SOUTH FRONTENAC

CORPORATE CLIMATE CHANGE ACTION PLAN

Township of South Frontenac

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A MESSAGE FROM THE MAYOR

RON VANDEWAL
MAYOR

On behalf of Council, I am pleased to introduce the Township of South Frontenac's Corporate Climate Change Action Plan, an important step in strengthening the sustainability and resilience of our municipal operations. Climate change is a pressing challenge of our time, and as a Township, we recognize the importance of taking proactive and practical measures to manage its impacts.

This Action Plan reflects our commitment to reducing greenhouse gas emissions, improving the resilience of our municipal fleet, facilities, and infrastructure, and embedding sustainable practices into how we plan, maintain, and operate Township assets. This work aligns closely with the Township's Strategic Plan, including our focus on responsible asset management, long-term resilience, and preparing for future adaptation.

I would like to thank everyone who contributed to the development of this Plan, including Council members, staff, and community partners. Your expertise and collaboration are critical as we take practical steps to protect Township assets, manage costs, and ensure reliable services for our residents. Together, we are building a more sustainable and resilient future for the Township of South Frontenac.

A MESSAGE FROM THE CAO

LOUISE FRAGNITO
CHIEF ADMINISTRATIVE OFFICER

The Township of South Frontenac's Corporate Climate Change Action Plan reflects a practical commitment to environmental stewardship, embedding climate considerations into the Township's own operations and decisions. This plan outlines clear actions and priorities, from reducing greenhouse gas emissions to improving the resilience of our infrastructure and services, ensuring we are prepared for the future.

Developing this plan involved collaboration across Council, staff, and the community, highlighting the teamwork and collective spirit that makes South Frontenac a unique and forward-looking municipality. As we implement this plan, we will focus on making data-driven decisions, leveraging partnerships, and celebrating the milestones we achieve along the way.

I am incredibly proud of our staff and community for their ongoing dedication to sustainability and resilience. Together, we will ensure that South Frontenac continues to thrive as a partner in climate action while preserving the natural beauty and quality of life that define our Township.

SECTION 1
EXECUTIVE SUMMARY

CORPORATE CLIMATE ACTION PLAN: RESPONDING TO CLIMATE CHANGE

Climate change is a top-of-mind global issue, with Canada warming at nearly double the global average, as reported in Canada's Changing Climate Report (2019). For South Frontenac, this means experiencing warmer and wetter conditions, coupled with more frequent and severe storms. These changes will increasingly impact the Township's residents, infrastructure, municipal operations, and economy. The extent of these impacts depends on the proactive measures the Township takes now. Through this Corporate Climate Change Action Plan (CCCAP), South Frontenac is taking steps to strengthen its commitment to sustainable development and enhance its resilience to climate change.

The CCCAP adopts a dual approach to address the causes and consequences of climate change:

1. **Adaptation** focuses on preparing for and mitigating the impacts of climate change. This ensures the Township can minimize risks to municipal operations, services, residents, and the local economy.
2. **Mitigation** emphasizes reducing the severity of future climate change impacts by addressing greenhouse gas (GHG) emissions. By playing its part in reducing emissions, the Township contributes to slowing the pace of climate change while reaping benefits such as cost savings from energy efficiencies.

This plan identifies and outlines specific actions the Township will take to reduce GHG emissions and adapt its assets, operations, and services to minimize the negative impacts of climate change. All actions are practical, achievable, and within the municipality's scope of control.

Plan Development and Guidance Framework

The mitigation elements of the CCCAP are informed by ICLEI Canada's Partners for Climate Protection (PCP) program which includes a framework guiding municipalities to:

1. Develop a baseline GHG emissions inventory and forecast.
2. Set emissions reduction targets.
3. Create a detailed action plan.
4. Implement the action plan.
5. Monitor progress and report results.

The plan reflects input from across the organization, with over 20 staff from all departments participating in workshops to assess climate risks, identify mitigation and adaptation actions, and prioritize initiatives. Senior Leadership also provided input to ensure alignment with corporate strategies and resource availability.

Integration with Existing Frameworks and Plans

The Corporate Climate Change Action Plan is a standalone document that is aligned with the Township's Asset Management Plan. It is intended to be applied alongside existing asset management frameworks, ensuring climate risks, resilience, and emissions considerations inform asset life-cylce and investment decisions. This approach supports integrated planning and coordinated implementation, while maintaining distinct plans that enhance the Township's resistance to climate change.

Identifying Risks and Opportunities

Using the latest climate projections, Senior Leadership and Council participated in a workshop to assess potential climate risks to the Township. This process identified eight (8) risk categories, which informed the inclusion of the priority initiatives identified within the plan. These efforts emphasize a collaborative and data-driven approach to climate planning.

PLAN GOALS AND ACTIONS:

The plan encompasses thirty-five (35) specific actions organized into eight (8) priorities, which were prioritized through the climate action planning process:

Resilient Infrastructure and Proactive Asset Planning	The Township aims to embed climate considerations into all infrastructure projects by leveraging past successes, integrating natural features, and designing for resilience. It will establish monitoring and maintenance practices to ensure long-term infrastructure performance and adaptability to changing climate conditions.
Enhance Energy Efficiency in Public Buildings	The goal is to improve energy efficiency in public buildings through practical fixes, retrofits, and smart technology integration. The Township will prioritize renewable energy adoption and implement regular energy audits to reduce emissions and operational costs.
Implement Climate-Responsive Budgeting	The Township will align budgeting practices with climate goals by incorporating life-cycle cost analysis and climate change considerations, when appropriate, into its financial planning.
Leverage External Funding and Partnerships for Climate Projects	The goal is to maximize external funding opportunities by securing grants, fostering partnerships, and showcasing the ROI of climate initiatives. The Township will build strong networks with funders and share success stories to enhance credibility and attract additional resources.
Support Natural Preservation Through Sustainable Land Planning	The Township aims to integrate climate resilience and biodiversity protection into policies, conduct risk assessments, and foster conservation partnerships. Progress in sustainable land use practices will be monitored and communicated to ensure long-term ecological health.
Strike a Balance Between Resiliency and Adaptation	The Township strives to address immediate climate impacts while building resilience to future risks. This includes developing emergency preparedness plans, implementing adaptive infrastructure solutions, and engaging communities in resiliency planning.
Enhance Information Sharing and Education	The Township aims to increase transparency and knowledge sharing about the Township's ongoing and planned climate actions. By sharing more information and educational resources, the Township aims to engage and empower its community.
Enhance Team Collaboration and Integration of Sustainability	The Township is committed to enhancing collaboration across departments and integrating sustainability more deeply across municipal operations. These initiatives will support the Township's long-term climate goals with a shared purpose and vision.

IMPLEMENTATION AND LONG-TERM COMMITMENT

An implementation schedule has been developed to guide the rollout of climate actions, detailing the lead and supporting departments, related policies, timelines, and required resources. A comprehensive action-specific implementation guide will be created by staff to further define responsibilities, financial projections, and performance indicators.

The CCCAP represents a long-term initiative requiring sustained collaboration across all municipal departments. Ongoing support from Council will be vital to maintain momentum, and some actions will require capital investments, which will be integrated into the annual budget cycle. Staff will also seek external funding opportunities to support these initiatives, when available.

Commitment to Action

By considering the CCCAP alongside its Asset Management Plan and broader planning processes, the Township of South Frontenac is reinforcing its commitment to the community's long-term well-being. The Plan provides practical guidance and strategies to support informed decision-making, reduce greenhouse gas emissions, and respond to evolving climate risks. This proactive approach demonstrates the Township's commitment to protecting municipal assets and fostering a safe, healthy, and prosperous future for its residents.

SECTION 2

SOUTH FRONTENAC AT-A-GLANCE

20,188	10,100	948 km²	75
Permanent Residents	Seasonal Residents	Land Area	Named Lakes

LOCATION

Region: Southeastern Ontario, within the County of Frontenac (approx. 4,000 km²).

Established: 1998 through the amalgamation of Bedford, Loughborough, Portland, and Storrington.

Biosphere: Part of the UNESCO-designated Frontenac Arch Biosphere, connecting the Canadian Shield and Adirondack Mountains.

POPULATION

2021 Census Population: 20,188 permanent residents (+8.3% since 2016) with 10,100 seasonal residents.

Projected Population by 2034:

- Permanent Residents: 22,725.
- Seasonal Residents: 11,195.

*Source: Watson & Associates Economists Ltd. “Township of South Frontenac Residential Growth Forecast Summary”

GEOGRAPHY & NATURAL FEATURES

Area: 948.05 km².

Lakes and Waterways:

- 75 named lakes.
- Numerous streams, ponds, and natural springs.

Natural Landscape: Mix of forested areas and open spaces, supporting biodiversity and recreational activities.

ECOLOGICAL IMPORTANCE

Biodiversity Corridor: Critical for species migration and ecological sustainability.

Region: Located within Ontario’s "Mixedwood Plains" — one of Canada’s most agriculturally productive areas.

CLIMATE CHANGE IMPACTS

Temperature: Projected increases pose risks to ecosystems and agriculture.

Precipitation: Variability threatens water resources and biodiversity.

Key Risks: Climate change impacts on agriculture, water resources, and natural ecosystems.

SECTION 3

CORPORATE CLIMATE CHANGE ACTION PLAN FRAMEWORK

As part of its Strategic Plan, the Township of South Frontenac (Township or South Frontenac) Council has prioritized resilience and adaptation to climate change as a key focus. Developing a Corporate Climate Change Action Plan (CCCAP) is an essential step to:

- Identify opportunities to reduce greenhouse gas (GHG) emissions within municipal operations.
- Assess climate change risks and vulnerabilities affecting infrastructure, services, and operations.
- Demonstrate the Township's commitment to environmental stewardship and proactive climate action.

THE PROCESS

To support the development of the Township's Action Plan, the following activities were undertaken as key inputs, and the findings were used to inform priorities and initiatives:

- Conducted **one-on-one interviews** with Council members and Senior Leadership.
- Facilitated **focus groups** with select staff representatives.
- Launched a comprehensive **staff-wide survey.**
- Launched a **community-wide survey summarized in Appendix V.**
- Collected essential Township data to create a **Corporate Greenhouse Gas Emissions Inventory and Forecast.**
- Completed a **Corporate Risks and Vulnerabilities Assessment.**

VISION AND GUIDING PRINCIPLES

The Township's long-term **vision** for a climate-resilient Township is: **To sustain community well-being through climate responsive municipal services and infrastructure.**

The Township's **guiding principles** that will facilitate its corporate climate action efforts include:

- **Collaboration:** Foster partnerships across municipal departments, community organizations, businesses, and residents to ensure collective climate action.
- **Data-Driven Decision-Making:** Utilize accurate data and forecasting to guide decisions and ensure resources are allocated effectively to achieve meaningful climate outcomes.
- **Transparency and Accountability:** Commit to regular reporting and open communication with stakeholders to build trust and maintain accountability for climate action efforts.
- **Resilience and Sustainability:** Focus on long-term resilience and environmental sustainability to safeguard South Frontenac's natural assets, infrastructure, and community well-being.
- **Continuous Improvement:** Adopt a flexible approach to climate action, regularly reviewing and updating strategies to reflect new data, technologies, and best practices.

SECTION 4

CURRENT STATE AND KEY THEMES

Through in-depth discussions and a review of South Frontenac's operations, important themes emerged. These insights highlight the Township's current climate efforts, challenges, and opportunities. They serve as a foundation for shaping the Township's corporate climate action plan.

KEY THEMES

Strong Support for Climate Action

There is strong support for climate action from Council, staff, and the community with general agreement on the need for a clear, practical plan that aligns with the Township's long-term goals for sustainability and resilience. This enthusiasm shows a shared readiness to embrace change and tackle climate challenges together.

Existing Climate Mitigation Efforts

The Township has already made great progress in tackling climate change with initiatives like:

- **Energy Efficiency Upgrades:** Retrofitting municipal buildings with LED lighting and heat pumps.
- **Waste Reduction:** Going digital to cut down on paper use.
- **Fleet transition to lower-emission vehicles:** The Township has begun transitioning portions of its light-duty fleet, including some SUVs, to hybrid vehicles. In 2025, the Township also purchased its first fully electric half-tonne truck.

While these efforts show a strong commitment, they've often been done one at a time. The plan will bring all these initiatives together into a clear, unified strategy to maximize impact and support long-term sustainability goals.

Budget and Financial Considerations

Budget limitations have been identified as a major challenge for implementing climate initiatives. Many people see these efforts as expensive, which is why it's important to:

- **Highlight Long-Term Benefits:** Show how investments can save money over time - for example, the cost savings from reduced fuel consumption and maintenance associated with converting a portion of the fleet from gas-powered vehicles to electric or hybrid vehicles, where it makes sense.
- **Showcase Value:** Prove the return on investment (ROI) for projects like energy-efficient buildings to gain support for funding.

By presenting climate action as both cost-saving and value-adding, the Township can build stronger support for dedicating resources to these initiatives.

Greenhouse Gas Emissions

The Corporate GHG emissions inventory shows that 73% of the Township's emissions come from the municipal fleet. This presents an opportunity to:

- Continue to switch smaller fleet vehicles to hybrid vehicles when it makes sense.
- Improve efficiency with better route planning and right sizing the fleet.
- Explore alternative energy options where full electrification isn't possible yet.

Focusing on fleet emissions is a key step in reducing the Township's carbon footprint and showing leadership in sustainable operations.

Key Factors for Success

To make the Corporate Climate Change Action Plan (CCCAP) a success, these important steps are needed:

1. **Use Data to Guide Decisions:** Tools like GHG inventories and modeling can help focus on initiatives that make the biggest impact.
2. **Celebrate Wins:** Sharing past successes can inspire momentum, boost morale, and gain community support.
3. **Be Open About Costs:** Clearly explain the costs and benefits of climate actions and provide regular updates to build trust.
4. **Enhance Information Sharing:** Share information early and often about what is planned and what the Township is doing to support a shared vision.
5. **Build Skills and Collaboration:** Provide opportunities for staff to learn more about climate change, encourage teamwork across departments, and make sustainability part of everyday operations to foster a culture of climate action.

WHAT IS THE TOWNSHIP CURRENTLY DOING ABOUT CLIMATE CHANGE?

Integrating Climate Considerations	• Climate priorities are part of the Official Plan, focusing on protecting shorelines and planning for waterfront areas. • Reports to Council now include a climate impact section to support sustainable decisions
Saving Energy in Public Facilities	• Projects include switching to installing LED lighting and upgrading older buildings with energy-efficient technology. • New buildings and renovations increasingly incorporate sustainable technologies, including heat pumps and solar panels.
Reducing Greenhouse Gas (GHG) Emissions	• Efforts include going digital and seeking grants for EV charging stations. • A detailed asset management plan is being developed to guide decision-making.
Building Climate Resilience	• The Emergency Management Program Committee (EMPC) helps Council stay prepared for emergencies. • The Fire Department has completed a community risk assessment and is finalizing in 2026 a Community Wildland Protection Plan to address challenges like wildfires and extreme weather.

SECTION 5

IDENTIFIED RISKS AND VULNERABILITIES

South Frontenac faces a range of risks and vulnerabilities resulting from climate change, many of which are amplified by the Township's rural nature and reliance on agriculture, natural resources, and aging infrastructure. The following summary highlights key areas of concern, providing a foundation for planning mitigation and adaptation strategies. Additional detailed information can be found in **Appendix I.**

Regional Context | Climate change poses global challenges, but its local impacts are uniquely felt in rural communities like South Frontenac. Increased temperatures, extreme weather events, and shifting precipitation patterns threaten the Township's ecosystems, infrastructure, economy, and public health. Ontario's rising temperatures and more intense precipitation highlight the urgency of adopting proactive measures.

SUMMARY OF RISKS AND VULNERABILITIES

Infrastructure Vulnerabilities

- **Increased Risk of Failures:** Extreme weather events, such as storms and floods, heighten the risk of infrastructure failures, including damage to transportation networks, utilities, and stormwater management systems.
- **Stormwater Management Systems:** Rising precipitation intensity could overwhelm existing systems, leading to frequent flooding.
- **Waste Management Challenges:** Extreme weather events may increase leachate production and flooding at landfill sites, raising the risk of environmental contamination and fires.
- **Freeze-Thaw Cycles:** Decreasing but more concentrated freeze-thaw cycles accelerate wear and tear on roads, sidewalks, and outdoor structures.

Food and Agriculture

- **Climate-Driven Risks to Productivity:** Changing precipitation and temperature patterns threaten crop yields and livestock health. Local crops such as corn, soybeans, and vegetables are particularly vulnerable.

- **Extended Growing Seasons:** Longer frost-free periods may allow for diverse crop cultivation but could also increase invasive species, pests, and the need for adaptive measures.

High and Unusual Temperatures

- **Heatwaves and Public Health:** By the late century, South Frontenac could face up to 107 days annually with temperatures above 30°C, increasing risks of heat-related illnesses, particularly for older adults and vulnerable populations.

- **Energy Demand:** Rising cooling degree days signal increased energy use for air conditioning, underscoring the importance of energy-efficient systems.

Heavy Precipitation and Changing Patterns

- **Rising Precipitation Levels:** By 2100, precipitation levels are projected to increase by 21.5%, with individual rain events becoming more intense and frequent. This shift could exacerbate flooding and strain stormwater systems.

- **Snow-to-Rain Transitions:** Warmer winters may result in more rain and wet, heavy snow, increasing risks to infrastructure and altering seasonal water availability.

Wildfire and Smoke Risks

- **Longer Fire Seasons:** Rising temperatures and drier conditions increase the frequency and intensity of wildfires, particularly in forested areas.

- **Health Impacts:** Prolonged smoke exposure could exacerbate respiratory and cardiovascular conditions, increasing pressure on local healthcare systems.

Droughts and Water Availability

- **Moisture Deficits:** Although drought frequency is relatively stable, long-term water shortages could affect agriculture, ecosystems, and community water supplies.

- **Heatwave Amplification:** Extended heatwaves increase the likelihood of severe and widespread droughts in the region.

Impacts on Vulnerable Populations

- Older Adults: With 21.5% of the population over 65, older adults face heightened risks from unusually high temperatures, poor air quality, and limited access to emergency services during climate events.

Public Health and Safety

- **Vector-Borne Diseases:** Rising temperatures and changing precipitation patterns increase the prevalence of Lyme disease and West Nile virus.

- **Water and Food Safety:** Heavy rainfall and rapid snowmelts heighten risks of water contamination, potentially leading to water-borne diseases.

- **Emergency Services Strain:** Extreme weather events disrupt critical infrastructure and emergency response systems, threatening public safety and resilience.

These risks and vulnerabilities reinforce the importance of integrating climate resilience into South Frontenac's municipal planning and decision-making processes. From infrastructure upgrades to emergency preparedness, the Township continues to proactively work to address these challenges and mitigate impacts to ensure long-term sustainability. **For additional details on these risks and their implications, please refer to Appendix I.**

SECTION 6

GREENHOUSE GAS (GHG) EMISSIONS INVENTORY AND FORECAST

WHAT IS A CORPORATE GREENHOUSE GAS (GHG) INVENTORY?

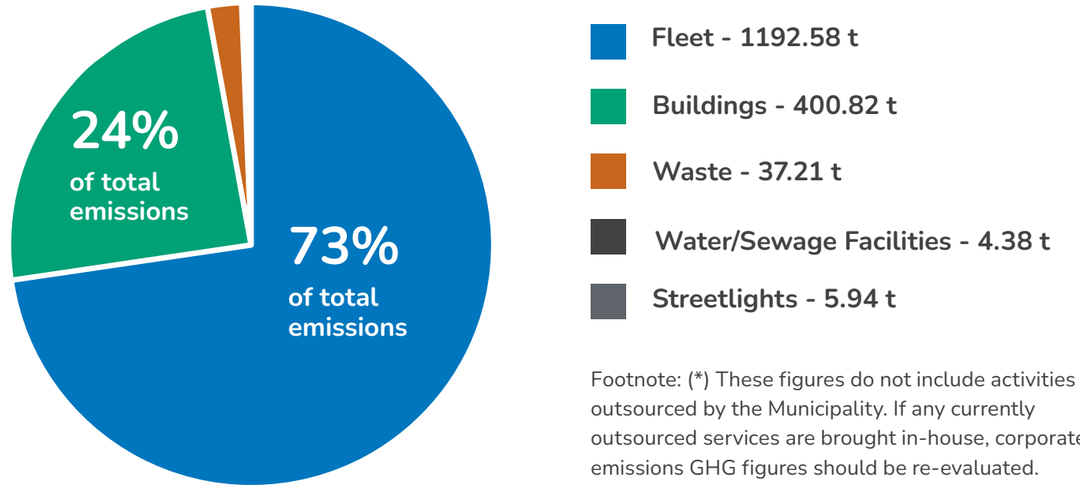
A Corporate GHG Inventory is a detailed account of all greenhouse gas emissions produced by an organization's operations. Its purpose is to measure emissions, understand their impact on climate change, and create strategies to reduce them. By tracking emissions systematically, organisations can set targets, monitor progress, and take meaningful climate action.

The analysis of South Frontenac's Corporate GHG Inventory has revealed key sources of emissions within the Township's operations, offering important insights to guide future action.

Key findings include:

- **The Township's fleet* emerged as the highest emitter,** accounting for 72.57% of the Township's total GHG emissions. This significant contribution underscores the potential benefits of transitioning to greener fleet options, including right-sizing and optimization, and electrification.
- **Buildings and municipal facilities were the second-highest emitter,** accounting for 24.43% of the Township's total GHG emissions. This highlights the potential for transitioning from propane and oil to electric, as well as planning for these investments in asset renewal and new construction.
- If the status quo is maintained, **GHG emissions are forecasted to reach 2,500 tonnes** by 2050, representing **a 52.35% increase** from 2024 levels.

GHG EMISIONS BY SECTOR (TONNES)



Footnote: (*) These figures do not include activities outsourced by the Municipality. If any currently outsourced services are brought in-house, corporate emissions GHG figures should be re-evaluated.

UNDERSTANDING THE TOWNSHIP'S FLEET EMISSIONS

The Township's fleet includes a mix of vehicle types that contribute differently to overall emissions. These include:

50.6% light-duty vehicles such as SUVs and pickup trucks, which are commonly used by building services, public services and the fire department.

49.4% heavy-duty or construction equipment, including graders, dump trucks, and snowplows, which are essential for road maintenance and seasonal operations.

Understanding the composition of the fleet is important when evaluating emissions reduction opportunities. While transitioning light-duty vehicles to electric models may be feasible in the near term, heavier equipment presents more complex challenges and may require longer-term planning or emerging technology solutions.

SECTION 7

CORPORATE CLIMATE ACTION PRIORITIES AT-A-GLANCE

The following key priorities ensure the Township's Climate Action Plan is actionable, measurable, and focused on addressing the unique challenges of climate change. These priorities emphasize resilience, sustainability, and collaboration, enabling the Township to model the right behaviors while inspiring the community to contribute to a sustainable future.

PRIORITY 1 - RESILIENT INFRASTRUCTURE AND PROACTIVE ASSET PLANNING

1.1 Climate-Informed Investments: Use evidence-based recommendations and a climate lens for infrastructure projects.

1.2 Leveraging Past Successes: Build on the Township's previous sustainability achievements as benchmarks.

1.3 Infrastructure Design that Supports Climate Change Impacts: Design infrastructure to support forecasted climate change impacts.

1.4 Monitoring and Maintenance: Regularly assess and maintain infrastructure for performance and resilience.

PRIORITY 2 - ENHANCE ENERGY EFFICIENCY IN PUBLIC BUILDINGS

2.1 Common-Sense Fixes: Address inefficiencies like drafts and outdated fixtures.

2.2 Adopting ENERGY STAR Technology: Transition to energy-efficient appliances and systems.

2.3 Energy-Efficient Retrofits: Retrofit older facilities with technologies such as LED lighting and heat pumps, when available.

2.4 Building Automation Systems: Implement smart technologies for optimized energy use.

2.5 Renewable Energy Integration: Explore the use of renewable energy sources in public buildings.

2.6 Ongoing Energy Audits: Conduct regular audits to identify improvements and track progress.

PRIORITY 3 - IMPLEMENT CLIMATE-RESPONSIVE BUDGETING

3.1 Life-Cycle Cost Analysis: Assess the long-term costs and benefits of projects.

3.2 Capacity Building for Climate Finance: Upskill staff on climate-focused financial planning and funding opportunities.

PRIORITY 4 - LEVERAGE EXTERNAL FUNDING AND PARTNERSHIPS FOR CLIMATE PROJECTS

4.1 Grant Identification and Applications: Proactively seek funding opportunities from external sources.

4.2 Highlighting Return on Investment (ROI): Showcase financial and environmental benefits of projects to attract investment.

4.3 Building a Network of Support: Establish relationships with funding bodies and stakeholders.

4.4 Showcasing Success Stories: Publicly share project outcomes to build credibility and inspire confidence.

PRIORITY 5 - SUPPORT NATURAL PRESERVATION THROUGH SUSTAINABLE LAND PLANNING

5.1 Policy Updates: Revise policies to include a climate lens

5.2 Collaborative Initiatives: Partner with stakeholders for enhanced conservation efforts.

PRIORITY 6 - STRIKE A BALANCE BETWEEN RESILIENCY AND ADAPTATION

6.1 Emergency Preparedness: Develop response plans for wildfires, storms, and other emergencies.

6.2 Comprehensive Risk Assessments: Assess vulnerabilities to guide investment and risk mitigation.

6.3 Adaptive Infrastructure Solutions: Strengthen stormwater management and protect critical infrastructure.

PRIORITY 7 - ENHANCE COMMUNITY COMMUNICATION AND EDUCATION

7.1 Awareness Campaigns: Use social media and storytelling to educate residents about sustainability initiatives.

7.2 Collaborate with the Community and Celebrate Progress: Work with local organizations to support climate action and highlight community achievements to build awareness and momentum.

7.3 Gather Feedback and Adapt Strategies: Use surveys and focus groups to refine and adapt climate strategies.

PRIORITY 8 - ENHANCE TEAM COLLABORATION AND INTEGRATION OF SUSTAINABILITY

8.1 Staff Training and Resources: Provide ongoing training and tools to manage climate initiatives effectively.

8.2 Unified, Collaborative Approach: Align departmental sustainability goals and foster collaboration.

8.3 Embedding a Culture of Sustainability: Integrate climate considerations into municipal policies and daily operations.

PRIORITY 1

RESILIENT INFRASTRUCTURE AND PROACTIVE ASSET PLANNING

INTRODUCTION

Building and maintaining resilient infrastructure is essential for creating a sustainable, climate-ready future. By incorporating climate considerations into asset planning, the Township can mitigate risks, extend the lifespan of assets, and align new investments with long-term sustainability goals. South Frontenac has already taken steps to integrate climate elements into recent renovations and new builds, setting a strong foundation to continue these efforts and lead by example.

INITIATIVES

1.1 | CLIMATE-INFORMED INVESTMENTS

Ensure infrastructure projects are guided by a “climate lens” assessment. This approach will support sustainability, reduce environmental impacts, and prepare the Township for the challenges of a changing climate.

1.2 | LEVERAGING PAST SUCCESSES

Build on the Township’s experience integrating environmental sustainability into recent renovations and new construction. Use these successes as benchmarks for future projects, demonstrating the value of proactive, climate-focused planning.

1.3 | INFRASTRUCTURE DESIGN THAT SUPPORTS CLIMATE CHANGE IMPACTS

Design new facilities and infrastructure to support forecasted climate change impacts. This includes implementing sustainable building practices, using durable materials, and considering energy efficiency from the outset. Wherever economically feasible, include elements like solar panels, rainwater harvesting systems, etc.

1.4 | MONITORING AND MAINTENANCE

Continue to proactively address wear and tear, ensuring that assets remain resilient and efficient throughout their life-cylce.

These initiatives will help the Township safeguard its infrastructure, protect its natural environment, and set a standard for environmental sustainability that benefits current and future generations.

PRIORITY 2

ENHANCE ENERGY EFFICIENCY IN PUBLIC BUILDINGS

INTRODUCTION

Improving energy efficiency in public buildings is one of the most cost-effective ways to lower emissions while reducing operating costs. This also demonstrates the Township's commitment to sustainability. By focusing on both simple fixes and advanced retrofits, South Frontenac can ensure its facilities are energy-efficient, environmentally friendly, and economically sustainable.

INITIATIVES

2.1 | COMMON-SENSE FIXES

Implement low-cost, high-impact solutions to address inefficiencies in public buildings. This includes sealing drafts, upgrading insulation, and replacing outdated fixtures. These straightforward changes can immediately reduce energy consumption and operating costs. The Facility Condition Assessment completed in early 2025 also identifies additional energy efficiency opportunities for further implementation.

2.2 | ADOPTING ENERGY STAR TECHNOLOGY

When feasible, transition public buildings to ENERGY STAR-rated appliances, HVAC systems, and lighting. These technologies are proven to save energy and reduce costs over time, supporting the Township's environmental sustainability goals.

2.3 | ENERGY-EFFICIENT RETROFITS

Continue retrofitting older facilities with energy-efficient technologies, such as LED lighting, heat pumps, and improved insulation. These upgrades not only cut emissions but also improve building performance, leading to significant operational savings over the long term.

2.4 | BUILDING AUTOMATION SYSTEMS

Integrate smart building technologies and automation systems to optimize energy use. Systems like programmable thermostats, occupancy sensors, and advanced energy monitoring can identify inefficiencies in real-time and ensure buildings operate at peak efficiency.

PRIORITY 3

IMPLEMENT CLIMATE-RESPONSIVE BUDGETING

INTRODUCTION

Incorporating a climate lens into the Township's Asset Management Plan and planning processes through the CCCAP supports data-driven decision-making for climate-related expenditures. Applying a life-cycle cost analysis enhances transparency and builds public trust by clearly linking expenditures to measurable climate outcomes.

INITIATIVES

3.1 | LIFE-CYCLE COST ANALYSIS

Incorporate life-cycle cost assessments into financial planning and budget decisions, when appropriate. This means evaluating the long-term financial and environmental impacts of projects, including operational costs, maintenance, and emissions. By prioritizing investments with sustainable benefits, the Township can make smarter financial choices that align with its climate goals.

Applying a climate lens and life-cycle cost analysis to climate-related initiatives within asset management and budget planning will help South Frontenac optimize resource allocation and deliver meaningful outcomes in addressing climate change across its municipal operations.

3.2 | CAPACITY BUILDING FOR CLIMATE FINANCE

Upskill staff and decision-makers, as needed in financial planning with a climate lens. Providing education on funding mechanisms, grant opportunities, and environmental sustainability metrics will ensure informed decisions and effective use of resources.

PRIORITY 4

LEVERAGE EXTERNAL FUNDING AND PARTNERSHIPS FOR CLIMATE PROJECTS

INTRODUCTION

Partnering with external stakeholders is essential to unlocking the financial resources and expertise needed to continue to support climate action. By actively pursuing grants, forging partnerships, and highlighting the economic value of climate initiatives, the Township can significantly enhance its capacity to implement impactful projects while minimizing the burden on local budgets.

INITIATIVES

4.1 | GRANT IDENTIFICATION AND APPLICATIONS

Incorporate life-cycle cost assessments into financial planning and budget decisions, when appropriate. This means evaluating the long-term financial and environmental impacts of projects, including operational costs, maintenance, and emissions. By prioritizing investments with sustainable benefits, the Township can make smarter financial choices that align with its climate goals.

4.2 | HIGHLIGHTING RETURN ON INVESTMENT (ROI)

Develop clear and compelling cases for investment by showcasing the economic and environmental benefits of climate projects. Quantify potential savings, such as reduced energy costs or avoided infrastructure damage from extreme weather events, to attract funding from external sources and demonstrate long-term value.

4.3 | BUILDING A NETWORK OF SUPPORT

Establish and maintain strong relationships with funding bodies, industry experts, and regional stakeholders. Regularly engage with these groups to stay informed about emerging funding opportunities and best practices in climate finance.

4.4 | SHOWCASING SUCCESS STORIES

Publicly share the results of externally funded projects to build credibility, inspire confidence among funders, and highlight the Township's commitment to climate action. Use these examples to strengthen future funding applications and partnerships.

With external funding and partnerships, when available, South Frontenac can accelerate progress toward meeting its climate goals, leverage additional expertise, and alleviate financial challenges, making its sustainability efforts more impactful and far-reaching.

PRIORITY 5

SUPPORT NATURAL PRESERVATION THROUGH SUSTAINABLE LAND PLANNING

INTRODUCTION

Preserving green spaces and biodiversity is essential for maintaining ecological health, supporting wildlife, and enhancing community well-being. Environmentally sustainable land planning provides a balanced approach to conservation while accommodating responsible growth. By integrating climate considerations into policies and practices, South Frontenac can protect its natural resources for future generations.

INITIATIVES

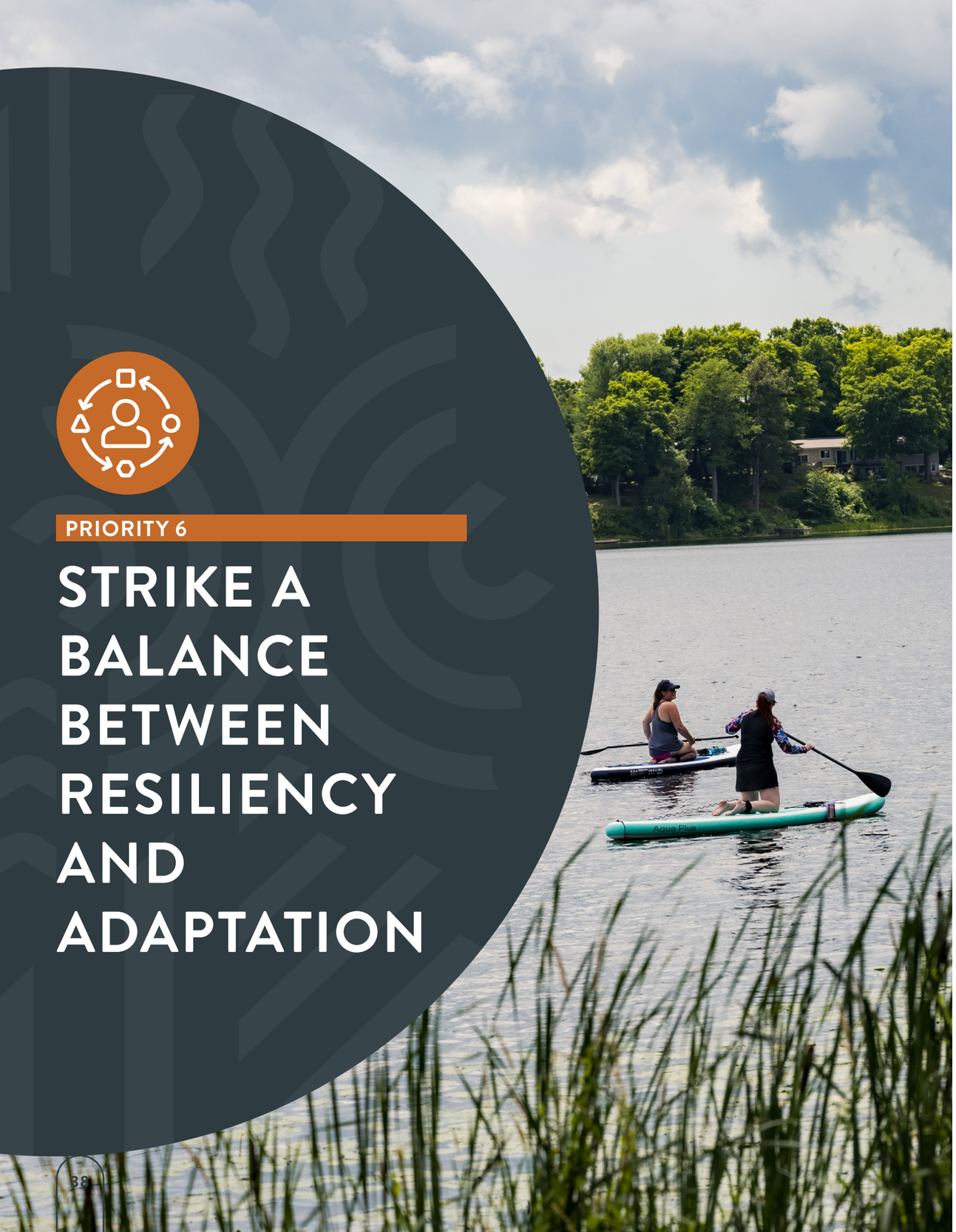
5.1 | POLICY AND OFFICIAL PLAN UPDATES

Revise policies to include climate considerations, such as green procurement practices, energy-efficient building practices, and land-use restrictions that protect sensitive ecosystems.

5.2 | COLLABORATIVE INITIATIVES

Partner with regional Conservation Authorities, other levels of government, and environmental organizations to support efforts like tree planting campaigns, community gardens, and waterfront preservation. These collaborations foster environmental awareness, align land-use planning with shared climate and conservation goals, and amplify efforts by pooling resources and expertise.

By integrating natural preservation into sustainable land planning, South Frontenac ensures a balanced approach to development, safeguarding its landscapes and ecosystems for future generations.



PRIORITY 6

STRIKE A BALANCE BETWEEN RESILIENCY AND ADAPTATION

INTRODUCTION

Climate change presents both immediate challenges and long-term risks. To address these effectively, the Township must adapt to current impacts while building resilience to withstand future uncertainties. This balanced approach ensures South Frontenac remains prepared, protects its infrastructure and community, and supports an environmentally sustainable future for generations to come.

INITIATIVES

6.1 | EMERGENCY PREPAREDNESS

Integrate a climate lens when developing and/or updating the Township's Emergency Plan and relevant response plans, to plan for climate-related emergencies (i.e. wildfires, storms, and flooding).

6.2 | COMPREHENSIVE RISK ASSESSMENTS

Conduct assessments to identify the Township's vulnerabilities to climate change impacts, such as infrastructure at risk of flooding or areas prone to wildfires. Use these findings to prioritize and guide investment in risk mitigation strategies.

6.3 | ADAPTIVE INFRASTRUCTURE SOLUTIONS

Strengthen stormwater management systems to handle increased rainfall and reduce flooding risks. Protect critical infrastructure, such as roads, bridges, and utilities, by upgrading designs to withstand extreme weather events and other climate-related stresses.

With a focus on both resilience and adaptation, South Frontenac can mitigate climate change risks while preserving its community, infrastructure, and natural assets for a sustainable tomorrow.

PRIORITY 7

ENHANCE COMMUNITY COMMUNICATION AND EDUCATION

INTRODUCTION

Engaging and educating the community through improved communications and information sharing will cultivate a sense of collective responsibility and strengthen support for environmental sustainability initiatives. By enhancing communication about ongoing and planned efforts, and providing educational resources, the Township can keep the community well-informed and empower individuals to contribute to meaningful change.

INITIATIVES

7.1 | AWARENESS CAMPAIGNS

Leverage the Township's website and social media platforms to promote and provide accessible and inclusive resources to support climate awareness and educate residents about the importance of environmental sustainability initiatives. Use engaging approaches like storytelling, infographics, and videos to make information accessible and relatable. A dedicated online presence will ensure residents stay informed about climate efforts, upcoming events, and practical ways to contribute to a more sustainable community.

7.2 | COLLABORATE WITH THE COMMUNITY AND CELEBRATE PROGRESS

Partner with local schools, businesses, non-profits, and community members to support climate action and promote environmental awareness. Share success stories and recognize local contributions to inspire continued engagement and build momentum across the Township.

7.3 | GATHER FEEDBACK AND ADAPT STRATEGIES

Use surveys, focus groups, and other feedback mechanisms to gather input from residents. Incorporate their insights to refine and adapt the Township's climate strategies.

By working collaboratively with its community, South Frontenac can ensure climate initiatives are broadly supported, effectively implemented, and successful in achieving lasting environmental sustainability.

PRIORITY 8

ENHANCE TEAM COLLABORATION AND INTEGRATION OF SUSTAINABILITY

INTRODUCTION

Building internal capacity and fostering cross-departmental collaboration ensures that climate initiatives are seamlessly integrated into all municipal operations. By equipping staff with the necessary tools, knowledge, and a shared commitment to sustainability, the Township can drive effective and consistent action across departments.

INITIATIVES

8.1 | STAFF TRAINING AND RESOURCES

Provide staff with ongoing training and resources to effectively manage climate initiatives. Equip them with the latest tools and best practices to integrate climate and conservation considerations into daily decision-making and project planning.

8.2 | UNIFIED, COLLABORATIVE APPROACH

Promote interdepartmental collaboration to align sustainability goals and share insights. Establish forums or regular meetings for departments to coordinate efforts, share success stories, and identify opportunities for innovation.

8.3 | EMBEDDING A CULTURE OF SUSTAINABILITY

Make environmental sustainability a core element of the Township's operations by integrating climate considerations into policies, procedures, and decision-making frameworks. Encourage staff at all levels to champion climate action, creating a unified organizational culture focused on long-term resilience and sustainability.

By investing in capacity-building and fostering a collaborative culture, South Frontenac can ensure its climate strategies are implemented effectively and supported across the Township.

SECTION 8

MEASURING SUCCESS

HOW WILL THE TOWNSHIP MEASURE SUCCESS?

Evidence-Based Decision-Making

Use data and metrics to prioritize impactful solutions, ensuring all initiatives are tailored to the Township's unique needs.

Accountability and Transparency

Track and report progress regularly to build trust with the community and stakeholders.

Collaboration and Capacity Building

Engage external stakeholders and neighbouring municipalities to support collaboration and knowledge exchange.

Alignment with Council Priorities

Integrate climate goals into existing strategic plans to ensure coherence and avoid duplication.

Effective Financial Planning

Integrate operating and capital budgets to assess long-term ROI and sustainability by applying a climate lens to decision-making within the asset management plan where appropriate.

Celebrating Success

Share achievements internally and with the community and the Township's partners to build morale, inspire community participation, and demonstrate progress.

SECTION 9

IMPLEMENTATION ROADMAP

The following implementation roadmap specifies actions, timelines, resources, potential challenges and success metrics for the initiatives that support the eight priority areas. This implementation roadmap provides a simplified guide for tracking the rollout of actions identified in the Corporate Climate Change Action Plan (CCCAP). It outlines anticipated timelines and current status across each of the eight priority areas. This roadmap supports internal coordination and communication with Council and the public.

PRIORITY 1 - RESILIENT INFRASTRUCTURE AND PROACTIVE ASSET PLANNING

1.1 Climate-Informed Investments

1.2 Leveraging Past Successes

1.3 Infrastructure Design that Supports Climate Change Impacts

1.4 Monitoring and Maintenance

- Data collection underway.
- 1.1, 1.3, 1.4 – Initiate in 1–2 years; implement over 3–4 years.
- 1.2 – Currently using past projects as references.

PRIORITY 2 - ENHANCE ENERGY EFFICIENCY IN PUBLIC BUILDINGS

2.1 Common-Sense Fixes

2.2 Adopting ENERGY STAR Technology

2.3 Energy-Efficient Retrofits:

2.4 Building Automation Systems

2.5 Renewable Energy Integration

2.6 Ongoing Energy Audits

- 2.1–2.3 – Implementation already underway where feasible.
- 2.4 – Initiate in 3–4 years (longer-term, dependent on funding and system compatibility)
- 2.5 – Explore within 1–2 years; implement as funding allows.
- 2.6 – Ongoing; audits to be conducted every 2-3 years or as needed.

PRIORITY 3 - IMPLEMENT CLIMATE-RESPONSIVE BUDGETING

3.1 Life-Cycle Cost Analysis

3.2 Capacity Building for Climate Finance

- 3.2 – Staff capacity-building is ongoing.
- 3.1 – Early planning phase; integrate into budgeting cycles over next 1–2 years.

PRIORITY 4 - LEVERAGE EXTERNAL FUNDING AND PARTNERSHIPS FOR CLIMATE PROJECTS

4.1 Grant Identification and Applications

4.2 Highlighting Return on Investment (ROI)

4.3 Building a Network of Support

4.4 Showcasing Success Stories

- 4.1 & 4.3 – Ongoing (actively pursued in all planning cycles).
- 4.2 – Incorporate into all project development phases (ongoing).
- 4.4 – Share ongoing success stories; align with website update (target: 1–2 years).

PRIORITY 5 - SUPPORT NATURAL PRESERVATION THROUGH SUSTAINABLE LAND PLANNING

5.1 Policy Updates:

5.2 Collaborative Initiatives

- 5.1 – Complete.
- 5.2 – Ongoing (updated regularly to align with land-use planning and conservation priorities).

PRIORITY 6 - STRIKE A BALANCE BETWEEN RESILIENCY AND ADAPTATION

6.1 Emergency Preparedness

6.2 Comprehensive Risk Assessments

6.3 Adaptive Infrastructure Solutions

- 6.1–6.3 – Underway. Continue to integrate into infrastructure and emergency planning.
- Target full integration across departments within 3–4 years

PRIORITY 7 - ENHANCE COMMUNITY COMMUNICATION AND EDUCATION

7.1 Awareness Campaigns

7.2 Collaborate with the Community and Celebrate Progress

7.3 Gather Feedback and Adapt Strategies

- 7.1 – Launch with website update (within 1 year).
- 7.2–7.3 – Transition into broader ‘Community Lift’ initiative; initiate within 1–2 years, sustain over 3–4 years.

PRIORITY 8 - ENHANCE TEAM COLLABORATION AND INTEGRATION OF SUSTAINABILITY

8.1 Staff Training and Resources

8.2 Unified, Collaborative Approach

8.3 Embedding a Culture of Sustainability

- 8.1–8.2 – Ongoing (part of team development and onboarding practices).
- 8.3 – Targeted for rollout within 1–2 years; reinforce in future policy updates.

APPENDIX I
IDENTIFIED RISKS AND VULNERABILITIES

Climate change is a global crisis impacting all regions of the planet. Its impacts – increasingly severe weather events and shifting climate patterns – require immediate attention due to its far-reaching consequences impacting communities' well-being and ecosystems' stability.

In Ontario, particularly in rural areas such as the Township of South Frontenac, the repercussions are multifaceted, affecting every aspect of the province from its natural ecosystems and infrastructure to its economic sectors and local communities. From 1948 to 2016, Ontario saw its mean annual temperature increase by 1.3°C, with the mean annual precipitation increasing by 9.7% over the same period[1]. Projections suggest that by the 2080s, if nothing more is done to curb emissions, Ontario could face 55 to 60 days of unusually high heat of 30°C or more annually, a significant increase from the current average of 16 days. Such changes threaten the province's biodiversity, water resources, public health, and infrastructure[2].

Rural communities like South Frontenac are especially vulnerable. The local economy, heavily reliant on agriculture and natural resources, faces direct threats from these climate shifts. Climate change leads to increased stress on infrastructure due to altered weather patterns and extreme events, leading to accelerated deterioration and the need for enhanced resilience planning[3]. The agricultural sector must also adapt to shifting climate conditions that threaten crop yields and livestock[4]. Additionally, public health is a growing concern due to increased risks from heatwaves, poor air quality, and disease vectors, challenging existing health infrastructure and requiring significant adaptation measures to protect vulnerable populations, including the elderly and those with chronic health conditions[5].

SCOPE AND LIMITATIONS

An assessment was conducted in accordance with the ISO Standard for Risk Management and ICLEI (International Council for Local Environmental Initiatives) Canada's Building Adaptive and Resilient Communities Framework, which are leading climate adaptation processes for Canadian municipalities. Additionally, the assessment follows the Black, Bruce, and Egener approach[25], which offers a step-by-step risk methodology tailored for local governments. Together, these frameworks facilitated the adoption of a holistic approach that covers multiple assets and systems, as opposed to detailed infrastructure risk assessments.
The evaluation of climate risks is based on future climate projections sourced from publicly available data and extensive literature reviews. However, it is important to note that the outcomes presented do not cover all possible hazards, risks, and consequences of climate change. Factors such as climate variability, data uncertainty, and complex and interdependent systems within communities can make it hard to accurately predict when and how risks will occur. Acknowledging these limitations is essential for accurately interpreting the results.

CLIMATE CHANGE PROJECTIONS & TRENDS

In South Frontenac[9], the annual average temperature was 6.5 °C for the 1971-2000 period, but under a high emissions scenario, it is projected to increase to 9.2 °C for the 2021-2050 period, further rising to 11.3 °C for the 2051-2080 period, and reaching 13.0 °C by the end of the century.

High & Unusual Temperatures

High temperatures are an important variable to monitor for decision-makers and local governments, as they influence ecosystems, human comfort, development planning, and energy systems. Unusually high temperatures are dangerous as they can lead to increased health issues, especially for the older adult population – who are much more likely to suffer from heat exhaustion and heat stroke.

According to Climatedata.ca[10], as time progresses, there is a clear upward trend in peak temperatures, particularly in the latter half of the century. Further examination of the data showed the number of days per year with maximum temperatures exceeding 30°C is also increasing, with the most severe scenario (SSP5-8.5) predicting a range of 47-107 days between the period of 2071-2100, compared to a range of 10-16 days between 1991 and 2020.

Cooling degree days indicate a very similar trend to unusually hot days, projected to increase in number and frequency. This indicates an increased energy demand for cooling and ventilation in the summertime and amplifies the importance of a reliable energy system[11].

Frost-Free Season

Data revealed an increase in the frost-free season as time progresses to a median of 214 days from 2071 to 2100 compared to a median of 166 between 1991-2020, indicating longer periods without freezing temperatures[12]. This can lead to extended agricultural growing seasons, potentially allowing for more diverse crop cultivation. However, it may also alter local ecosystems and increase the prevalence of invasive species or pests.

Low temperatures

Data in South Frontenac revealed extreme cold days where mean air temperature drops below -25° are projected to reach a median of 0 between 2041 and 2070[13]. This shift may reduce residential and municipal heating demands, offering energy cost savings. However, it could pose challenges to local wildlife and plant species accustomed to harsh winters, potentially leading to shifts in the ecosystem.

Freeze-thaw cycles are the total number of days when the air temperature fluctuates between freezing and non-freezing temperatures. The number of freeze-thaw cycles is projected to decrease to reach a median of 62 between 2041 and 2070[14] but become more concentrated in the winter months and may occur more rapidly over shorter periods. When freeze-thaw cycles happen continuously, the freezing, melting, and re-freezing of water can, over time, cause significant damage to roadways, sidewalks, and other outdoor structures. Potholes that form during the spring, or during mid-winter melts, are good examples of the damage caused by this process[15].

Heavy Precipitation

Precipitation in South Frontenac is projected to increase in volume, become more intense and more variable. The median total precipitation in the Township is projected to increase by 21.5% by 2100, according to the most severe scenario (SSP5-8.5). This could mean the Township will receive an additional 194 mm of precipitation per year. Individual rain events will likely increase in intensity, which means more precipitation falling in a shorter period.

Warmer winter temperatures could lead to a shift in precipitation from snow to rain, with snowfall beginning later and ending sooner each year. Additionally, precipitation during winter months may more frequently fall as rain rather than snow, and the snow that does fall may be wetter and heavier.

Wildfire & Smoke

Research has shown that with rising temperatures, three major factors that influence wildfires will worsen: having longer fire seasons, more dry fuel to burn, and frequent lightning strikes that start a fire[16]. In Ontario, the area burned by forest fires is expected to increase, with projections showing that the annual area burned could rise significantly, especially under high emissions scenarios (RCP 8.5). Specifically, by the 2050s, the frequency of large fires (greater than 200 hectares) is projected to increase, intensifying the overall risk of forest fires in the region[17]. With South Frontenac in an area with significant forest coverage, South Frontenac is at risk of larger and more frequent forest fires. This could significantly degrade air quality, leading to increased respiratory and cardiovascular health issues among residents. Prolonged exposure to smoke and fine particulate matter from fires can exacerbate asthma, lead to chronic lung conditions, and strain local healthcare services, impacting overall public health and quality of life.

Droughts

Droughts are periods of long-lasting and widespread water shortages that have significant environmental and socio-economic impacts. The annual moisture deficit, as projected, suggests that drought conditions will slightly increase over time across Ontario, with moisture deficits becoming more frequent. This trend indicates an increase in the likelihood of droughts, although the frequency of these conditions remains relatively stable for now18. Moreover, climate projections that predict summers with multiple or extended heat waves further suggest that droughts will become much more likely and widespread in the region.

Their Impacts

The "Ontario Provincial Climate Change Impact Assessment" report offers a comprehensive overview of the current and projected impacts of climate change across Ontario. The report identifies several risks pertinent to South Frontenac, detailing their effects on infrastructure, key Township's economic sectors, public health and safety, and vulnerable population groups, as outlined below.

Infrastructure: Significant climate-related risks to infrastructure exist within the Mixedwood Plains region, which includes South Frontenac. While all infrastructure across Ontario faces climate risks, not a single asset is considered to have a risk lower than 'medium' under current climate conditions. These risks are projected to increase over time due to extreme weather events and changing climate conditions. Key vulnerabilities highlighted include:

- **Increased risk of infrastructure failures** due to extreme weather events such as storms and floods, which are becoming more frequent and intense.

- **Impacts on transportation and utilities,** which are critical for both economic and daily community functions. These sectors face heightened risks from extreme precipitation and temperature variations, which can lead to operational disruptions and increased maintenance costs.

- **Stormwater management systems** are at high risk, with projections indicating that this risk will remain high in the future.

- **Waste management vulnerabilities:** Extreme weather events, such as increased precipitation, can lead to higher leachate production and potential flooding of landfill sites, which may cause slope instability and increase the risk of waste displacement. Additionally, elevated temperatures raise the likelihood of landfill fires, complicating waste management efforts and posing safety and environmental risks.

The assessment suggests that these infrastructure vulnerabilities could have cascading effects on other sectors, including agriculture, by impacting irrigation systems and access roads, thereby influencing agricultural productivity and access to markets.

Food & Agriculture: Significant impacts on food and agriculture were identified in the Mixedwood Plains, which includes South Frontenac. The region faces a 'very high' climate risk by the end of the century, primarily due to changing temperature and precipitation patterns that directly influence agricultural productivity. While there may be potential opportunities such as longer growing and grazing seasons, these are likely to be offset by negative impacts including declining productivity, crop failures, and livestock fatalities. Although managing uncertainty is common in Ontario's food and agricultural sector, climate change is expected to amplify existing risks and introduce new ones for food producers across the province.

For South Frontenac, this means that local agricultural practices could be significantly affected. Key agricultural commodities like corn, cereals, soybeans, grapes, and field vegetables in the Mixedwood Plains are expected to face increasing climate risks. Adaptive actions and measures to support potential opportunities are crucial to limit the risks and harness any positive impacts that might arise from the changing climate conditions.

Older Populations: In South Frontenac, older adults aged 65 and over constitute 21.5% of the population. Heatwaves can exacerbate chronic conditions such as cardiovascular and respiratory diseases in the elderly, significantly increasing the risk of heat-related illnesses and mortality. For older populations in remote or rural areas, the lack of accessible transportation and healthcare services can significantly delay emergency medical responses during climate events, posing a serious risk to their health and safety.

Public Health & Safety: There are several key vulnerabilities to public health and safety in the Mixedwood Plains, including South Frontenac, due to climate change. Warming temperatures and changing precipitation patterns increase the prevalence of diseases carried by vectors like ticks and mosquitoes, elevating the risks of Lyme disease and West Nile virus. Additionally, extreme weather events such as heavy rainfall and rapid snowmelts can compromise water quality and food safety by introducing contaminants into water systems, raising the risk of water-borne diseases. Moreover, these climate-related events can damage critical infrastructure and disrupt emergency response services, posing further risks to public safety.

APPENDIX II
ABOUT SOUTH FRONTENAC

The Township of South Frontenac is located in Southeastern Ontario, within the County of Frontenac, a region that is approximately 4,000 square kilometres. Established in 1998 through the amalgamation of the former townships of Bedford, Loughborough, Portland, and Storrington, South Frontenac has since grown to be a vibrant, forward-looking, rural municipality. As of the 2021 Statistics Canada Census, the Township is home to more than 20,188 residents, an 8.3% increase since 2016 – a growth rate that exceeds the provincial average by 2.5%6. According to the Growth Analysis Study7, the population is projected to reach 23,800 permanent residents and 10,700 seasonal residents by 2046.

The Township spans an area of 948.05 square kilometres and is characterized by a rich diversity of ecological features. It is particularly known for its 75 named lakes, along with numerous streams, ponds, and natural springs, all of which are integral to supporting local biodiversity and recreational activities.

South Frontenac is also part of the UNESCO-designated Frontenac Arch Biosphere, where the Canadian Shield meets the Adirondack Mountains. This area serves as a critical corridor for biodiversity and species migration. The natural landscape features a mix of forested areas and open spaces, contributing to the Township's biodiversity and the variety of species that call it home.

Additionally, South Frontenac lies within the "Mixedwood Plains" geographic region, as identified by Ontario's Provincial Climate Change Impact Assessment (PCCIA). Known for its diverse forest types, this area is among the most densely populated and agriculturally productive in Canada. It is also expected to face significant impacts from climate change, including temperature increases and variabilities in precipitation patterns. These changes pose threats to water resources, agriculture, and biodiversity within the region, all of which are crucial for South Frontenac's environmental sustainability and economic stability.

KEY SECTORS

Due to its rural nature and geography, South Frontenac's economic growth is heavily reliant on four key sectors, all of which are susceptible to the impacts of climate change. These sectors are outlined as follows:

Agriculture: farming and farm jobs have led the growth in Frontenac over the past ten years, thanks to access to relatively low land prices and taxation rates, combined with easy access to established markets and local distribution systems8. The Township is seeing an emerging community of young farmers operating organic and sustainable ventures alongside traditional farms that have operated for generations.

Tourism: The tourism sector benefits from the natural landscape and outdoor activities available in South Frontenac. It is supported by both the agricultural richness, which attracts culinary tourism, and the preserved natural environments, which attracts eco-tourism.

Local Food & Beverage: The Township emphasizes the quality and skill of its food products and is a great place for unique food experiences provided by local entrepreneurs. South Frontenac offers an array of items including artisan cheeses, organic creams, artisanal sausages, and fine chocolates.

Niche Manufacturing: This sector is known for its specialization and innovation and is distinguished by a blend of traditional craftsmanship and modern technology, contributing significantly to local economic development in the Township.

APPENDIX III

DESIGN AND RENOVATION GUIDANCE

PURPOSE

The following guidance supports the Township's commitment to climate-resilient infrastructure by offering practical, cost-effective considerations for both new municipal builds and retrofits/ renovations. It aligns with South Frontenac's Corporate Climate Change Action Plan (CCCAP) and helps embed a "climate lens" in municipal decision-making.

Note: Not all measures will be feasible for every project—particularly where costs, building age, or timing constraints are at play. The goal is to prioritize upgrades that offer long-term savings, lower emissions, or support climate resilience, while balancing affordability and value-for-money.

1. Apply a Climate Lens at the Start of Each Project

- Integrate climate considerations in project scoping and procurement.
- Use local climate projections to guide site selection, design, and materials.
- Where feasible, align with asset management planning tools.

2. Energy Efficiency First

- Prioritize LED lighting, programmable thermostats, heat pumps, and ENERGY STAR–rated HVAC systems and appliances in all new builds and retrofits.
- Where feasible, transition from oil to lower-emissions heating fuels, such as propane, as part of broader system upgrades.
- Address low-cost, high-impact measures, including air sealing, insulation upgrades, and daylighting strategies.
- Require energy audits at key life-cylce points for buildings more than 10 years old.

3. Leverage What Already Works

- Build on recent Township projects that used energy-efficient upgrades and sustainable materials.
- Use successful pilot initiatives as templates for new work (e.g., solar panel integration).

4. Incorporate Smart, Passive, and Renewable Systems

- Design for solar readiness (e.g., roof orientation, electrical conduit planning).
- Use rainwater harvesting where applicable.
- Automate where beneficial: lighting, HVAC, occupancy sensors, and energy monitoring systems.

5. Prioritize Durability and Climate-Resilient Materials

- Consider freeze-thaw resistant materials for roadbeds, sidewalks, and building envelopes.
- Select materials with lower embodied carbon and longer useful life.
- Incorporate green roof or high-albedo roofing where practical.

6. Enable Electrification

- Plan for future Electric Vehicle fleet needs by installing EV-ready infrastructure at key municipal sites.
- Where full electrification is not immediately feasible, consider dual-fuel or hybrid heating systems.

7. Support Stormwater and Heat Management

- Use permeable surfaces, bioswales, and naturalized buffers where possible.
- Incorporate shade trees and vegetation to reduce urban heat island effects.
- Consider underground infrastructure design that accounts for projected extreme precipitation levels.

8. Align Budgets with Life-Cycle Costing

- Conduct a life-cycle cost analysis (LCCA) for all major capital projects, when resources permit.
- Include estimated maintenance, emissions, and energy use over time—not just up-front costs.
- Use LCCA results to inform capital planning and budgeting decisions.

9. Ensure Compatibility with Township Climate and Land Use Policies

- Reference the Official Plan for direction on shoreline protection, land use compatibility, and biodiversity corridors.
- Ensure designs meet both resilience (emergency preparedness) and adaptation (long-term climate readiness) goals.

10. Document and Share Learnings

- Track and report on emissions reductions, energy savings, and cost benefits post-construction.
- Share lessons learned internally across departments and externally with peers and funding bodies.
- Apply lessons learned to future projects.

RECOMMENDED MINIMUM REQUIREMENTS FOR NEW BUILDS AND RETROFITS

1. Energy Efficiency

- New municipal building designs should target to perform at least 25% better than the Ontario Building Code (SB-10), and at a minimum must meet all Ontario Building Code requirements
- Energy audits must be completed for retrofit projects on facilities older than ten years.
- Install LED lighting, programmable thermostats, and ENERGY STAR-rated HVAC systems as standard.

2. Electrification Readiness

- All new builds should consider EV charger–readiness (i.e., rough-in electrical infrastructure at a minimum).
- Mechanical systems should be electrified or dual-fuel where feasible (e.g., heat pumps instead of propane).

3. Smart & Renewable Features

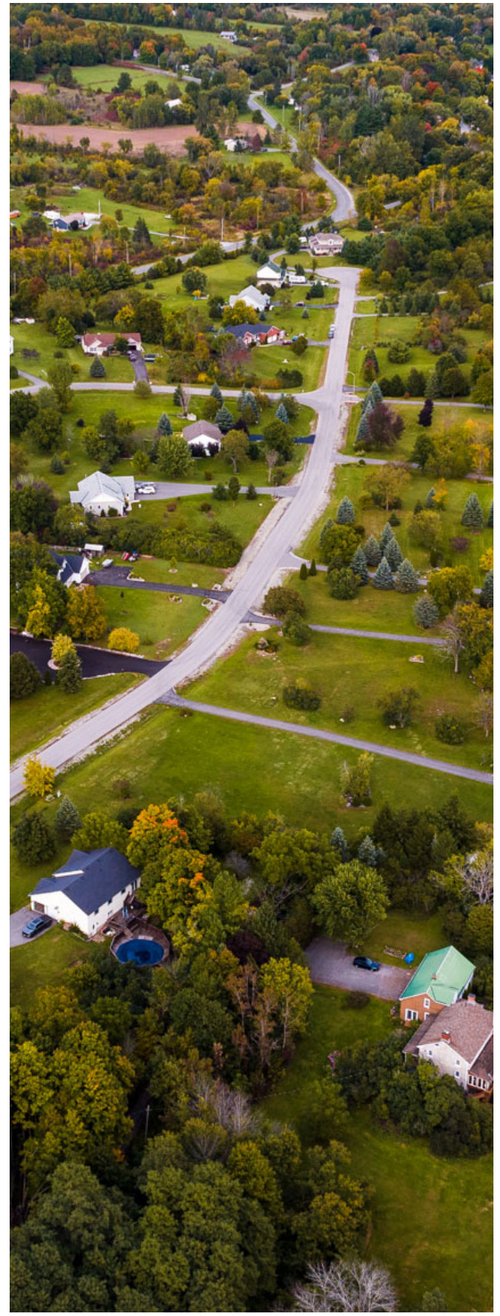
- New buildings should be solar-ready (e.g., south-facing roofs, pre-installed conduit paths).
- Consider building automation systems for HVAC, vacancy sensors, and lighting controls on new builds and major HVAC retrofits.

4. Stormwater & Resilience

- Permeable surfaces, bioswales, or naturalized stormwater features should be used where site conditions allow.
- Stormwater systems must be designed using ministry guidelines for future extreme precipitation events, using local climate projections.

5. Life-Cycle Costing

- Require a basic life-cycle cost analysis for all capital projects with a climate impact, including facilities over $1M and fleet over $500k, capturing capital, energy, and maintenance costs.



APPENDIX IV

CAPITAL PROJECT CHECKLIST

Climate-Resilient Capital Project Checklist

For New Builds & Retrofits | Apply early in project scoping

The following quick-reference checklist is intended to help staff apply a climate lens at key project milestones—supporting practical, climate-resilient design across both new builds and renovations.

1. Climate Lens & Planning

- ☐ Have climate risks and local weather projections been reviewed?
- ☐ Is the project aligned with the Asset Management Plan and Official Plan?
- ☐ Have potential disruptions (e.g., heat, flooding) been factored into design?

2. Energy Efficiency

- ☐ Have energy-efficient systems been considered (LED, heat pumps, smart controls)?
- ☐ Has an energy audit been completed (for retrofits over 10 years old)?
- ☐ Does the design meet Ontario Building Code energy standards?

3. Smart & Renewable Systems

- ☐ Is solar readiness integrated (roof angle, conduit, etc.)?
- ☐ Are automation or passive systems (e.g., HRVs, sensors) included?

4. Durable, Low-Carbon Materials

- ☐ Are freeze-thaw or low-embodied carbon materials prioritized?
- ☐ Is a green or reflective roof considered where feasible?

5. Electrification & EV Readiness

- ☐ Is EV charging infrastructure included or pre-wired?
- ☐ Are systems electrified or designed for future transition?

6. Stormwater & Heat Resilience

- ☐ Are permeable surfaces, bioswales, or natural buffers used?
- ☐ Is vegetation or canopy cover included to reduce heat islands?

7. Life-Cycle Costing & ROI

- ☐ Was a life-cycle cost analysis (LCCA) completed?
- ☐ Have maintenance, emissions, and grant funding been factored in?

8. Policy Alignment

- ☐ Does the project meet Official Plan and climate policy expectations?
- ☐ Is shoreline protection or biodiversity considered, if applicable?

9. Post-Construction

- ☐ Will results be measured (e.g., energy use, GHG savings)?
- ☐ Are lessons learned being documented for future projects?

APPENDIX V
WHAT WE HEARD

In the Fall of 2024, a survey was conducted to assess public opinion on the Township's Corporate Climate Change Action Plan. 277 responses were received, representing about 1.4% of South Frontenac's population. While the results are not statistically generalizable and likely reflect the views of residents already engaged or interested in climate issues, the themes offer valuable insights. They reveal a community that is concerned about climate change, supportive of sustainability efforts, and eager for more communication and transparency from the Township.

Key Insights

- **Strong Personal Concern**
    - 68% of respondents said addressing climate change is "extremely" or "very" important to them.
    - Main drivers include concern for future generations and recognition of global/local impacts.
- **Awareness Gaps**
    - Only 6% feel the Township communicates climate actions effectively.
    - 63% rated information-sharing as poor or very poor.
    - Preferred communication channels: website and email newsletters.
- **Mixed Views on Current Actions**
    - 45% rated current efforts as "neutral."
    - 28% found them effective; 27% ineffective.
    - Calls for more ambitious, measurable action and better communication.
- **Balanced Climate Strategy Favoured**
    - 62% want an equal focus on mitigation and adaptation.
    - Few prioritize one over the other (15% adaptation, 13% mitigation).
- **Community Priorities**
    - Top priorities: *Preserving natural areas and increasing energy efficiency of buildings.*
    - Lower priority: Making the Township's fleet greener.
- **Financial Support for Climate Action**
    - 67% support investing in green projects.
    - Nearly 50% support tax increases to fund climate initiatives.
    - Support increases when long-term savings are communicated.
- **Vision and Future Focus**
    - 59% agree with the Township's climate vision.
    - Feedback suggests a desire for stronger, action-oriented language, greater community involvement, and clear, accountable outcomes.

Key Opportunities

- Improve transparency and regular communication on progress.
- Emphasize economic benefits and long-term savings.
- Leverage strong community support for integrated planning, fleet upgrades, and energy-efficient infrastructure.

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