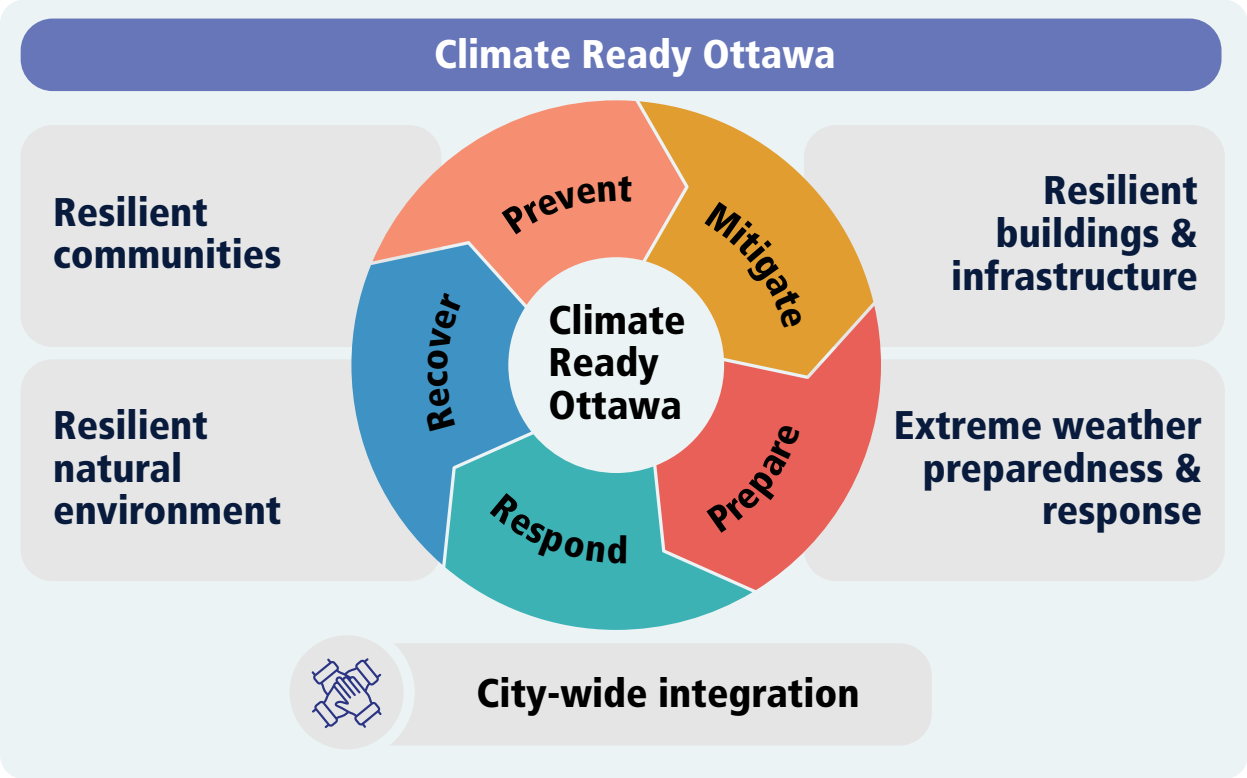


Image 7: Climate Ready Ottawa framework

drawing on the five stages of emergency management (Box 1 below). Additional cross-cutting actions integrate climate resiliency into City planning, operations, and budgeting. Performance metrics have been identified to track both strategy delivery and effectiveness.

The strategy will:

- Identify clear, prioritized actions to address the highest risks to lives, property and critical services.
- Enhance governance and coordination across departments and partners to ensure clear accountabilities, roles, and responsibilities, while prioritizing organization-wide risks rather than department by department. This ensures limited resources are directed toward the greatest risks, improving efficiency and addressing emerging gaps.
- Assess risks to remaining critical municipal infrastructure to prioritize investments for continued operations and services during extreme weather.
- Support innovation by testing and piloting new technologies and approaches, identifying cost savings and avoided costs, developing business cases, and integrating the findings into capital planning and operations.
- Scale up proven programs to see results more quickly, such as programs that reduce flood risks and protect and grow the trees canopy.
- Leverage existing programs and partnerships, for example to support most at-risk populations.
- Serve as the overarching strategy to guide the integration of climate resiliency into updates of City policies and plans.

Collaboration has been essential to the development of Climate Ready Ottawa. The strategy is the result of coordinated efforts across City departments, with input from other public agencies, community organizations, researchers, the business community, and residents. This approach ensures actions are informed by local knowledge, operational expertise, and community priorities inform actions.

Working with partners to integrate climate resiliency into planning, operations, and service delivery remains critical. The strategy will be implemented through a phased approach that aligns with corporate planning and budget cycles, and adopts an agile approach based on changing risks.

The five components of Emergency Management[i]

- **Prevention:** Actions to stop an emergency (e.g., zoning to restrict building in floodplains).
- **Mitigation:** Measures to reduce unavoidable impacts (e.g., berms, building codes).
- **Preparedness:** Planning and training before an event (e.g., emergency response plans).
- **Response:** Emergency services and public assistance during or immediately after an event.
- **Recovery:** The process of restoring an affected community or area to pre-disaster level of functioning. This may include financial assistance, repairing buildings or infrastructure, or environmental restoration.

i Source: A safe, practiced and prepared Ontario—Provincial emergency management action plan. (2023) and An emergency management framework for Canada (2017).

2.3 Five-year action plan

The five-year action plan translates the strategy's long-term objectives into concrete programs and projects that protect people, infrastructure, and services, while minimizing long-term costs. The plan focuses on the most urgent risks, directing targeted investments to protect critical services and populations. It aligns with Council's recent direction in response to the Climate Change Master Plan audit to use a new framework to guide investments in high-impact projects that align with Council priorities. The plan will deliver visible benefits to residents and build the foundation for long-term climate resilience. This includes testing and piloting new approaches and technologies to identify proven, cost-effective solutions. Equity is a guiding consideration. Actions are targeted to address the needs of populations most at risk from climate impacts to ensure no community is left behind.[ii]

Image 8: Climate Ready Ottawa Priority Programs

ii All actions under Climate Ready Ottawa will align with the City of Ottawa's accessibility framework, including the Accessibility for Ontarians with Disabilities Act (2005), the Integrated Accessibility Standards Regulation, 191/11, and the City of Ottawa Accessibility Design Standards. Embedding accessibility into implementation is essential to advancing equity and ensuring that climate actions meet the needs of residents most at risk from climate impacts.

The 2026–2030 five-year action plan focuses on seven priority programs

1. **Flood Preparedness:** Reduce flood risks and protect vulnerable neighbourhoods through infrastructure upgrades, community response plans, and community education and support.
2. **Cooling Strategy:** Expand public cooling features, support heat-vulnerable populations, and integrate cooling in parks, housing, and citywide planning.
3. **Community Climate Preparedness:** Equip residents and communities to better respond to adverse effects of climate change, including extreme weather, with localized programs, resilient home initiatives, and support to at-risk populations.
4. **Critical Infrastructure Protection:** Safeguard essential services such as water and wastewater treatment from flooding and power outages and identify and address risks to other critical infrastructure to ensure continued services during extreme weather.
5. **Climate-Ready Infrastructure:** Ensure new and renewed infrastructure is built to withstand climate impacts through enhanced design standards, innovative pilots, and greater integration of nature-based solutions.
6. **Tree & Natural Asset Management:** Strengthen the urban forest in identified priority areas and protect natural assets with targeted planting, maintenance, and erosion control.
7. **Extreme Weather Preparedness and Response:** Enhance emergency preparedness and response with specialized plans, training, and partnerships to improve resiliency against severe weather events especially for those most at-risk.

3.0 Background: How did we get here?

Climate Ready Ottawa was developed through a three-phase approach—

1. **Climate Projections (2020): Understanding how Ottawa's climate is expected to change over the coming decades**
2. **Climate Vulnerability and Risk Assessment (2022): Identifying the top risks to people, infrastructure, ecosystems, and services**
3. **Strategy development and Plan (2022–2025): Identifying long-term objectives and actions to reduce the top risks and build resiliency**

3.1 Climate projections (2020)

Climate Ready Ottawa is grounded in the latest climate science, drawing on the Climate Projections for the National Capital Region (2020), developed by leading climate scientists for the City of Ottawa and the National Capital Commission, with technical expertise from Environment and Climate Change Canada.

Ottawa's climate has already become warmer, wetter, and more unpredictable. The climate projections show these trends will continue to intensify in the coming decades:

Average annual temperatures are expected to rise by 1.8°C by the 2030s and 3.2°C by the 2050s

- Hot days exceeding 30°C will increase from roughly eleven days per year to 28 days per year in the 2030s and 43 days per year by the 2050s.
- Winters will be four weeks shorter in the 2030s and five weeks shorter in the 2050s, with less snowfall.

- Precipitation will increase in most seasons, with the exception of summer, and there will be more intense rainfall events.
- Extreme weather such as heat waves, ice storms, wildfire and severe winds will become more likely.

The full technical report and data can be found here. These projections align with the findings from the Intergovernmental Panel on Climate Change and Environment and Climate Change's Climate Data Page.

Future Climate in Canada's Capital Region

	What to expect*	2030s	2050s	2080s
Temperature	Average temperature	↑1.8°C	↑3.2°C	↑5.3°C
	Very hot days (above 30°C)	2.5 times more	4 times more	6.5 times more
	Very cold days (below -10°C)	20% less	35% less	63% less
Seasons	Winters shorter by	4 weeks	5 weeks	8 weeks
	Spring earlier by	2 weeks	2 weeks	4 weeks
	Winter freeze-thaw	↑13%	↑33%	↑54%
Precipitation	Fall-winter-spring precipitation	↑5%	↑8%	↑12%
	Intense precipitation	↑5%	↑14%	↑19%
	Snowfall	↓10%	↓20%	↓44%
Extreme events	Increased likelihood of severe winds, ice storms, wildfire smoke, drought and other severe storms			

More certainty / Less certainty

*For a high carbon emission scenario (RCP 8.5)

Image 9: Climate Projections for Ottawa by the 2080s

3.2 Climate Vulnerability and Risk Assessment (2022)

The Climate Vulnerability and Risk Assessment identified 40 high-priority risks to Ottawa across four areas, including public health and community well-being, infrastructure, natural environment, and the economy. The risk assessment examined the risks from both gradual changes, such as shifts in seasonal temperatures, and extreme weather like heat waves, intense rainfall, and severe storms.

The risk assessment found that climate change is expected to have significant health, well-being, safety, and economic impacts. It will lead to increased flooding, property damage, service interruptions, and ecological changes. While climate risks impact everyone, certain populations will be disproportionately affected, including lower-income individuals, people with health or mobility challenges,

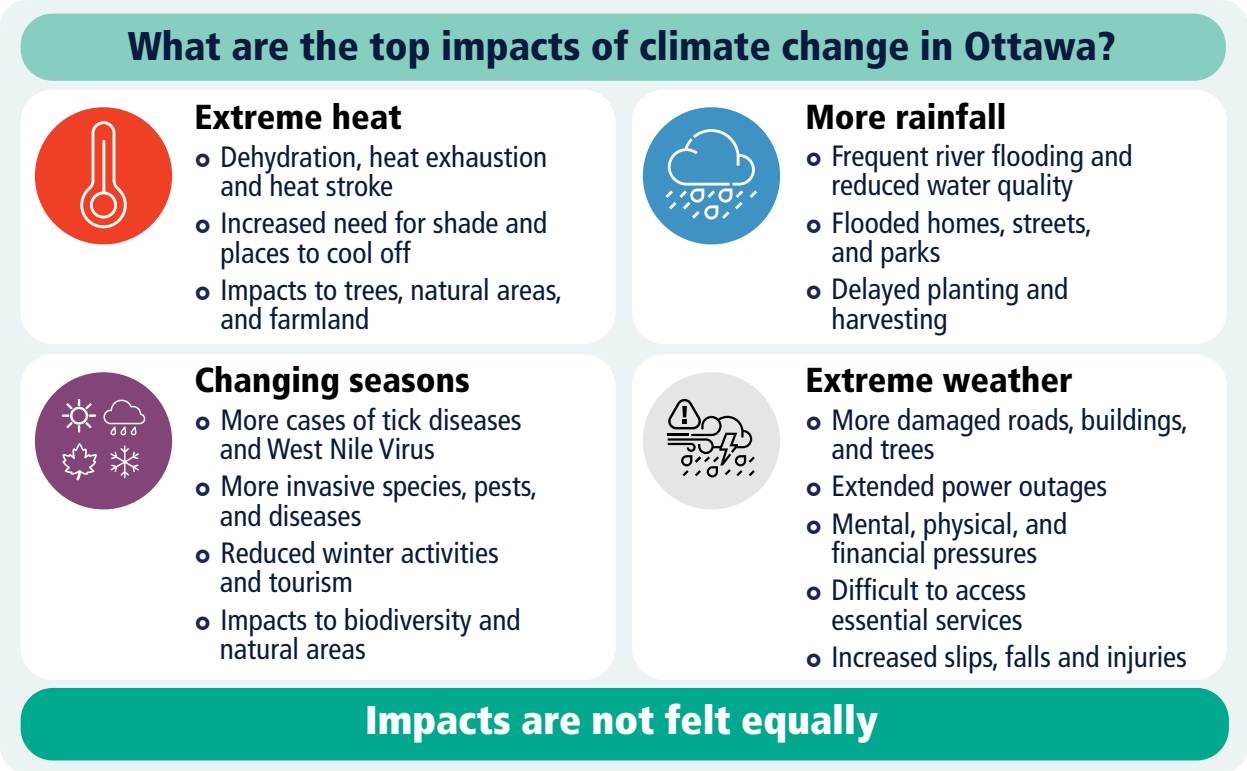


Image 10: Top risks of climate change in Ottawa

residents living in flood-prone areas, and other equity-denied or equity-deserving populations[iii] who face systemic barriers.

The full report can be found on the City of Ottawa website. A summary of risks to can be found in Appendix One.

3.3 Strategy development (2022–2025)

The final phase resulted in a long-term strategy for a climate-resilient Ottawa by 2050, supported by a five-year action plan for priority actions in the short term. The strategy is city-wide, to be implemented across all City departments, and in collaboration with partners including conservation authorities, utilities, and community and social service organizations.

This phase was informed by best practice research and extensive engagement with City departments, internal and external partners, community groups, and residents, on proposed solutions.

Public engagement was central to the strategy's development. From 2022 to 2025, the City conducted a multi-phase engagement to ensure Climate Ready Ottawa reflects community priorities and local knowledge. Activities included:

- Online survey via Engage Ottawa.

iii Please note that the language used to describe marginalized populations from published literature may not reflect how people prefer to be called. We welcome suggestions from the community on language that is inclusive and accurate.

- Open houses (virtual and in-person) to present the draft strategy and gather feedback.
- Webinars, in-person dialogues, and workshops reaching over 90 targeted groups, including Ottawa Public Health's Community Engagement Team, and Ottawa Youth Engagement Committee, to share information and hear from residents about climate impacts and solutions.

The 2023 *As We Heard It* report summarized input from residents who contributed more than 1,000 ideas. This input helped to inform the draft strategy, that was released on Engage Ottawa in March 2024.

Subsequent engagement on the draft strategy generated nearly 500 survey responses. Feedback confirmed strong support for all five proposed areas (Image 11). Respondents prioritized actions with visible, local benefits, especially those addressing extreme heat, flooding, and infrastructure resilience. Participants also expressed readiness to act, but highlighted the need for clear guidance, financial support, and partnerships with community organizations. These findings are consistent with results discussed in the previous 2023 *As We Heard It* report.

Recognizing the importance of engaging diverse audiences, particularly those disproportionately at risk from climate impacts, the City established a Climate Equity Working Group in 2024 with several departments and Ottawa Public Health. Guided by this group, staff carried out targeted outreach in 2025 with organizations serving equity-deserving populations, including ACORN, the Community Development Framework, the Coalition for Community Housing, and the Ottawa Black Coalition. These discussions identified barriers such as cost, limited access to information, and housing constraints, which in turn informed concrete support actions.

The 2025 open house series reinforced earlier feedback, validating the strategy's long-term objectives and confirming strong community support for both City-led action and support for community preparedness. See the 2024–2025 *As We Heard It* report for further details (Document 3).

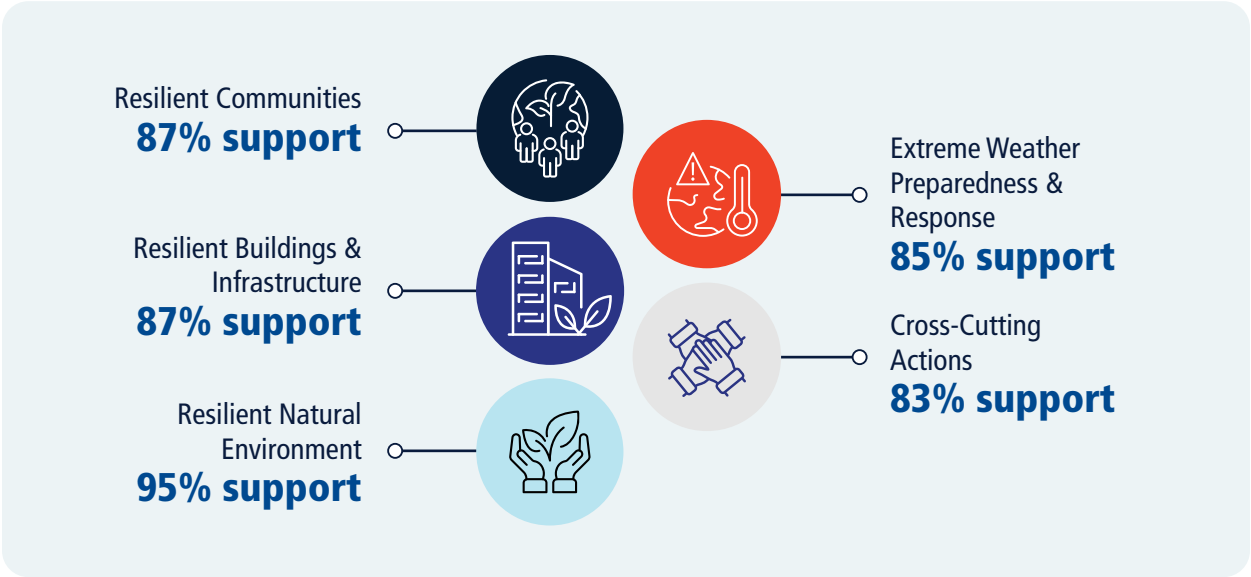


Image 11: Climate Ready Ottawa 2024 survey results

3.4 Early actions to build resiliency

While the strategy was under development, the City began implementing early actions to address urgent risks, build internal capacity, and inform future planning. Examples of these actions included:

Protecting critical infrastructure and services:

- Dedicated risk assessments completed for the drinking water and wastewater treatment plants and priority projects identified
- Detailed flood response plans developed to protect the water purification plants from Ottawa riverine flooding including mobile barriers
- Upgrades to backup power systems at 16 City facilities that serve as emergency reception and lodging sites, and at three fire stations
- Redundant power at the e-bus charging facility

Supporting residents and communities:

- Beat the Heat resources and cooling options
- Public health guidance for illnesses spread by ticks, mosquitoes, and other insects, air quality, and water and food safety
- Expanded homeowner rebates for flood preparedness and water management
- New tree planting and garden programs
- Ottawa Alert: new public notification system
- Revised protocols for emergency food distribution during power outages

Integrating climate resiliency in City planning and programs:

- Updated floodplain maps and flood hazard modeling (with conservation authorities)
- Climate considerations added to the Official Plan and Master Plans, Asset Management Plans, and budget planning
- Updated Urban Forest Management Plan, Tree Protection By-law and tree planting strategies (including equity analysis)
- Climate risks and reduction measures included in corporate risk management

These early actions lay the groundwork for Climate Ready Ottawa's five-year action plan, demonstrating the City's commitment to proactive adaptation and building momentum for the strategy's long-term objectives.

4.0 Climate Ready Ottawa priority areas

The following section presents Climate Ready Ottawa's four priority areas, highlighting the top risks, long-term objectives, and a five-year action plan to strengthen climate resilience across the city.

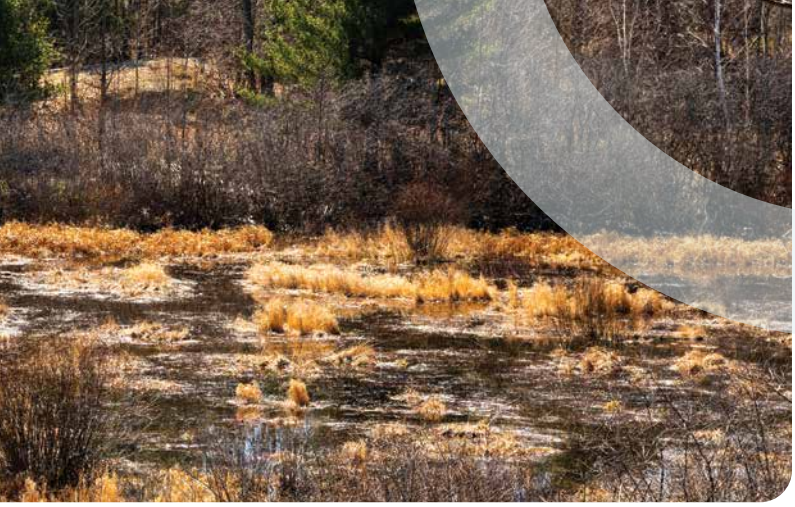
4.1 Resilient Communities

4.1.1 Top risks

Climate change is already impacting community well-being, physical and mental health, and delivery of City services, and will only increase as global and local temperatures rise. Top health risks in Ottawa include increased heat stress and dehydration, diseases like Lyme's and West Nile[16], and poor air quality from wildfire smoke, as experienced in 2023 and 2025. Emergency visits increase during heat warnings and persistent wildfire smoke.[17] Health impacts come with significant financial costs. For example, heat-related deaths in Canada due to climate change are estimated to cost from $3.0 billion to $3.9 billion per year by 2050.[18]

As seasons shift, Ottawa's economy is also at risk, including impacts on local businesses from extreme weather and supply chain disruptions, as well as tourism and agricultural sectors.

Building Ottawa's climate resilience means strengthening the ability of our communities—residents, organizations, institutions and businesses—to prepare for and adapt to changing climate conditions. Municipalities play an important role through public education and policies, and programs that support climate preparedness and adaptation. Building community preparedness not only reduces risks to residents, it also reduces the pressure on social services and emergency response teams.



Building equity is a priority. Climate change disproportionally impacts certain populations due to increased exposure to climate hazards (e.g., spending a lot of time outside or living in areas prone to flooding or wildfire), or because of systemic barriers that mean people may have fewer resources or capacity to adapt. These include, for example, persons living in or near poverty, persons living unhoused, persons with disabilities or health conditions, rural residents, Indigenous peoples, racialized people, immigrants, older adults and children.[19] Climate impacts can worsen financial pressures, livelihood barriers, and food insecurity.[20] For example, climate-related disruptions to global agriculture and supply chains are expected to drive up food prices. Prolonged power outages can also lead to increased spoilage of fresh and frozen foods.

Building resilient communities includes the following long-term objectives:

- Protecting from Extreme Heat
- Preparing for Flooding
- Building Community Capacity to Prepare for Climate Change
- Supporting a Resilient Economy

4.1.2 Long-term objectives

Objective 1: *Protecting from extreme heat*

Over the next few decades, Ottawa will become much hotter and more humid, averaging 43 days above 30°C per year—four times today's frequency—and nighttime temperatures will no longer cool down the city. Extreme heat threatens human health and safety, as seen with the hundreds of deaths during the 2021 heat dome in British Columbia. Heat poses particular danger to older adults, infants and young children, members of racialized groups, people living with chronic illnesses, people living with visible/non-visible disabilities, outdoor workers, Indigenous people, diverse cultural populations, people experiencing homelessness, pregnant people, people living with pre-existing mental illness, and those without air conditioning.[21] These risks intensify in areas with minimal tree canopy and extensive hard surfaces[22] due

Image 12: Splashpad on a hot day (left); Ottawa River flooding (right)

to the urban heat island effect[23] and worsen when wildfire smoke coincides with heat waves. In 2018 and 2020, heat-related hospital visits in Ottawa peaked during heat warnings.[24] Extreme heat can also harm community well-being by forcing people indoors or by causing the cancellation of outdoor programs or activities in community spaces with inadequate air conditioning. This can be especially isolating for low-income individuals, older adults, families, and those living unhoused.

Action is needed to:

- Provide more places to cool in communities with limited options, through shade and water features
- Safeguard priority populations from heat-related health risks

Actions to protect and grow the tree canopy are covered in Resilient Natural Environment.

Objective 2: *Preparing for flooding*

Flooding has become Canada's most costly natural disaster.[25] Climate change is projected to increase the number of events, volume and intensity of rainfall in Ottawa contributing to more frequent and severe riverine flooding and leading to more overland and basement flooding as infrastructure is overwhelmed.[26]

Ottawa has already experienced devastating floods. Severe spring flooding along the Ottawa River in 2017 and 2019—'1 in 50' and '1 in 100 year[iv]' events—affected about 500 households. It cost the City $2.6 million in direct costs in 2017 and led to more than $223 million in insured damages in eastern Ontario and western Quebec.[27]

While the lower Rideau River has not recently seen severe flooding, nine flood vulnerable areas have been identified between Carleton University and the Ottawa River using modeling. During a relatively frequent flood event

iv A 1 in 100 year flood means that a flood having a return period of 100 years on average or having a 1% chance of occurring or being exceeded in any given year. A 1 in 50 year flood has a 50 year return period or 2% chance of occurring in any given year.

(a '1 in 20 year' event), more than 400 homes, one school and 14 commercial buildings (place of business) will be impacted while three neighbourhoods will experience safe access restrictions. During a '1 in 100 year' flood event, more than 900 homes, two schools and 28 commercial buildings will be impacted while six of the neighbourhoods may not have safe access (0.3m or greater flood depth over roads/driveways). During a '1:350 year' storm event, all nine neighbourhoods may not have safe access[28].

Flooding has also resulted from localized intense rainfall. In August 2023, for example, more than 50 mm of rain fell during a 90-minute span. 176 people located in separate areas of the City reported flooded basements[29] with more than $70 million in insured damages[30] and 316 million litres of combined sewage overflowed into the Ottawa River because of overwhelmed stormwater and wastewater systems.[31]

As flood risks increase, insurance companies are increasing rates or altering their coverage, no longer providing insurance to flood-prone homes or not covering flood-related damages.[32] While a national flood insurance program is being explored[33], homeowners need to understand risks to their properties and consider options to floodproof.[v]

While many City programs and planning regulations are in place to reduce the risk of flooding, additional action is needed to:

- Raise public awareness of flood risks and support residents to take action to protect their property
- Build resilience of municipal infrastructure to both riverine flooding and extreme rainfall events and ensure safe access to communities and critical infrastructure

Additional actions to enhance stormwater infrastructure are covered in Resilient Infrastructure.

Objective 3: *Building community capacity to prepare for climate change*

In addition to the heat and flood risks covered above, there is a need to support community climate preparedness more broadly, including for risks from emerging pests and diseases, wildfire smoke, and drought.

Many barriers influence whether people take personal steps to prepare for climate change. These include a lack of information, time or financial resources, overcoming behavioural biases or beliefs, accessibility of the information, and strengthening policies and regulations.

A key step is raising awareness of climate risks and solutions to support residents, agencies, and businesses in taking proactive measures to protect themselves, their homes and buildings, and their communities. This can involve sharing information and best practices, clarifying property owner responsibilities, and providing services and supports to disproportionately at-risk populations. Capacity building can also include enacting

v Waterproofing options can involve any combination of relocating a dwelling outside of the floodplain or elevating the dwelling on the existing footprint out of the flood hazard or using materials or techniques to prevent water from entering (private berms, waterproofing, drainage improvements, sump pump and backup power improvements), as permitted by the local Conservation Authority and Building Code Services.

policies and advocating for regulatory change that supports innovation and creates resilient cities. This includes creating built environments that are accessible, livable, safe, and resilient to climate change through the Official Plan and Master Plans, and associated development review.

Continued and enhanced partnerships are central to building community resilience. This includes working directly with community groups as well as with community development and social service agencies that work with Ottawa's diverse communities to better understand localized climate impacts and work to reduce these risks. A climate lens can also be added to existing community plans, programs and partnerships. For example, working to support food security actions of the Poverty Reduction Strategy and Community Safety and Well Being Plan, recognizing that climate change creates additional pressures including increased food prices and food spoilage during power outages.

Action is needed to:

- Build climate readiness through public education and outreach
- Support communities and their partners to develop and implement their own climate action plans
- Minimize health risks from existing and emerging diseases worsened by climate change
- Strengthen food security due to climate change pressures
- Encourage the resiliency of homes and privately-owned buildings

Objective 4: *Supporting a resilient economy*

The top climate risks to Ottawa's business community include buildings that are not climate-ready (e.g., lack cooling, flood protection, or back-up power), declining tourism (especially in winter), and disruptions due to extreme weather, power outages, and disrupted supply chains. Ottawa's agricultural sector will face stressors as temperatures rise and risk of droughts increase, new pests and diseases emerge, rainfall becomes more variable, and extreme weather events become more frequent or severe. Ottawa's farms are already adapting practices for variable weather conditions, but more will be required.

The City collaborates with economic partners such as Invest Ottawa, Ottawa Tourism, local Business Improvement Areas through its Economic Development Service Area and with the agricultural community through its Rural Affairs and Natural Systems offices. The City supports economic development and adaptation through policies, information sharing, and grants to accelerate adoption of adaptive practices.

Action is needed to:

- Raise awareness of climate risks and mitigation measures to Ottawa's business community and support readiness
- Help adapt key tourism destinations and events based on changing climate conditions
- Support business innovation to address climate change
- Support adaptation of Ottawa's agricultural, food systems and supply chains

4.1.3 Five-year action plan—Resilient Communities

Resilient Communities programs will equip residents to better adapt to climate change and prepare for extreme weather. These initiatives build on a strong foundation of policies, programs, and partnerships, and focus on infrastructure upgrades, public education and outreach, and targeted support for at-risk populations to reduce flood and heat risks, strengthen community preparedness, and build more climate-resilient homes and neighbourhoods.

The five-year action plan is focused on the following priority programs:

- Flood Preparedness Program
- Cooling Strategy
- Community Climate Preparedness

Image 13: Dunrobin tornado clean up (left); Fire hydrant drinking fountain (right)

Flood preparedness program

Proactively reduce flood risks and protect vulnerable neighbourhoods through infrastructure upgrades, community response plans, and public education and outreach

Expected results	• More homes protected during flooding (inland and riverine) • Flood risk mitigation and response plans for high-risk areas for riverine and inland flooding
Lead Departments	Infrastructure and Water Services with Public Works and Conservation Authorities
Estimated investment	• Planned investment: $43.5M in Rate funding over the next five years • New Climate Ready Ottawa needs: $1.25M over five years

Key ongoing projects and programs

- **Wet Weather Implementation Management Plan:** Continue to systematically identify areas at risk due to heavy rainfall events through the flood risk profile to prioritize neighbourhoods and reduce flood risks. Flood risk reduction measures include sewer separation, ditch improvements, maintenance hole sealing, catch basin control devices and others.
- **Floodplain mapping:** Continue to work with conservation authorities to produce and update floodplain mapping for Ottawa's watercourses for regulatory and lower flood return levels.
- **Floodplain restrictions:** Implement the Official Plan policies that prohibit development within the regulatory floodplain, defined by a 1-in-100 flood eventvi, and require all new development in climate flood vulnerable areas to incorporate flood mitigation measures for more extreme riverine flood risks, including up to a 1-in-350-year event.
- **Ditch Alteration and Maintenance:** Continue working with the Ditch Alteration and Maintenance Councillor Sponsors Group to raise public awareness about the roles, responsibilities and polices related to ditch maintenance and re-instatement in both urban and rural areas. Additionally, work toward implementing the recommendations from the Water Rate Structure Review Report including the establishment of a roadside ditch maintenance special area levy in 2027 that will fund additional roadside ditch maintenance works with dedicated funds for ditch maintenance in both rural and urban areas.

vi A 1 in 100 year flood means that a flood having a return period of 100 years on average or having a 1% chance of occurring or being exceeded in any given year. Similarly for 1 in 350 year flood, it has a 350 year return period or 0.29 % chance of occurring.

- **Homeowner support:** Continue to provide the Residential Protective Plumbing, Compassionate Grant, and Rain Ready Ottawa programs that support homeowners with the installation of backwater valves, sump pumps, permeable paving, and other absorbent landscaping, along with support after a basement flooding event due to sewer surcharging.

New programs or projects

- **Integrated community flood preparedness program:** Increase outreach to inform homeowners, tenants, and businesses in areas vulnerable to flooding from heavy rains or riverine flooding on steps that can be taken to prepare for a potential flooding event. Proactively target communities with greater flood risks to improve understanding of the impacts, their responsibilities, and awareness of City programs such as Residential Protective Plumbing, Compassionate Grant, and Rain Ready Ottawa. Mobilize teams to provide tailored, one-stop support to residents after a flooding event.
- **Riverine flood risk management program:** Building on updated floodplain mapping and modeling, conduct flood risk assessments, and develop risk mitigation and response plans for riverine flood vulnerable areas with a focus on the lower Rideau River. This includes an inventory and condition assessment of existing flood control structures, assessment of risks to public infrastructure and communities, and exploration of both flood mitigation (capital projects) and response options (operational plans). Will involve close collaboration across City departments, Rideau Valley Conservation Authority, public agencies (e.g., Parks Canada, National Capital Commission, Carleton University), and impacted homeowners and businesses.
- **Enhanced inland flood mitigation in high-risk neighbourhoods:** Building on the City's Wet Weather Implementation plan and improved ditch maintenance, strengthen flood risk assessment and mitigation plans to address flooding from heavy rains and extreme rainfall events. Identify opportunities to incorporate low impact development (LID) or nature-based solutions to reduce flood risk. Prioritize neighbourhoods with lower socio-economic conditions and equity scores when scheduling flood mitigation and measures during integrated road and sewer renewals. Coordinate with other flood related programs to ensure post-flood resident support is available, especially to basement properties and tenants.

Cooling Strategy

Improve heat resilience by expanding public cooling features, supporting vulnerable populations, and integrating cooling into parks, housing, and citywide planning

Expected results	• More public cooling features • Fewer hospital visits during extreme heat periods • More support to at-risk populations
Lead Departments	Strategic Initiatives with Emergency and Protective Services, Communities and Social Services, Ottawa Public Health, Recreation Cultural and Facility Services, Infrastructure and Water Services
Estimated investment	• Planned investment: $750K over 3 years[vii] • New Climate Ready Ottawa needs: $4M over five years

Key ongoing projects and programs

- **Tree Planting Strategy:** Based on tree equity analysis, accelerate the implementation of the tree planting strategy in prioritized neighbourhoods to enhance the tree canopy and provide shading and cooling in areas with low canopy cover, high urban heat, and lower socio-economic conditions.
- **Hydrant water fountains and bottle fill-stations:** Increase access to accessible water fountains and fill-stations on fire hydrants, especially in high pedestrian traffic and high-density areas. Under the Drinking Water Awareness program, continue the installation of indoor and outdoor bottle-fill drinking water fountains at public-facing, City facilities (e.g., libraries, community centre arenas, and parks).
- **Reduce urban heat island in the built environment:** Implement planning policies in the City's Official Plan to integrate shade, cool surfaces, and other heat-reduction measures into community design plans, secondary plans, urban design plans, and development review processes.

vii Financial Contribution from the Government of Canada to Ottawa Public Health to support misting stations, social housing cooling analysis and targeted education and outreach (until 2028).

- **Extreme Heat, Cold & Air Quality Committee:** Continue to work collaboratively with departments and agencies to develop and implement education and response plans that reduce health impacts due to extreme heat, cold and air quality issues, and supports the most at-risk populations.
- **Air conditioners:** Continue to support eligible low-income residents with air conditioning units through the Ontario Works, Essential Health and Social Supports, and Ontario Renovates programs, subject to funding availability.
- **Parks and Recreation Facilities Master Plan:** Install 35 new splash pads by 2031, taking into consideration equity and urban heat island mapping when selecting locations.

New projects or programs

- **Targeted communications and outreach for those most at risk to extreme heat:** Develop and deliver targeted communications and engagement with an equity-lens to raise awareness of the health risks related to extreme heat, facilitate discussions, and engage and mobilize community partners to increase adoption of actions that reduce these risks in disproportionately impacted populations.
- **Cooling amenities in parks and public realm:** Accelerate the addition of amenities that provide heat relief, such as shade trees and structures, bottle-fill drinking water fountains, misting stations, or air conditioning/ cooling in community recreational buildings, as well as installation or renewal of splash pads and wading pools with a focus on priority neighbourhoods.
- **Hydrant misting station pilot in priority neighbourhoods:** Pilot the seasonal installation of combined drinking water fountains and misting stations connected to fire hydrants in equity-deserving and at-risk neighbourhoods.
- **Cooling options analysis for social housing:** Collaborate with social housing providers to identify and assess options to add long-term cooling in existing buildings. Examine installation, operational and maintenance costs to support housing providers with external funding opportunities.
- **Heat mitigation pilots, policies, and partnerships:** Work across departments to identify and implement proactive measures to reduce heat risks for most at-risk populations. This will include a range of policy and regulatory options, pilot programs and partnerships, including leveraging social housing cooling studies and misting pilots currently underway.

Community Climate Preparedness

Equip residents and communities to better prepare for climate change with localized programs, resilient home initiatives, and support to at-risk populations

Expected results	• Communities better prepared for climate change and extreme weather • More community-led climate action • Proactive support for most at-risk populations • More climate-ready homes
Lead Departments	Strategic Initiatives with Community and Social Services, Ottawa Public Health and Emergency and Protective Services
Estimated investment	• New Climate Ready Ottawa needs: $4.75M over five years

Key ongoing projects

- **Climate-related health communications:** Continue to share educational material on health risks and protection measures from vector-borne diseases, food and water safety, poor air quality, and flooding.
- **Community funding:** Continue to provide existing grant and incentive programs that support individuals and communities to take action on climate preparedness. These existing programs include community environmental grants, residential flood protection and water management, better homes loans, and support to rural communities and businesses. Explore options to enhance these programs to support additional climate resilience actions.
- **Groundwater monitoring and Low water response team:** Continue to monitor water levels and impacts on well drinking water systems through a multi-agency committee including the City, Conservation Authorities and other experts, and raise awareness of water efficiency and risks to private wells. Expand rural groundwater monitoring near rural developments reliant on private wells.
- **Food security:** Continue to support developing, coordinating and implementing food security actions under the Poverty Reduction Strategy and the Community Safety and Well-Being Plan that consider long-term, multi-disciplinary efforts and investments to improve the social determinants of health and increase safety and well-being in the community.

New projects or programs

- **City-wide climate education and outreach:** Building on health-related communications, accelerate and broaden outreach on climate preparedness, through engagement and awareness-raising on climate change trends, risks, and adaption actions, including promotion of programs that help residents prepare for, respond to, and recover from climate change impacts.
- **Community climate preparedness pilot program for priority communities:** Collaborate with community agencies to build knowledge and capacity in disproportionately impacted communities about climate risks and preparedness, and support community-led action.
- **Community emergency preparedness pilot program for extreme weather:** Establish a grant program to support community groups, faith-based organizations, and social service providers to bolster their ability to address future climate emergencies.
- **Resilient Homes Loans pilot program:** Explore expansion of the Better Homes Ottawa Loan program to support homeowners with the installation of additional climate preparedness features in their homes, such as riverine flood protection, reinforced roofing systems, and back-up power during power outages.

Working in partnership: Ottawa Community Housing

Ottawa Community Housing (OCH) invests in projects to improve the energy efficiency and resilience of its housing portfolio. These upgrades involved deep energy retrofits—upgrading mechanical systems to increase efficiency and reduce reliance on greenhouse gas-emitting systems—as well as increasing insulation. By making these changes, OCH enhances tenant comfort, regardless of the outside temperature, and ensures that the existing buildings will be preserved for both current and future tenants. OCH also installed 115 heat pumps in 2024 that reduce electricity bills and offer cooling options to better maintain safe and comfortable indoor temperatures.

OCH has partnered with EnviroCentre and Forêt Capitale Forest, with the support of OCH residents to plant Tiny Forests at five community housing neighbourhoods. These dense plantings of trees, shrubs, and wildflowers enrich urban biodiversity, improve air quality, and create shaded areas to help mitigate the urban heat island effect. These forests were made possible by funding from the Josette Robertson and Joan Johnston Family Foundation Fund—Ottawa Community Foundation.

Beyond physical upgrades, OCH projects serve as valuable case studies, contributing to educational and research opportunities with partners such as local utility companies and post-secondary institutions. By combining energy efficiency, nature-based solutions, and collaborative learning, OCH continues to implement initiatives that reduce housing energy use while supporting its communities to adapt to a changing climate.

4.2 Resilient Infrastructure

4.2.1 Top risks

Climate change is already placing pressures on Ottawa's infrastructure systems — from buildings and roads to water services and parks. Most existing infrastructure was not designed to withstand changing climate conditions, making impacts from extreme heat, heavy rainfall, freeze-thaw cycles, and severe weather increasingly disruptive and costly.

The Financial Accountability Office of Ontario 2023 report projects that without climate adaptation, it will cost an additional $4.1 billion per year (16 per cent increase) to operate and maintain existing public infrastructure in Ontario. Municipalities, which own and manage the majority of this infrastructure, will be responsible for covering most of these additional costs.[34]

The City of Ottawa owns and manages over $90 billion worth of infrastructure assets that deliver a range of services (see Box 2). The City's Asset Management Plans guide decisions on maintenance, renewal, expansion, and risk management.[35]

Protecting critical infrastructure and services is the top priority. The City will prioritize upgrades based on severity of risks with a focus on critical infrastructure. As guided by the Ontario Emergency Management and Civil Protection Act O. Reg 71/22, critical infrastructure includes facilities and systems essential to the functioning and safety of society. This includes, for example, municipal infrastructure for water distribution and wastewater collection and treatment, public safety and security, and continuity of government.

The City has already assessed climate risks to its drinking water purification and wastewater treatment plants and developed prioritized projects to address the most urgent risks (see Early Action highlight below). Climate Ready Ottawa will undertake proactive climate risk assessments for remaining critical infrastructure and recommend prioritized projects to mitigate urgent risks, safeguard service continuity, and avoid higher long-term costs from system failures or emergency repairs. Approximately 230 facilities have been identified including pump stations, emergency reception and lodging sites, fire stations and other assets that support water and wastewater management, public safety and security, and continued government services. Major enhancement projects identified through these risk assessments will be considered as part of Asset Management Plans and annual and long-range capital budgets, or through external funding applications.

The City of Ottawa owns and manages over $90 billion in infrastructure. This includes:

- Over 950 facilities that support everything from recreation, clean water and sanitation to long-term care and emergency response.
- Over 12,700 lane-km of roads, 506 bridges, 228 bridge culverts and 15,000 parking spaces.
- About 2,300 km of sidewalks, 350 km of pathways, 40 km of physically separated cycling facilities, 340 km of on-road bicycle lanes and 11,000 public bicycle parking spaces.
- More than 3,300 km of water mains, 17 pumping stations, 5 reservoirs and more than 23,000 hydrants for the drinking water purification and distribution
- 3,000km of sewers, 55 wastewater pumping stations and more than 92,000 maintenance holes for wastewater collection and treatment
- 169 stormwater ponds, 3,150 km of stormwater pipes and over 8,900 stormwater outfalls and culverts
- 25 O-Train stations and 35.5 km of rail, with an additional 16 stations and 27 km of rail under construction as part of Stage 2 Extension Project.
- Over 700 buses (including 30 e-buses), 29 park-and-ride lots, 80 Para Transpo minibuses, and 22 Transitway stations. An additional 324 e-buses to be delivered through Phase 1 of the Zero Emission Bus program
- Over 187,000 trees, 26,000 hectares of forests, 12,500 hectares of rural greenspace and 3,500 hectares of urban greenspace

In addition to the proactive risk assessments for critical infrastructure, the City will adapt other municipal infrastructure through an incremental approach as part of life cycle renewal. This is a cost-effective means to ensure City roads, sewers, and buildings function in changing climate conditions.

The 2025 Asset Management Plans identify climate-related risks that could impact levels of service and increase costs. Deferring climate investments could result in failing to maintain service levels, higher operating and maintenance costs, or earlier lifecycle renewal. To avoid these risks, climate resiliency must be integrated into infrastructure planning, renewal, and operations, designing to changing climate conditions and embedding the rising costs into financial planning.

Image 14: Climate Ready Ottawa integration

Building on the Financial Accountability Office of Ontario studies, the plans estimate an additional $680 million will be needed over the next 10 years in incremental renewal and operating needs to adapt core City infrastructure to warmer temperatures and more rainfall. Based on a percentage increment, this estimate includes transportation infrastructure (roads, culverts, and bridges), water assets (pipes and pumps) and buildings due for renewal in the next ten years. Proactive adaptation saves long-term costs. Adapting Ottawa's transportation, water and building assets during lifecycle renewal is estimated to save four per cent or $36 million by 2100[36].

These estimates do not include specific projects identified in the dedicated proactive risk assessments of critical infrastructure, since not all critical infrastructure may not be due for renewal in the next 10 years.

They also do not include costs from extreme weather damage such as riverine flooding, severe winds, power outages, smoke, or climate-related operating or renewal costs for parks, trees, and greenspace. Some of these gaps are unknown costs (like extreme weather damage), others require further refinement based on testing in the Ottawa context and upgraded design standards.

Climate Ready Ottawa will take a pragmatic approach to determine prioritized City-wide infrastructure investments by testing new technologies that reduce risks in a cost-effective manner. Cost savings and cost avoidance data will support the business case for resiliency investments for buildings and transportation infrastructure. Upgrades to prepare for changing climate conditions will maintain compliance with accessibility requirements.

4.2.2 Long-term objectives

Building resilient infrastructure includes the following long-term objectives:

- Enhancing the resilience of City infrastructure and services
- Promoting safe, comfortable, and climate-ready transportation networks

Objective 1: *Enhancing the resilience of city infrastructure and services*

Climate change is placing an increasing stress on Ottawa's infrastructure and services—from buildings and transportation systems to water-related infrastructure—creating risks to service delivery, safety, and long-term maintenance and renewal costs.

Buildings are vulnerable to wind, flooding, and ice, and they face increasing energy demands for cooling and back-up power. This is particularly important for City facilities that support public health, emergency response, and social services. Extreme heat, freeze-thaw cycles, and ice can damage roads, pathways, and transit infrastructure, reducing mobility and increasing safety risks. Heavy rains can overwhelm sewer and drainage systems leading to sewer overflows, flooded basements, and streets. In addition, riverine flooding and power outages can disrupt drinking water and wastewater services.

While the City has already taken proactive steps to factor in more rainfall in the design of sewers, other design guidelines need revisiting to ensure infrastructure is built for changing climate conditions.

As described in the Extreme Weather chapter, energy resilience is a growing concern as extreme weather can damage electrical systems causing outages that affect public safety and essential services. A full list of climate risks to infrastructure can be found in Appendix One.

As Ottawa prepares for a changing climate, solutions can be explored that provide multiple benefits. Investments can be aligned to reduce emissions by integrating renewable energy and storage systems, and promote environmental health through nature-based stormwater solutions such as street trees, bioswales, and porous surfaces. These actions will help safeguard essential services, protect public health, and ensure infrastructure meets residents' needs under shifting climate conditions.

To enhance the resilience of municipal infrastructure and services, action is needed to:

- Assess and address climate risks for existing infrastructure, with a focus on critical services.
- Design new facilities and infrastructure systems for changing climate conditions.
- Maintain, renew, and operate existing infrastructure to support its function in future climate conditions.
- Ensure electric transportation systems can operate during extended power outages.
- Protect drinking water sources including communal wells and the Ottawa River

- Retrofit neighborhoods built without adequate stormwater management to better reduce runoff and flooding.
- Integrate nature-based solutions to support multiple benefits.

Objective 2: *Promoting safe, comfortable, and climate-ready transportation networks*

Ottawa's transportation systems must adapt to a changing climate to remain safe, reliable, accessible, and meet modal share targets. Promoting climate-ready networks means protecting infrastructure from extreme weather and ensuring comfortable transit options.

To promote safe, comfortable, and climate-ready transportation networks action is needed to:

- Design and renew transit, active transportation, and road infrastructure to provide shade, shelter, and access to drinking water.
- Clear sidewalks, bike lanes, and other active transportation facilities to support safe and accessible walking, cycling, and transit use.

4.2.3 Five-year action plan—Resilient Infrastructure

Resilient Infrastructure programs focus on designing, maintaining and renewing City buildings, transportation, and water systems to withstand changing climate conditions and provide continued services. Building on early actions taken to protect the drinking water and wastewater plants, the next five years will focus on remaining critical assets and services, including water distribution and wastewater collection and treatment, public safety and security, and continuity of government.

The five-year action plan is focused on two priority programs:

- Critical Infrastructure Protection Program
- Climate-Ready Infrastructure

Critical infrastructure protection program

Safeguard essential services such as water and wastewater treatment from flooding and power outages and identify and address risks to other critical infrastructure to ensure continued services during extreme weather

Expected results	• Water purification and wastewater treatment systems protected from flooding and extended power outages • Continued critical services during climate events
Lead Departments	Infrastructure and Water Services, Transit Services, Recreation Culture and Facility Services, Emergency and Protective Services, Strategic Initiatives
Estimated investment	• Planned investment: $40M in Rate funding over five years • New Climate Ready Ottawa needs: $3.75M over five years

Key ongoing projects:

- **Redundant power** feeds and a backup generator are being installed at the St. Laurent bus facility to ensure continued charging of the electric bus fleet.
- **Energy resilience at Robert O. Pickard Environmental Center (ROPEC):** Upgrade and renew the cogeneration system at the Robert O. Pickard Environmental Centre to produce electricity and heat, serving as a reliable back-up power source. This will help ensure uninterrupted, safe wastewater treatment during extended power outages and strengthen the facility's resilience to future energy disruptions

New projects or programs:

- **Flood protection at water purification plants:** Assess options to upgrade road access to Britannia water purification plant and implement recommendations to ensure safe, year-round road access and continued operation during growing riverine flood risks.
- **Climate risk assessments for critical facilities:** Conduct climate risk screenings and prioritized risk assessments of City facilities that provide critical services. Identify recommended measures to address the highest risks and develop implementation and funding plans to address the most urgent vulnerabilities. Approximately 230 City buildings and facilities have been identified based on provincial regulations on critical infrastructure.
- **Flood risk assessments for critical transportation corridors:** Conduct flood risk assessments and develop mitigation strategies for vulnerable transit corridors and transportation routes, including improving road access in flood-prone communities.

Early action highlight—protecting critical City infrastructure

Britannia and Lemieux Island water purification plants, which provide most of the City's drinking water, were at risk during the 2017 and 2019 spring freshets due to high river levels. High water levels made it difficult to safely access the sites and bring in the chemicals needed to treat the water. In 2019, the Canadian Armed Forces helped with emergency sandbagging to keep the plants running. Climate vulnerability and risk assessments for both plants have been completed to understand the risks from all climate hazards and provide recommendations to build the resilience of the plants. Many recommendations have been implemented, including developing a comprehensive response plan for rising flood levels and the use of moveable flood barriers to maintain operations during spring floods. Additional permanent flood protection measures will be further assessed if needed. A feasibility study is also underway to ensure safe access to the Britannia plant along Cassels Street while protecting the nearby Mud Lake Conservation Area.

These two plants, along with the Robert O. Pickard Environmental Center are among the City's first critical facilities to undergo climate risk assessments. Generators have also been installed at sixteen priority community facilities and three fire stations. In total, 230 additional critical facilities have been identified for the next climate risk assessments.

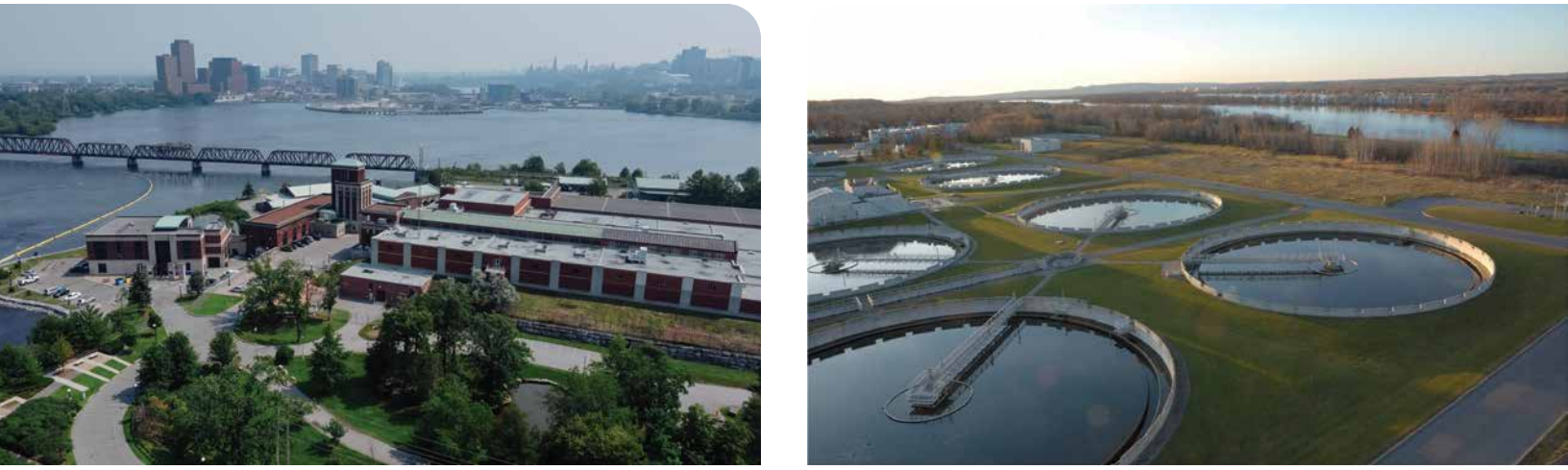


Image 15: Aerial view of Lemieux Island Water Purification Plant (left); Robert O. Pickard Environmental Centre (right)

Climate ready infrastructure

Ensure new and renewed infrastructure is built to withstand climate impacts through enhanced design standards, innovative pilots, and greater integration of nature-based solutions

Expected results	• City infrastructure is built for future climate conditions (new and renewal) • Pilot projects demonstrate climate benefits and savings • Nature-based solutions provide multiple climate benefits
Lead Departments	Infrastructure and Water Services with Strategic Initiatives, Transit Services and Recreation Culture and Facility Services
Estimated investment	• Planned investment: $26M in Rate funding over five years • New Climate Ready Ottawa investment: $5M over five years

Key ongoing projects:

- **Stormwater and Wastewater Master Planning:** Implement the Infrastructure Master Plan policies that direct stormwater and wastewater systems to be designed to manage increased rainfall, and support stormwater retrofit programs to mitigate impacts of stormwater runoff. Implement new policies and programs identified in the Infrastructure Master Plan for onsite stormwater management and intensification capacity management to address the impacts of intensifying development and protect both new infill development and existing neighbourhoods from increased flood risks.
- **Transportation Master Plan:** Implement the new policies that mitigate flood risk, manage additional stormwater, and address the effects of extreme heat for transportation projects, and ensure that maintenance, operations, and new planning and construction are resilient to future climate conditions, subject to available funding.
- **Energy Retrofits to Build Energy Resiliency:** increase energy resilience co-benefits from retrofits of City buildings that integrate renewable energy and reduce emissions and energy costs.

New projects or programs:

- **Resilient Infrastructure Pilot Program:** Identify and test resilient infrastructure solutions through a Climate Ready pilot and renewal program, supporting "like for better" upgrades to parks, facilities, roads, pathways, and other infrastructure. Pilot results will inform capital planning and prioritization processes, supporting long-term infrastructure adaptation. Examples include, heating ventilation and cooling upgrades, wind-resilient roofing, battery storage pilots, and heat and freeze-thaw resilient road and sidewalk materials.

- **Climate-ready Design Standards:** Update key guidelines and technical standards to embed climate adaptation measures into planning and design. Examples include refinements to the Sewer Design Guidelines, Parks Manual, Recreational Facility Infrastructure Standards, and Bus Rapid Transit guidelines. Identify costs and benefits to inform prioritized investments in Asset Management planning.

- **Nature-Based Solutions:** Increase the use of nature-based solutions and stormwater low impact development (LID) strategies to manage stormwater runoff where suitable and strengthen climate resilience. Continue to test and adopt new technologies such as permeable paving and implement based on on-site constraints These 'green infrastructure' projects—such as bioswales, rain gardens, tree trenches and permeable surfaces— can improve water quality, reduce stormwater runoff, mitigate heat impacts, and support biodiversity.

Image 16: Several potholes are seen on an asphalt road (left) and a newly installed rain garden (right)

Working in partnership: Resilient residential retrofit initiative

The City of Ottawa is participating in the National Research Council of Canada's Resilient Residential Retrofit (R^3) initiative to make homes and communities more prepared for climate change. R^3 is helping inform and update the national building code and other standards and guidelines, by conducting pilot projects and engaging in partnerships. The end result is to help protect people from flooding, wildfire, extreme heat, strong winds, and smoke. By sharing knowledge across industry, government, and insurers, the city is providing input and collaborating to reduce risks to lives, property, and finances, especially for vulnerable communities. The collaboration will also help guide smarter climate funding programs, ensuring investments go where they have the greatest impact in building a safer, more resilient future.

4.3 Resilient natural environment

4.3.1 Top risks

Ottawa's natural environment is as essential to the city's function and livability as its roads and sewers. Sometimes referred to as natural assets, trees, wooded areas, creeks, rivers and other greenspaces provide shade, cleaner air and water, reduce flooding risk, and provide habitat for wildlife, while also offering space for relaxation, cultural gatherings, and improved mental health.

Trees and natural areas are impacted by extreme heat, fluctuating temperatures and drought. Extreme weather events are a major concern (see Appendix one for a full list of risks). Tens of thousands of trees in Ottawa were damaged during recent tornadoes, the derecho and other wind events, and ice storms.

Changes to local and global climates are also causing significant shifts to ecosystems and migratory patterns, increasing the spread of diseases, pests, and invasive species. These changes can have significant and costly impacts. For example, the Emerald Ash Borer destroyed more than 20% of Ottawa's forest cover between 2008 and 2017. In addition to the rising health costs from diseases, an estimated $50 million is spent annually by Ontario municipalities and conservation authorities to manage invasive species.[37] As the elimination of invasive species is an impossible objective, efforts will need to focus on species that cause the most harm to human and ecosystem health.

This priority area focuses both on adapting the planning and management of trees and natural spaces to a changing climate, and the need to protect and grow trees and natural areas for the ecological services and protection that they provide for communities.

Image 17: Damaged trees due to wind and ice

4.3.2 Long-term objectives

Building a resilient natural environment includes the following objectives:

- Protecting, maintaining, and enhancing tree canopy
- Protecting and enhancing wetlands, watercourses, groundwater and other greenspaces

Objective 1: *Protecting, maintaining, and enhancing tree canopy*

The City maintains more than 300,000 individual trees in parks and along streets, and 10,000 Ha of forested areas.[38] Even more trees grow on private property. Recognizing the significant environmental and health benefits of trees, the City has a target of 40 per cent canopy cover city-wide.[39] With the acceleration of climate change, trees are at risk from drought, fires, storms, invasive species, and pests, all of which can have cascading impacts to the broader community.

Action is needed to:

- Grow Ottawa's tree canopy in line with canopy targets.
- Expand tree maintenance operations to reflect changing climate conditions and improve recovery after extreme weather events.
- Reflect the climate and health benefits of trees in plans and programs.
- Protect tree and forest health from emerging pests, diseases, and wildfire risks.

Objective 2: *Protecting and enhancing natural heritage and other greenspace*

Ottawa's natural heritage is comprised of a complex system of wetlands, groundwater features, forests, four major rivers and hundreds of tributaries. Ottawa's Official Plan identifies a connected Natural Heritage System of core natural areas and natural linkages, along with protective planning policies. In addition to acting as important habitat for aquatic and terrestrial wildlife, these areas provide important physical, social, and mental health benefits, as well as drinking water, drainage, and flood mitigation functions. The increase frequency of low water conditions, accelerated spread of invasive species, increased runoff from increased precipitation and urban development, and extreme weather events are placing wetlands, watercourses and greenspaces under significant stress, resulting in a loss of important ecosystem goods (e.g., fresh water) and services (e.g., carbon sequestration).

Action is needed to:

- Protect the climate and health benefits of natural heritage and greenspaces through acquisition, restoration, and stewardship.

- Manage urban watercourses and valleys to reduce risk of erosion and slope destabilization.
- Raise public awareness of the health and climate benefits of wetlands, watercourses and greenspace, and support community stewardship.
- Protect groundwater aquifers from low water conditions.
- Ensure equitable access to parks and greenspace.

4.3.3 Five-year action plan—Natural environment

Actions under Natural environment protect and enhance trees and natural systems from changing climate conditions. Building on existing initiatives such as the Urban Forest Management Plan, these programs focus on improving resilience to drought, fire, wind, ice, and disease, minimizing risks from falling trees and wildland fire, and managing erosion on unstable slopes.

The five-year action plan is focused on the following priority program:

Tree and Natural Asset Management program

Strengthen the urban forest and protect natural assets with targeted planting, maintenance, and erosion control

Expected results	• Increased tree canopy in priority areas identified through the Tree Equity Score Analysis • Improved resilience of trees and forests to drought, fire, wind, ice, and diseases • Less damage / risks due to falling trees • Reduced risks of erosion and unstable slopes
Lead Departments	Public Works, Infrastructure and Water Services and Strategic Initiatives
Estimated investment	• Planned investment: $40M in Rate funding over the next five years • New Climate Ready Ottawa needs: $3.25M over five years

Key ongoing projects:

- **Urban Forest Management Plan:** Continue implementing the City's Urban Forest Management Plan to protect and improve the urban tree canopy, including the development and implementation of the Tree Planting Strategy, tree equity analysis, and enhanced zoning requirements to ensure suitable conditions for new trees.
- **Natural Heritage program:** Continue acquisition, restoration, and stewardship of natural areas to protect and connect forests, wetlands, and watercourses, and ensure equitable access to quality greenspace.
- **Environmental stewardship:** Support programs such as Greening Public Lands, Forestry Stewardship, and Community Environmental Projects Grant Program, as well as Conservation Authority partnership programs such as Ottawa Rural Clean Water Program and Green Acres to enable community-led action to foster environmental sustainability and stewardship.

New projects or programs:

- **Tree canopy in priority areas:** Accelerate implementation of the Tree Planting Strategy to increase canopy cover and support recovery after extreme weather. Focus on neighbourhoods identified through Tree Equity Score Analysis.
- **Wildland fire risk:** Complete a wildland fire risk assessment to identify forests and other natural areas most at risk to fire and develop a mitigation plan to address those risks.
- **Forest Health:** Establish a forest health management program to monitor and manage impacts from emerging pests and disease and support safe tree removal and forest recovery efforts after extreme weather events.
- **Proactive tree maintenance:** Accelerate the proactive tree maintenance program to enhance resilience to drought, winds, and severe weather events.
- **Tree and greenspace valuation and condition assessment:** Update tree valuation and condition assessments to inform updates to the Greenspace and Forest Asset Management Plan.
- **Natural hazards management program:** Work in partnership with Conservation authorities to develop a program to identify and address unstable slopes and erosion concerns in watercourses and associated ravines and raise public awareness of risks to private property.

Working in partnership: Conservation Authorities

The Rideau Valley, South Nation, and Mississippi Valley Conservation Authorities further the conservation, restoration, development, and management of natural resources in Ottawa's watersheds. Many of these programs are funded by the City for properties within City boundaries. Their programs support environmental monitoring and reporting, restoration and stewardship, conservation lands and education, development review and approval, and flood forecasting and warning, including for example:

- Tree planting and recovery programs such as Green Acres and Woodlot Storm Recovery
- Watercourse stewardship programs such as Streamwatch, Shoreline Naturalization and Ottawa Rural Clean Water
- Wetland restoration projects such as Stillwater wetland in Nepean, as well as erosion control and natural hazard protection initiatives
- Manage risks by regulating development in flood prone areas and hazard lands and provide technical advice to promote proper land-use planning and to protect lives and properties

Other organizations like Ducks Unlimited, The Nature Conservancy of Canada, Alternative Land Use Services and local "Friends of" groups play a key role in supporting the acquisition and stewardship of wetlands and other natural areas, as well as promoting sustainable agricultural and land-use practices.

4.4 Extreme weather preparedness and response

4.4.1 Top risks

Over the past decade, Ottawa has experienced multiple extreme weather events, including riverine flooding (2017, 2019, 2023), intense rainfall (2023), tornadoes (2018, 2019, 2023), derecho (2022), ice storms (2023), low water conditions (2025) and poor air quality due to wildfire smoke (2023, 2025). In addition to property damage and health impacts, these events placed huge financial strain on communities and City services. From 2017 to 2023, extreme weather response and recovery cost the City more than $35 million.[40]

Rising costs of extreme weather—The May 2022 Derecho

More than 1,000 City staff and partners supported the response and recovery to the May 2022 derecho with an estimated $24.1 million in incremental costs to the City.[41] These costs covered a wide range of emergency and recovery operations, including ensuring residents safety, tree and debris removal, waste disposal, repairs to traffic lights, park cleanup, operation of community support centres and restoration of damaged city buildings.[42] That storm toppled transmission towers, damaged more than 400 poles and left 180,000 customers in Ottawa without power, some for almost two weeks.[43] It ranks as the sixth-largest insured loss event in Canadian history.[44]

Climate models predict that Ottawa will experience an increase in both the frequency and severity of extreme weather events, as well as prolonged heat waves and drought. Extreme weather will directly impact Ottawa's communities, exacerbating many of the inequities that are already present, and place a greater strain on community resources, City operations, and emergency services. Prolonged power outages impact everyone, but are especially devastating for people with disabilities, those who are dependent on power for medical devices, or people with limited resources to replace spoiled food.

Image 18: Aerial view of tornado damage (left); Emergency services sand bagging (right)

4.4.2 Long-term objectives

Building resilience to extreme weather includes the following long-term objectives:

- Preparing for more frequent and severe extreme weather events
- Building community capacity to prepare and respond
- Supporting the most vulnerable
- Working with external partners to prepare for power outages

Objective 1: *Preparing for more frequent and severe extreme weather events*

While the risks and consequences of climate change cannot be reduced to zero, the City can bolster its preparedness and response mechanisms to reduce the extent of impacts and shorten recovery times.

Action is needed to:

- Update emergency response plans and develop tools to prepare for increased frequency and severity of extreme weather events.
- Expand and diversify resources to respond to extreme weather events.
- Equip critical City facilities to serve as emergency reception centers.

Objective 2: *Building community capacity to prepare and respond*

Ottawa's ability to withstand climate events is not only dependent upon adequate City services, but also on whether residents, communities, and businesses have mechanisms in place to cope and recover quickly.

Action is needed to:

- Enhance public and business community education and outreach on extreme weather preparedness.
- Strengthen community-led action on extreme weather preparedness.
- Build a diverse network of community-based hubs to support residents during extreme weather.

Objective 3: *Supporting the most vulnerable*

While many people in Ottawa will be impacted by extreme weather, certain populations are more vulnerable to climate hazards as they are less able to prepare for, respond to, or recover from extreme weather events. Social, environmental, and economic factors such as poverty, racial discrimination, access to healthcare and insurance, inequitable care burden, and inadequate social support systems all contribute to who is more at risk during extreme weather events. For example, populations more at risk may live in apartments without cooling or back-up power, in basements that flood, or in poorly built housing that cannot withstand

extreme weather, or live unhoused requiring community outreach. These individuals typically include older adults, persons with disabilities, persons living in or near poverty, racialized people, Indigenous people, rural residents, immigrants, women and single parents, or people who are isolated.

Impacts can be multiplied. During the 2022 derecho, for example, some people lost power for up to two weeks. This was especially difficult for people with mobility challenges, particularly those in high-rise buildings where elevator outages left them unable to leave their units, and for those reliant on medical devices that could not function without electricity. This was often compounded by limited financial resources or a strong social support network.

Increasing the resilience of disproportionately at-risk populations will require a range of actions that factor in equity considerations. It will require collaboration with many partners, including social service agencies, property owners or building managers, and other levels of government.

Action is needed to:

- Ensure priority and at-risk populations are supported before, during and after extreme weather events.
- Support priority and at-risk populations to access resources from other levels of government to manage and recover from extreme weather events.

Objective 4: *Working with external partners to prepare for power outages*

As extreme weather events increase, power outages are expected to become more frequent and longer in duration. This can result in loss of perishable foods, stranding of people in multi-storey buildings, and increased incidences of carbon monoxide poisoning or house fires due to unsafe heating and cooking (e.g., using BBQs and portable generators inside). People who depend on power for medical devices, mobility, or communication are particularly at risk. To reduce these risks the City will continue to work with various levels of government as well as utility partners, housing providers and other interest holders to advance a multi-partner approach to understand and manage vulnerabilities.

Action is needed to:

- Improve the resiliency of our electrical grid.
- Enhance power restoration to critical community services and at-risk populations.
- Improve multi-modal communications during an outage.
- Advocate for greater support to residents in multi-storey buildings or congregate care settings (long-term care or retirement homes) to shelter in place during power outages.

Extreme Weather Preparedness and Response Program

Enhance emergency preparedness and response with specialized plans, training, and partnerships to improve resiliency against severe weather events while supporting those most at-risk

Expected results	• Enhanced response and recovery to extreme weather events • Expanded partnerships for extreme weather response • Fewer emergency visits during extreme weather
Lead Departments	Emergency and Protective Services, Public Works, & Recreation, Cultural and Facility Services with Ottawa Public Health and Community and Social Services
Estimated investment	• New Climate Ready Ottawa needs: $3M over five years

4.4.3 Five-year action plan—Extreme weather

Extreme Weather programs aim to strengthen Ottawa's readiness to prepare for and respond to increasingly frequent and severe weather events. While the City has a robust Emergency Plan, these initiatives will enhance operational plans, expand training, and build partnerships with the private sector and community organizations to support at-risk populations. By investing in emergency infrastructure, agile response capabilities, the City is improving its capacity to respond quickly, reduce impacts, and help residents and communities better prepare for extreme weather.

Key ongoing projects:

- **Spring freshest task force:** Continue the City-led inter-agency team that monitors and responds to riverine water levels each spring and proactively supports residents and businesses before, during, and after riverine flooding.
- **Backup generators** are being procured for four remaining priority community and recreation centres and three fire stations to maintain service during extended power outages.
- **Extreme heat, cold and air quality committee:** Continue the City-led inter-agency committee that monitors extreme heat, cold, and air quality events that impact public health and coordinate response through communications, outreach, and support to most at-risk populations.

- **Public education:** Enhance public and business outreach on how to prepare for extreme weather events and power outages through enhanced notification systems (Ottawa Alert), as well as the Community Emergency Tool Kit that provides guidance to community organizations to develop their own community emergency plans.
- **Emergency food distribution protocol:** Continue collaboration with the Ottawa Food Bank and other partners to strengthen ways to build food security and protect local emergency food access during extreme weather events and power outages.

New programs or projects:

- **Build mobile generator fleet for agile response to power outages:** Expand the fleet of mobile generators that can be quickly dispatched to various facilities or critical infrastructure during power outages. This offers a flexible response to local needs to maintain critical operations and services during extreme weather, protect vulnerable populations, and reduce pressures on emergency response services.
- **Extreme weather operational plans, analysis, and training:** Establish dedicated resources to prepare for and coordinate operational preparedness and response to extreme weather events. Improve data collection and analysis, update Continuity of Operations Plans, enhance staff training, and acquire specialized equipment.
- **Enhance emergency preparedness for top climate hazards:** Conduct a full-scale exercise for top climate hazards that includes community partners. Continue to update emergency telecommunications and secure priority emergency response equipment to more effectively respond to extreme weather emergencies.
- **Extreme weather partnership program:** Cultivate and coordinate support from private sector and non-profit partners to champion preparedness, response, and recovery during extreme weather events. A Public-private partnership approach strengthens the City's ability to support diverse populations closer to where they live as extreme weather events become more severe or frequent.
- **Back-up home battery pilot program for medical devices:** Work with partners to develop and test a pilot program that provides back-up batteries for medical devices to support at-risk populations during power outages and reduce pressures on emergency response services.

Working in partnership: Hydro Ottawa climate adaptation plan

Hydro Ottawa provides electricity to the majority of the City of Ottawa, serving over 360,000 residences and businesses, through overhead and underground distribution. Hydro Ottawa developed a Climate Adaptation Plan in 2019, which identified and addressed risks and vulnerabilities in its service delivery. The plan addressed health and safety, future asset planning, improving current operations and maintenance, and understanding and implementing standards for future weather conditions.

Specific actions to build climate resiliency include:

- Strategically undergrounding vulnerable overhead lines and station egress points and relocating specific lines.
- Utilizing satellite imaging to monitor tree growth and maintenance for better-informed vegetation management.
- Reinforcing the pole line system by installing composite poles and additional guying and anchoring to prevent damage from high winds.
- Updating its Business Continuity Management program and emergency response plan to prepare for large-scale, long-duration events.
- Enabling customer alerts for unplanned outages via email and text message and improving outage reporting options.

Hydro Ottawa has recently reviewed its climate risk assessment and adaptation plan based on lessons from recent extreme weather events to continue to support its customers.

Image 18: Fallen power lines and light stands (left); Tree trimming (right)

5.0 Governance, implementation, and integration

This chapter outlines the proposed governance, monitoring and reporting, and resource needs to support the implementation of the Climate Ready Ottawa strategy and its five-year action plan. It also outlines how climate resiliency will continue to be integrated in City planning and decision-making processes.

5.1 Governance and accountability

Climate Ready Ottawa will be implemented through a distributed leadership approach that shares responsibilities across City departments, engages and builds partnerships, and creates conditions for residents to take action.

The Strategic Initiatives Department—Climate Change and Resiliency Services will provide overall leadership and accountability, including coordination, monitoring, and reporting to ensure timely implementation. Multiple departments will lead implementation of specific programs and projects and integrate climate adaptation across service delivery and work planning. SI will ensure alignment with the Climate Change Master Plan, and enable coordination, learning, and knowledge sharing across departments.

The Climate Change Master Plan provides the overarching governance and reporting framework for all City climate initiatives. It includes the following key bodies:

- **Climate Change Executive Steering Committee:** Provides strategic direction on climate related initiatives. It consists of the City's Senior Leadership Team and the Chief Medical Officer of Health.

- **Climate Change Council Sponsor's Group:** Advises on how climate change risks, acts as a sounding board as staff advance new policies and programs based on Council direction, and opportunities intersect with Committee and Council priorities, and champions climate change initiatives to Council.

A further governance and accountability framework is being established for the climate change portfolio by the end of 2025 in response to recommendations from the Climate Change Master Plan audit. The framework will assign accountability, roles, and responsibilities for climate change projects across the organization. It will propose additional governance bodies, including a leadership working group across all departments to advance and coordinate climate change initiatives. It also proposes an external working group with community partners, organizations, businesses, and institutional partners. This group will bring together strategic partners to pool resources, coordinate efforts, and drive community-based climate action focusing on priority actions for both climate mitigation and adaptation as identified in the response to the Climate Change Master Plan audit. This targeted approach will help concentrate collective efforts on initiatives with the greatest potential to enhance community preparedness and advance Climate Change Master Plan targets.

5.2 Implementation and prioritization

The strategy provides a coordinated plan to prepare for more frequent and severe climate impacts, reduce service disruptions, protect critical assets, and avoid higher future costs. It also safeguards long-term community well-being and economic stability. Implementation will help maintain service reliability, protect vulnerable residents, and strengthen investor and insurer confidence—ensuring Ottawa remains a safe, livable, and competitive city despite a changing climate.

Long-term objectives to 2050 and priorities for the five-year action plan were established in response to the City's 2022–2026 Strategic Plan and focus on critical gaps to address Ottawa's top climate risks. Specific Climate Ready Ottawa projects will be developed and implemented by departments in accordance with this strategy and through corporate planning and budget processes.

The Climate Change Master Plan prioritization framework will be used to guide the selection of projects to be funded with CCMP resources. Presented to City Council in September 2025 as part of the response to the CCMP audit, the framework identifies criteria to prioritize City investment in climate initiatives based on impact, reach, effort, and confidence. This ensures that annual funding allocation continues to address top Council priorities.

Climate Ready Ottawa provides the overarching strategy to guide integration of climate preparedness into all City plans, including updates to the Official Plan, Master Plans, Asset Management Plans and Long-Range Financial Plans.

Implementation of the strategy will be through an adaptive approach. Demonstration projects and pilot programs create the space for innovation, learning, and continuous improvement. Lessons from these projects will be integrated into City planning and policies, as highlighted in the next section. This marks a shift from project-by-project approaches toward a coordinated and strategic system for setting priorities, monitoring outcomes, and adapting to new risks.

5.3 Integration into City planning and decision-making

In addition to the priority programs outlined in the previous sections, staff will continue to embed climate resilience into major City plans, policies, and processes, and build capacity of departments to lead this work. This builds on efforts in recent years to consider climate preparedness and risk mitigation in the Official Plan, Transportation Master Plan, Infrastructure Master Plan, and Asset Management Plans. A climate lens has also been applied to the annual capital budget since 2023, and corporate risk management.

Next steps in the adoption of a climate resiliency lens include:

- Continued integration in master plan and asset management planning, including capital project planning and prioritization processes, and relevant policies. This will include continued testing of adaptation technologies for the Ottawa context, and refinement of adaptation costs based on best practices, local pilots, and feasibility assessments. And continued improvement of climate-related knowledge gaps, such as the value of climate benefits from natural assets.
- Continued reporting of climate implications in key reports to Committee and Council to demonstrate how projects are preparing for changing climate conditions.
- Continued integration in annual and long-range budgets, to highlight planned investments in capital projects that build resiliency and expanding to track completed investments.
- Continuing to work with finance and all departments to identify and prioritize necessary long-term capital and operational funding to protect critical assets, services, and populations, and explore innovative funding options.

- Continued integration in corporate risk management practices, including sharing of risk reduction strategies across departments, and disclosure of climate-related financial risks.
- Enhanced capacity building of staff across departments through training, and data and knowledge sharing.
- Enhanced public data sharing including through public dashboards and Open Data.

5.4 Monitoring, evaluation, reporting, and renewal

A monitoring and evaluation plan with a suite of indicators helps staff, Council, and the community track progress and see whether projects are contributing to long-term results. It also helps communicate changing climate conditions, the associated climate risks, and the rationale for adaptive measures.

Monitoring and evaluation will focus on measuring both project delivery ("*Are we doing things right/well?*") and strategic effectiveness, ("*Are we doing the right things?*"). This will show if the projects and programs are being implemented as planned and if the plan is achieving its intended outcomes.

The set of indicators included in this report will be refined as part of adaptive management that adjusts and refines actions as projects advance and draws from lessons learned.

Performance metrics have been identified to track strategy delivery, effectiveness, and external conditions. These measures look at three things:

- **Output indicators (what we've done):** What projects or actions have we delivered or implemented?
- **Outcome indicators (what's changing):** Are these projects reaching desired goals for making the city and residents more prepared for climate change?
- **External trends (what's happening around us):** How is the climate changing, what extreme weather has happened, and what social or economic changes could affect our results?

Further details on the Climate Ready Ottawa indicators are available in Appendix three.

Staff will report on progress, including project status and delivery indicators, as part of annual reporting of the Climate Change Master Plan. Departments may also bring separate reports on key projects and programs to appropriate committees. Progress will be shared through Ottawa.ca as well as on-line "dashboard."

A review of Climate Ready Ottawa will be completed in five years and will include progress on long-term objectives (outcome indicators) and consideration of external trends. This review will inform recommendations for the next five-year action plan and future updates of the Climate Change Master Plan.

5.5 Budget and funding strategy

Building Ottawa's climate resiliency will require significant investment to support both immediate and long-term actions. The City cannot fund this alone. Investment must be shared across multiple parties and partners, individuals, organizations, the private sector, and other government agencies.

City investment will be strategic and prioritized. It will reduce immediate known risks through concrete projects and programs, undertake more refined risk assessments in areas of exposure, such as Rideau River flood areas and remaining critical infrastructure, and build community climate preparedness to reduce pressures on strained City services. A key focus will be to identify investments that optimize benefits, reduce long-term costs, and position the City to secure external funding.

Any major infrastructure investments identified in the next risks assessments will be considered in Asset Management Plans and capital budgets, while long-term operational costs will need to be covered through departmental budgets. Staff will continue to pursue external funding opportunities through private sector partnerships and grant applications. In recent years, the City was awarded just under $1 million for successful grant applications to the Federation of Canadian Municipalities Local Leadership in Climate Adaptation program to support feasibility studies to ensure safe access during floods, risk assessments for critical infrastructure, and a permeable paving demonstration project. Ottawa Public Health also secured $750,000 from Health Canada to advance collaborative projects that reduce health risks from extreme heat. Staff will also continue to support Mayor and Council to discuss critical funding gaps with other partners and levels of government. In addition, the plan will explore innovative funding mechanisms to enable further municipal action and catalyze community climate resiliency.

Climate Ready Ottawa identifies $25 million in financial needs over the next five years alongside prioritized Rate funding for flood and water-related projects and programs, as outlined in the following table. Climate Ready Ottawa investments will address critical gaps and accelerate action. It will support demonstration projects, pilot programs, feasibility studies and plans to identify cost effective long-term solutions.

Five-year financial needs:

Climate Ready Ottawa Program	New Needs	Rate Funding
Flood Preparedness	$1.25M	$43.5M
Cooling Strategy	$4M	
Community Climate Preparedness	$4.75M	
Critical Infrastructure Protection	$3.75M	$40M
Climate-Ready Infrastructure	$5M	$26M
Tree & Natural Asset Management	$3.25M	$40M
Extreme Weather Preparedness and Response	$3M	–
Total	**$25M**	**$149.5M**

Budget pressures will be brought through annual budget cycles and considered in the Tax Long Range Financial Plan. As noted above, the Climate Change Master Plan prioritization framework will be used to select investments in Climate Ready Ottawa based on annual budgets.

City-wide investment in climate change will continue to be tracked through the climate lens on the annual capital budget.

5.6 Conclusion

Climate Ready Ottawa marks a significant advancement in the City's approach to planning for and responding to climate risks. Under the leadership of the Strategic Initiatives department, this effort reflects a coordinated, city-wide commitment to building resilience and proactive climate action.

Addressing Ottawa's top risks—including extreme heat, severe flooding, extreme storms, and power outages—the strategy supports alignment across departments and embeds climate resilience into the City's planning, budgeting, and decision-making processes.

Building climate resiliency is not only about protecting infrastructure, but also about strengthening the capacity of communities to understand and prepare for growing climate risks. Climate Ready Ottawa will enhance the abilities of residents, businesses, and community organizations to build their preparedness and response capacity. By raising awareness, sharing knowledge, and fostering collaboration, residents will be better able to collectively manage the increasing impacts of climate change.

The strategy identifies concrete measures to reduce risks today, while setting the stage for prudent longer-term investments. This balance allows the City to deliver immediate improvements to address the most pressing risks and generate evidence needed to prioritize and expand resilience investments over time. By providing a unified framework that integrates efforts across departments, Climate Ready Ottawa strengthens the City's collective capacity to build climate resilience. Achieving these goals requires ongoing collaboration with City departments, community partners, interest holders, and residents, to build a safer, healthier, and more climate-resistance Ottawa for the future.

6.0 Appendix one: Top climate risks from Ottawa's Climate Vulnerability and Risk Assessment

Introduction

Climate change is already affecting daily life in Ottawa, from heatwaves that increase health risks, to freeze–thaw cycles that damage roads, to heavier rainfall that raises flooding hazards. The City completed a Climate Vulnerability and Risk Assessment in 2022, the second phase of the Climate Resiliency Strategy.

The assessment used climate projections and input from staff, partners, and the public to examine nearly 150 possible impacts on health, infrastructure, the environment, and the economy. From this, 40 priority risks were identified for immediate action. The top risks by priority area are summarized below, with further details available in the full report. Climate Ready Ottawa was further informed by a detailed health risk assessment conducted by Ottawa Public Health. Their report, Climate Change and Health Vulnerability Assessments, outlines key findings and recommended strategies to help residents adapt to the impacts of a changing climate.

Resilient communities

Climate change does not affect everyone equally. While all residents will feel the impacts of heatwaves, flooding, and severe storms, certain communities are more at risk due to age, health, income, housing conditions, or their professions. The top risks for Ottawa's communities highlight where climate change is expected to have the greatest impacts on residents' health, safety, and well-being.

Top risks to communities

Extreme heat, drought, and humidity

- Increased heat stress and dehydration, especially for those disproportionately impacted

- Cancelled outdoor recreation, sports and cultural events or indoor programs where cooling is not available
- Reduced agricultural yields and increased need for irrigation

Seasonal variability and change

- Increased spread of vector-borne illnesses such as Lyme disease and West Nile virus, and new illnesses
- Increased slip and fall injuries during icy conditions
- Decline of winter recreation and tourism
- Reduced agricultural yields from variable conditions and increased pests and diseases

Increased volume and intensity of precipitation

- Increased basement flooding, localized flooding, and property damage from riverine flooding, overland flooding or overwhelmed stormwater drainage systems
- Reduced access to roadways, transit and active transportation routes, parks, and properties during flooding events
- Delayed planting and/or harvesting and reduced pasture, crop damage from intense rainfall

Extreme weather events

- Reduced access to essential services during extreme weather (e.g., health services, grocery stores, food banks, mental health supports, schools, community centres, transit)
- Increased risk of food spoilage and loss, heat and cold related exposure, and reduced access to services due to prolonged power outages
- Increased mental, physical and financial pressures from extreme weather, especially for people experiencing poverty or living in homelessness, as well as increased social isolation
- Temporary impacts to usage of city assets affected/damaged by extreme weather events
- Increase in respiratory, asthma, and air-quality related emergency department visits due to poor air quality from wildfire smoke
- Business disruptions due to extreme events or supply chain interruptions

Global climate change

- Supply chain instability and/or market failures impacting the cost and/ or availability of goods and services, impacting populations and businesses
- Reduced food security, with additional pressures on low-income populations
- Increased risk of skin cancer from increased exposure to UV radiation and stratospheric ozone.

Resilient infrastructure

Ottawa's infrastructure systems, including roads, buildings, water, wastewater, and transit, were designed for past climate conditions. As the climate changes, these assets face increase stresses from heat, precipitation, freeze–thaw cycles, and extreme storms. The following risks highlight how climate change could accelerate their decline, disrupt essential services, and increase maintenance costs.

Top risks to municipal infrastructure

Extreme heat, drought and humidity

- Increased cooling demands in buildings
- Increased demand for shaded outdoor areas and cooled indoor recreation facilities
- Accelerated deterioration of transportation infrastructure due to extreme heat, drought, and humidity. Asphalt-based surfaces softening under heavy vehicles, causing rutting, potholes, more frequent repairs, and increased safety risks to residents. Paver stones may shift or crack due to changing conditions creating accessibility challenges. Rail systems also vulnerable with high heat causing track expansion and buckling, leading to more frequent speed restrictions
- Reduced access to outdoor recreational spaces and infrastructure leading to fewer opportunities for sports, community activities, and outdoor play
- Disruptions to agricultural activities, impacting local food production

Seasonal variability and change

- Increased freeze-thaw damage reduces lifespan of transportation infrastructure (roads, sidewalks, pathways), buildings (foundation cracking and heaving, pipe bursts), and stormwater/wastewater systems (catch basins, driveway culverts, maintenance holes, pump stations)
- Increased maintenance needs for winter roads, sidewalks, and pathways
- Greater risks to users from icy conditions caused by freeze-thaw cycles and freezing rain
- Increased potential for ice damming during spring freshet potentially affecting bridges over waterways

Increased volume and intensity of precipitation

- Building damage from inland or riverine flooding, and basement flooding/ sewer backup (overwhelmed stormwater and wastewater systems)
- Reduced access to buildings, roads, transit, pathways, and critical services due to riverine or inland flooding
- Damaged / overwhelmed stormwater, wastewater and flood protection infrastructure in floodplains (e.g. pump stations, culverts, sewers, berms)
- Increased runoff from overwhelmed stormwater infrastructure causing reduced water quality, erosion, bank destabilization, and localized basement flooding

Extreme weather events

- Increased winter maintenance of roads, sidewalks and pathways, and risks to users freezing rain/ icy conditions
- Reduced access to essential services during extreme weather and power outages (e.g. electricity, health, education, food banks, transit)
- Ditch and culvert blockages from windborne debris causing localized flooding
- Increased damages to outdoor assets (e.g., play structures, sports fields, trails, pedestrian bridges, etc.)

Global climate change

- Supply chain instability and/or market failures impacting the cost or availability of goods required to maintain or construct buildings, transportation, and water-related infrastructure systems.

Resilient natural environment

Ottawa's natural environment provides shade, clean air and water, habitat, recreation, and gathering spaces. Climate change, however, is putting increasing pressure on forests, rivers, wetlands, and green spaces. Rising temperatures, shifting seasons, and extreme weather events threaten the health of ecosystems, reduce their ability to provide these benefits, and increase risks for residents.

Top climate risks to the natural environment

Extreme heat, drought and humidity

- Stress on trees and other terrestrial and aquatic ecosystems, including increased harmful algae blooms
- Impact to drinking water supply and aquifers

Seasonal variability and change

- Increased impacts of pests, diseases and invasive species that harm trees, forest and other ecosystems (e.g., Emerald Ash Borer or Dutch Elm Disease)
- Increased environmental damage and degradation from increased use of a road salt to counter freeze-thaw cycles
- Increased damage to vegetation (especially urban trees) due to fluctuating temperatures that impact life cycle processes
- Increased volume and intensity of precipitation
- Erosion of riverbanks and slope destabilization

Extreme weather events

- Ice storms, extreme wind, lightning storms, heavy snowfall causing greater damage to trees, forests, parklands, and other natural areas
- Damaged property and communication and power lines from falling trees

Emergency preparedness and response

As extreme weather events become more frequent and severe, Ottawa's emergency response systems will face additional pressures. These risks will place added strain on critical systems and disproportionately impact at-risk populations.

Top climate risks related to extreme weather

Extreme heat, drought, and humidity

- Increased risk of heat stress, dehydration, or emergency room visits
- Increased heat stress for first responders
- Increased occurrence and spread of wildfires

Seasonal variability and change

- Increased slip and fall injuries due to increased icy conditions

Increased volume and intensity of precipitation

- Increased frequency and severity of both riverine and overland flooding resulting in emergency conditions in flood-prone areas, and increased need for shelter and support services

Extreme weather events

- Increased frequency and duration of power outages resulting in loss of perishable foods, stranding of people who need elevators or rely on power-operated medical devices, and an increase of carbon monoxide poisoning or house fires from unsafe heating and cooking (e.g., using BBQs and portable generators indoors)
- Strained emergency and operational services from increased severity, frequency and/or combination of extreme weather events and recovery efforts
- Direct damage to buildings and infrastructure, resulting in disruption of critical services like transportation networks, food banks, and other social services
- Additional impacts on at-risk populations, including mental health pressures

Global climate change

- Supply chain instability and/or market failures impacting the availability or cost of goods required for emergency services.

7.0 Appendix two: Climate Ready Ottawa 2026–2030 five-year action plan summary

1. Flood Preparedness (Proposed new investment: $1.25M + Rate funding)

Program/Project	Description	**Lead Department /** Supporting Department(s)
Integrated community flood preparedness program	Increase outreach to homeowners, renters, and businesses in areas vulnerable to flooding from heavy rains or riverine flooding on steps they can take to prepare and raise awareness of City programs such as Residential Protective Plumbing and Compassionate Grant.	**IWSD/**SI
Riverine flood risk management program	Conduct flood risk assessments and develop risk mitigation and response plans for riverine flood vulnerable areas in the lower Rideau River. Includes inventory and condition assessment of existing flood control structures, risks to public infrastructure and communities, and exploration of flood mitigation and response options.	**IWSD/**PW/ Conservation Authorities
Enhanced inland flood mitigation in high-risk neighbourhoods	Strengthen flood risk assessment and mitigation plans for areas prone to flooding under heavy rains. Identify opportunities for low impact developments, nature-based solutions, and green infrastructure. Focus on neighbourhoods with lower socio-economic conditions and equity scores.	**IWSD**

2. Cooling Strategy (Proposed new investment: $4M)

Program/Project	Description	**Lead Department /** Supporting Department(s)
Targeted communications and outreach to most at risk to extreme heat	Develop and deliver targeted communications and engagement with an accessibility and equity-lens to raise awareness of the health risks of extreme heat and engage and mobilize community partners to increase adoption of actions that reduce these risks.	**OPH/**SI
Cooling amenities in parks and public realm	Accelerate the addition of accessible amenities that provide heat relief, such as shade structures, drinking water fountains, misting stations, or cooling in community recreation buildings, as well as installation and/or renewal of splash pads and wading pools.	**RCFS/**IWSD/ OPH/CSSD
Hydrant misting atation pilot	Pilot the seasonal installation of accessible water fountain and misting stations on fire hydrants in equity-deserving and at-risk neighbourhoods.	**OPH/**IWSD
Cooling options analysis for social housing	Collaborate with social housing providers to identify and assess options to add permanent cooling in existing buildings.	**OPH/**CSSD
Heat mitigation pilots, policies and partnerships	Establish a multi-department team to identify and implement proactive measures to reduce heat risks to most at-risk populations (including policies, pilots, and partnerships).	**SI/**OPH/CSSD/EPS/ RCFS/IWSD/CEWG[i]

i CEWG -Climate Equity Working Group – an assembly of representatives from various City departments and OPH, to guide and advise on climate equity-based communications and engagement to reach and mobilize disproportionately impacted communities.

3. Community Climate Preparedness (Proposed new investment: $4.75M)

Program/Project	Description	**Lead Department /** Supporting Department(s)
City-wide climate education and outreach	Broaden outreach on climate preparedness for all climate risks.	**SI/**CSSD/OPH/ CEWG
Community climate preparedness pilot program	Collaborate with community agencies to build knowledge and capacity of disproportionately impacted communities about climate risks and preparedness, and support community-led action.	**SI/**CSSD/CEWG
Community emergency preparedness pilot program for extreme weather	Establish a grant program to support community groups, organizations, and social service providers to bolster their ability to address future climate emergencies.	**EPS/**CSSD/OPH/EWG
Resilient Homes Loan pilot program	Explore possible expansion of the Better Homes Ottawa Loan program to support homeowners to install climate preparedness features in their homes	**SI**

4. Critical Infrastructure (Proposed new investment: $3.75M + Rate funding)

Program/Project	Description	Lead Department / Supporting Department(s)
Flood protection at water purification plants	Ensure safe access to Britannia water purification plant during riverine floods for continued plant operation.	**IWSD**
Climate risk assessment for critical facilities	Conduct climate risk screenings and assessments of ~230 City facilities that provide critical services and develop risk mitigation plans to address the highest risks.	**SI/**IWSD/RCFS/EPS
Flood risk assessment for critical transportation corridors	Conduct flood risk assessments and develop mitigation strategies for vulnerable transit and transportation routes, including improving road access in flood-prone communities.	**TS**

5. Climate-Ready Infrastructure (Proposed new investment: $5M + Rate funding)

Program/Project	Description	Lead Department / Supporting Department(s)
Resilient Infrastructure pilot program	Test resilient infrastructure solutions and support "like for better" upgrades to infrastructure for facilities, parks, and transportation infrastructure. Integrate results into capital planning.	**SI/**IWSD/RCFS
Climate ready design standards	Update key guidelines and standards to include climate adaptation in planning and design (e.g. for facilities, parks, transit and sewers).	**IWSD/**RCFS/TS
Nature based solutions	Implement nature-based solutions and stormwater low impact development (LID) strategies to strengthen climate resilience where additional stormwater management has been quantified and where feasible.	**IWSD**

6. Resilient Natural Environment (Proposed new investment: $3.25M + Rate funding)

Program/Project	Description	**Lead Department /** Supporting Department(s)
Tree canopy in priority areas	Accelerate implementation of the Tree Planting Strategy to increase canopy cover in neighbourhoods identified through Tree Equity Score Analysis.	**PW**
Wildland fire risk assessment	Identify forests and other natural areas most at risk to fire and develop risk mitigation plans.	**SI/**PW
Forest Health Management program	Monitor and manage impacts from emerging pests and disease and support safe tree removal and forest recovery after extreme weather events.	**PW**
Proactive tree maintenance	Accelerate the proactive tree maintenance program to enhance resilience to severe weather events.	**PW**
Tree and greenspace valuation and condition assessment	Revise tree valuation and condition assessments to inform updates to the Greenspace and Forest Asset Management Plan.	**SI/**PW/IWSD
Natural Hazards Management program	Develop a program to identify and address unstable slopes and erosion concerns in watercourses and associated ravines	**IWSD**

7. Extreme Weather Preparedness and Response (Proposed new investment: $3M)

Program/Project	Description	**Lead Department /** Supporting Department(s)
Build mobile generator fleet for agile response to power outages	Expand the fleet of mobile generators that can be quickly dispatched to various facilities or critical infrastructure during power outages.	**RCFS/**EPS
Extreme weather operational plans, analysis & training	Update operational plans and training to better prepare and respond to extreme weather events.	**PW**
Enhance emergency preparedness for top climate hazards	Conduct a full-scale exercise for top climate hazards, update emergency telecommunications, and secure priority response equipment.	**EPS**
Extreme Weather Partnership program	Cultivate and coordinate support from private sector and non-profit partners to champion preparedness, response, and recovery during extreme weather events.	**EPS/**OPH
Back-up home battery pilot program for medical devices	Work with partners to establish a pilot program that provides back-up batteries for medical devices to support at-risk populations during power outages, reduce pressures on emergency response services to support at-risk populations during power outages, and reduce pressures on emergency response services.	**EPS/**CSSD/OPH/AO

8.0 Appendix three: Performance measurement

Monitoring and evaluation of Climate Ready Ottawa will track both project delivery, ("*Are we doing things right/well?*") as well as strategic effectiveness, ("*Are we doing the right things?*"). This will show if the projects and programs are being implemented as planned and if the plan is achieving its intended outcomes.

Performance metrics have been identified to track strategy delivery, effectiveness, and external conditions:

- Output indicators (implementation measures): *What have we delivered or implemented?*
- Outcome indicators (effectiveness measures): *Are adaptation and resilience projects working to achieve long-term results?*
- External trends (changing environment/ external conditions): *How has the climate changed, what extreme weather events have occurred, and what social or economic trends could affect our results?*

Output indicators will be tracked annually while outcome and external conditions will be assessed every five years, or as data is available.

Given climate variability, understanding climate resilience is like capturing a moving target. This is further magnified by the adaptive management approach that adjusts and refines actions as projects advance and draws from lessons learned. Another issue is attribution or causality—climate change may not be the only factor influencing an indicator, especially for longer-term indicators. Other factors could include external social or economic conditions, or infrastructure conditions.

Establishing indicators is an iterative process. Indicators will be refined as new data is available, and risks and opportunities emerge. Key considerations for selecting the current set of indicators included appropriate units of analysis, frequency of measuring and reporting, financial costs, and whether to use existing data or develop new protocols. To develop the initial set of indicators, City staff worked with community groups, a non-government organization, multiple departments, and reviewed best practices, literature, and approaches from other municipalities.

1.0 Resilient communities

Strategy implementation will be tracked through the following kinds of output indicators:

- Number of climate outreach and engagement initiatives, and people engaged
- Number and value of grants or loans awarded (e.g. Residential Protective Plumbing, Rain Ready Ottawa, Community climate preparedness, Better Homes Ottawa Loan Program)
- Number and type of partnerships for climate resiliency
- Number of updated floodplain maps
- Number of completed flood risk assessments for high-risk flood-vulnerable riverine areas
- Completed cooling options analysis
- Number of new cooling amenities installed across the city and in priority neighbourhoods (drinking water fountains, misting stations, splash pads, shade structures etc.)

Strategy effectiveness will be measured through the following outcome indicators, some of which are being refined due to lack of data:

Prepare for Flooding

Area	Key Performance Indicator (KPI)	Baseline data (Y/N)	Source	Frequency
Riverine flooding	Percentage of properties in municipality resilient to 1:100 year riverine flooding event*	Y	City-Wide Flood Risk Profile	5 years
Inland surface flooding	Percentage of properties in municipality resilient to 1 in 100-year storm (overland flooding)	Y	City-Wide Flood Risk Profile	5 years
Sewer system performance	Percentage of the municipal stormwater management system resilient to a 1 in 5-year storm (sewer system performance)	Y	City-Wide Flood Risk Profile	5 years
Basement flooding	Percentage of the municipal stormwater management system resilient to a 1 in 100-year storm (basement flooding)*	Y	City-Wide Flood Risk Profile	5 years

* Will include equity analysis.

Protect from Extreme Heat

Area	Key Performance Indicator (KPI)	Baseline data (Y/N)	Source	Frequency
Heat related hospital visits	Annual age-standardized rate of heat-related emergency department visits among Ottawa residents	Y	OPH—NACRS	Annual
Access to Cooling Amenities	Distribution of drinking water fountains, splash pads, shade structures and other cooling amenities*	Some		TBC

Community Climate Preparedness

Area	Key Performance Indicator (KPI)	Baseline data (Y/N)	Source	Frequency
Community awareness of climate risks and solutions	KPIs will be refined potentially drawing on OPH surveys or federal data through the National Adaptation Strategy	N		5 years
Vector-borne diseases	Annual rate out of 100,000 of confirmed or probable vector-borne diseases in Ottawa residents	Y	OPH—iPHIS	Annual
Health impacts of wildland fire smoke	KPIs will be refined through program development, drawing on public health data	N		TBD
Leveraged funds	Total amount of homeowner contributions in cost-share grant programs for resiliency	Some	Program data	Annual

* Will include equity analysis.

2.0 Resilient infrastructure

Strategy implementation will be tracked through the following kinds of output indicators:

- Number of Climate Vulnerability and Risk Assessments completed on critical facilities
- Number of completed feasibility studies for safe road access during severe flooding
- Number of City standards and guidelines updated to include climate resilience criteria
- Number of City projects using nature-based, low impact development, or green infrastructure solutions
- Number and type of pilot projects with climate-ready features
- Number of new bus shelters that offer shade and shelter

Strategy effectiveness will be measured through the following outcome indicators, some of which are being refined due to current lack of data:

Critical Infrastructure and Services

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Critical facilities resilience	Percent of critical facilities with a completed climate vulnerability and risk assessment	Y	Strategic Initiatives	4 years
Drinking water resilience	Number of days per year with a boil water advisory in effect per system (central, communal)	Y	Water Distribution Branch	4 years
Drinking water resilience	Number of households affected by drinking water advisories*	Y	Drinking Water Quality Management System	Annual

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Sewer and stormwater flooding	Number and volume of CSO events per mm of rainfall in the reporting season.	Y	Wastewater Linear Collection Systems Branch	Annual
Nature-based solutions/ Green Infrastructure	Catchment area and runoff volume managed through City projects and Rain Ready Ottawa using nature-based, Low Impact Development (LID), or Green Infrastructure solutions	N		5 years
Service disruption due to climate events	KPIs will be refined through program development	N		5 years

* Will include equity analysis.

Safe Transportation Systems

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Pavement deterioration	Pavement Quality Index*	Y	Linear Asset Management Branch	4 years
Transit stops with shelters	Percentage of transit stops with shelter (shade/ protection)*	Y	Transit Services	5 years
Shaded transportation network	Square meters of active transportation network with overlayed canopy cover*	N		5 years

* Will include equity analysis.

3.0 Resilient natural environment

Strategy implementation will be tracked through the following kinds of output indicators:

- Number of trees planted in identified priority areas
- Number of trees maintained each year
- Area of rural and urban forest evaluated under wildland fire risk assessment
- Completion of Forest Health Monitoring Plan and early detection response framework for tree and forest pests and disease
- Change in call volume for tree-related service requests
- Established condition-rating and valuation methodology for trees, forest and other natural areas
- Length of high-risk watercourse reaches on City property with a condition and risk assessment

Strategy effectiveness will be measured through the following outcome indicators, some of which are being refined due to current lack of data:

Protect, Maintain and Enhance Tree Canopy

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Canopy cover	Percentage of canopy cover change (City-wide, by transect, by Ward, by neighbourhood, and for urban priority neighbourhoods as identify by the tree equity score analysis)*	Y	City of Ottawa Canopy Cover Data	5 Years
Proactive tree maintenance	Percentage of trees maintained within lifecycle maintenance program*	N	SAP Reporting	Annual

* Will include equity analysis.

Protect and enhance natural heritage and other greenspace

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Wildland fire risk	KPIs will be refined through program development	N		
Forest health	KPIs will be refined through program development	N		
Unstable slopes/ erosion issues	KPIs will be refined through program development	N		

* Will include equity analysis.

4.0 Extreme weather preparedness and response

Strategy implementation will be tracked through the following kinds of output indicators:

- Continuity of Operations Plans updated for freshet, inland flooding and extreme weather
- Number of mobile generators and transfer switches installed
- Number of communities or partners supported by grants for community preparedness
- Value of grants awarded
- Number of people supported with back-up batteries for medical devices during power outages
- Number of departments and partners participating in full scale training exercise

Strategy effectiveness will be measured through the following outcome indicators, some of which are being refined due to current lack of data:

Prepare for more frequent and severe extreme weather events

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Backup power at critical facilities	Percentage of critical facilities with backup power for critical systems	Y		5 Years

Build community capacity to prepare and respond

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Community emergency preparedness	Number of community associations registered with a community emergency preparedness plan*	N		5 Years

Work with external partners to prepare for more power outages

Area	Indicator	Baseline data (Y/N)	Source	Frequency
Partner support	Number and diversity of partners supporting residents during extreme weather events	N		Annual

* Will include equity analysis.

5.0 Climate resiliency integration

Strategy implementation will be tracked through the following indicators:

Area	Indicator	Baseline data (Y/N)	Source	Frequency
City-wide climate resilience budget	Total annual budget allocated for capital projects with a major or moderate contribution to climate resiliency	Y	Capital budget	Annual
External funding	Total external funding secured for resiliency	Y	Strategic Initiatives	5 Years
Unplanned extreme weather expenditures	Incremental costs to respond to and recover from extreme weather events	Y	Annual Report	Annual
Council Reports with climate adaptation measures	KPIs will be developed through program development	N		

6.0 External trends

External trend indicators track broader conditions and factors that could affect progress towards the long-term objectives. These forces are outside of the City's or a project's control. The external trend indicators are organized into climatic (physical or climate-based) and socio-economic (based on societal developments or economic trends) categories.

Climatic trends include, but are not limited to:

- Increase in annual average temperatures and number of heat warning days (maximum temperature greater than 31 degrees Celsius for 2 consecutive days or more, and nighttime minimum temperatures are 20 degrees Celsius or warmer or humidex is greater than 40 degrees Celsius for 2 consecutive days), annually
- Total annual precipitation (millimeters), annual maximum one-day precipitation (millimeters), and other precipitation thresholds for specific infrastructure design
- Number of days with wind warning (70km/h or more sustained wind; and/or gusts to 90k/m or more), annually
- Number of days under a burn ban, annually
- Number of freeze-thaw cycles, by season
- Number of days of river flooding above 1:20/ 50/ 100 flood event elevations on specific reaches of the Ottawa and Rideau Rivers
- Number of tornadoes, ice storms and other extreme weather events

Socio-economic trends could include, but not limited to:

- Self-reported mental health (OPH Dashboard)
- Percentage of households that are food insecure (Public – PHO – Canadian Income Survey)
- Changes in number of tourists visiting Ottawa
- Changes in households with air conditioning

9.0 Appendix four: Summary of public engagement: 2023–2025

From 2023 to 2025, the City of Ottawa engaged thousands of residents to help shape *Climate Ready Ottawa*, the City's climate resiliency strategy. Engagement confirmed strong alignment on the urgency of preparing infrastructure and natural systems to future climate conditions, protecting vulnerable residents, and embedding resilience into City planning.

For more information refer to the 2023 *As We Heard it Report* and Supporting Document 3: 2024–2025 As We Heard it Report.

Engagement Summary

2023 Engagement

Objectives: Learn community concerns about climate change and generate ideas for how the City and residents can prepare for the impacts of climate change; Capture perspectives of equity-deserving and under-represented groups; Kick-off public awareness on climate resiliency

Format	Participation/who engaged	Feedback and use
Engage Ottawa online platform	6,400 visitors, 1,309 contributions, 226 ideas with 1,212 likes and 58 follow-up comments	Ideas and contributions summarized to inform draft strategy and identify resident priorities
Community Dialogues: 10 in-person sessions + 1 virtual session, co-hosted with CAFES and community associations	330+ participants; 70 volunteer facilitators; residents from community associations across Ottawa	Feedback summarized in CAFES report (engagement session partner); informed draft strategy priorities and planning

Format	Participation/who engaged	Feedback and use
Small group workshops and dialogues	Ottawa Public Health Community Engagement Team, Ottawa Youth Engagement Committee, organizations serving renters, people experiencing homelessness, people with disabilities; Ambassadors Working Group; Indigenous communities (initial meeting)	Feedback applied to ensure equity lens in draft strategy and incorporated into ongoing engagement
Virtual public information session 'Creating a Climate Resilient Ottawa'	Open to public; featured Intact Centre and City staff	Feedback from Q&A informed communications and highlighted public interest areas for strategy refinement

2024–2025 Engagement

Objective: Present the draft Climate Ready Ottawa strategy to residents for review and gather feedback on proposed actions; gather additional input with a focus on inclusion, accessibility, and identifying remaining gaps; targeted interest holder engagement; Share how the draft Climate Ready Ottawa strategy reflects previous engagement activities.

Format/how engaged	Participants/who engaged	Feedback and use
Online Engage Ottawa survey	487 survey responses The survey captured a diverse cross-section of Ottawa residents from urban, suburban, and rural areas, with notably high response rates from rural residents and villages.	Feedback informed revisions to draft strategy and helped finalize action priorities
In-person and virtual Open Houses	25 virtual and 30 in-person participants across Orleans, Nepean, City Hall, and one virtual event	Feedback collected on draft strategy actions and priorities; used to refine final strategy before release

Format/how engaged	Participants/who engaged	Feedback and use
AccessAbility Day	In-person City Hall with residents attending AccessAbility Day	Feedback on the draft with a focus on inclusion and accessibility, and identifying any gaps for further consideration.
Targeted sessions with interest holders	Hydro Ottawa, Conservation Authorities, National Capital Commission, People's Official Plan, Community Development Framework partners	Feedback from key partners; used to refine final strategy before release

Conclusions and Key Takeaways

Across 2023–2025, engagement consistently affirmed strong public support for a climate resiliency strategy. Residents identified many actions the City could undertake to both reduce risks to municipal assets and help members of the community prepare for the impacts of climate change. Feedback from residents as it relates to the priority areas is summarized below.

Priority Area	Feedback
Resilient communities	• Residents highlighted health risks from extreme heat, flooding and wildfires, as well as mental health stress from climate uncertainty. • Renters and low-income households identified barriers beyond their control, stressing the need for equity-focused supports. • Support for maximum indoor temperature regulations and expanded cooling options to protect renters, seniors, and multi-unit residents.
Resilient infrastructure	• Concerns about power outages and infrastructure not withstanding climate impacts. • Support for new infrastructure to be built with resiliency in mind. • Strong support for protecting critical services and building resilience in social and low-income housing. • Priority on strengthening the electricity grid with backup power and battery storage.

Priority Area	Feedback
Resilient natural environment	• Support for urban forest management and investment in greenspaces. • Residents prioritized protecting and connecting natural areas and expanding trees and shaded structures for cooling options.
Emergency preparedness	• Residents asked for alert systems, communications plans, neighbourhood-level emergency plans, and community hubs for cooling, warming, and power. • Emphasis on building community connections to share resources during extreme events. • Continued requests for practical guidance, accessible resources, and financial supports at the household and neighbourhood level.
Governance, leadership, and accountability	• More than 80% of residents supported the overall strategy direction (2024 Survey). • Residents emphasized the need for City leadership, clear communication, and financial support. • Support for embedding climate resilience in City Master Plans and Asset Management Plans, with transparent reporting.
Personal Climate Preparedness	• Respondents are ready to act on climate preparedness but need more support from the City to do so, barriers cited: High costs, limited control, and personal or systemic constraints hinder individual action. • Residents stated needing: clearer guidance and information, and financial assistance to overcome barriers • Additional support includes establishing community hubs and facilitation of neighbour-to-neighbour connections. • Community collaboration and personal commitment are essential, as many feel individual efforts alone are insufficient.

10.0 Appendix five: Glossary

Adaptation
Preparing for and responding to the impacts of a changing climate and building climate resiliency.

Asset Management Plan (AMP)
A requirement of Ontario Regulation 588/17, AMPs report the current state of assets, target and expected levels of service, strategies and activities applied by the City, historical and forecasted financial details, risks, and non-financial strategies, and potential improvement actions.

Climate change
Long-term changes in climate variables, as measured by temperature, precipitation, and frequency of events, differ significantly from the normal range for a particular region.

Climate hazard
Potential source of harm. Hazard comprises slow-onset developments (for example: rising temperatures over the long term) as well as rapidly developing climatic extremes (for example: a heatwave) or increased variability.

Climate impact
The resulting problem or opportunity to deal with a climate hazard (e.g. culvert failures, road washouts, flooding basements, etc.).

Climate risk
The effect of uncertainty. Potential harm that climate change impacts may cause to societies or ecosystems. Assessing climate risk involves analyzing the possible consequences, their likelihood, and the available responses.

Community capacity
The ability of residents, communities, and businesses to respond to and withstand climate events, including having mechanisms in place to recover quickly.

Conservation authorities
Conservation authorities develop and deliver local, watershed-based resource management programs on behalf of the province and municipalities. Conservation authorities are local public sector organizations established by the Province and governed by the Conservation Authorities Act, which is administered by the Ministry of Natural Resources (MNR).

Critical infrastructure and facilities
Critical infrastructure as guided by Ontario Emergency Management and Civil Protection Act O. Reg 71/22, includes facilities and systems essential to the functioning and safety of society. This includes, for example, municipal infrastructure for water distribution and wastewater collection and treatment, emergency protection services and key administration buildings. Additional infrastructure for continued critical service delivery includes fill stations and garages, emergency reception and lodging centers, city owned long term care homes and pump stations.

Drought
A prolonged period of below-average rainfall and high temperatures, which leads to extremely dry conditions. Drought increases fire risk and causes agricultural stress. Drought conditions and frequency will increase as a result of climate change.

Extreme weather
Extreme weather refers to unusual, severe, or unseasonal weather conditions that can cause significant disruption or damage. In Ottawa, this can include heatwaves, heavy rainfall, droughts, ice storms, tornadoes, derechos or other windstorms.

Freeze thaw cycle
The pattern of temperatures fluctuating above and below 0°C, causing water to freeze at night and thaw during the day. This cycle is common in late fall, winter, and early spring, and affects everything from road conditions and building foundations to natural ecosystems. As a result of climate change, these cycles will become more frequent.

Green infrastructure
Refers to natural and nature-based systems—such as trees, wetlands, and waterways, as well as designed systems like bioswales, rain gardens, and green roofs that mimic and enhance natural processes. Together, these assets manage stormwater, reduce flood and erosion, cool neighbourhoods during extreme weather, improve air and water quality, and provide habitat for biodiversity and pollinators. Beyond environmental benefits, green infrastructure also supports healthier, more resilient communities by fostering recreation, cultural connections, and mental well-being.

Heat event
Environment and Climate Change Canada defines heat events as: daytime temperature of 31°C or higher and nighttime temperature not cooler than 20°C for at least two days, or a Humidex of 40 °C for at least two days. Heat events can cause significant health impacts to vulnerable populations, cause infrastructure strain, and environmental stress.

Inland flooding
Inland flooding occurs after prolonged or intense rainfall when the volume of water overwhelms the capacity of natural or built drainage systems. Inland flooding can include sewage back-ups when storm or sanitary sewer systems are overwhelmed and surcharge into basements. It can also include overland or surface flooding where runoff flows over streets, yards or parks.

Long Range Financial Plan (LRFP)
Comprehensive documents that establish sustainable funding strategies for asset maintenance, renewal, and growth across tax-supported, rate-supported, and transit assets.

Low impact development (LID)
A stormwater management approach that seeks to reduce the harmful impacts of increased runoff and stormwater pollution by mimicking natural processes to absorb, filter, and store rainwater close to where it falls. It focuses on minimizing environmental disruption and promoting infiltration, evapotranspiration, and reuse of rainwater.

Nature based solutions
Nature-based solutions are strategies that use natural systems or processes to solve challenges caused by climate change. In rural settings, they can include restoring wetlands to manage water flow or using cover crops to improve soil health and carbon storage. In urban settings, it can include the use of rain gardens and green roofs to manage stormwater and reduce urban heat.

Natural environment
Refers to forests, rivers, wetlands, and wildlife. Within the context of climate change, these environments are both impacted by and part of the solution to climate challenges.

Poor air quality
Poor air quality can be caused by a variety of factors, including traffic related-air pollution, smog, and smoke caused by wildfires.

Resilience
The capacity to prevent, withstand, respond to, and recover from climate trends and shocks.

Risk assessment
The process of determining and evaluating risks. Assessments may be quantitative or qualitative and involve applying rating levels to prioritize risks needing mitigation.

Risk management
The identification, assessment, and response to risk to a specific objective. Integrated risk management is a systematic process for identifying, analyzing, evaluating, mitigating, communicating, documenting, and monitoring/reassessing risks that would threaten the achievement of objectives.

Riverine flooding
The overflow of rivers or streams caused by excessive rainfall, snowmelt, or upstream water release, leading to water spilling into surrounding areas.

Urban forest canopy cover
A measure of the layer of tree leaves, branches, and stems that provide tree coverage of the ground when viewed from above. It is typically expressed as a percentage of total land area covered.

Urban heat island effect
Built-up urban areas that are hotter than nearby rural areas or greenspace because buildings and paved surfaces amplify and trap heat. The average air temperature of a city with 1 million people or more can be 1 to 3°C warmer than its surroundings. In the evening, the difference can be as high as 12°C. Heat islands can exacerbate the impact of an extreme heat event, putting additional stress on the health of vulnerable people.

Vulnerability
The likelihood to be affected by change. Vulnerability includes a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Endnotes

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