Climate Change Master Plan

Progress Report

City of Ottawa
Planning, Real Estate and
Economic Development

April 2023

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INTRODUCTION

In January 2020, Council approved the Climate Change Master Plan, the overarching framework for how Ottawa will mitigate and adapt to climate change over the coming decades.

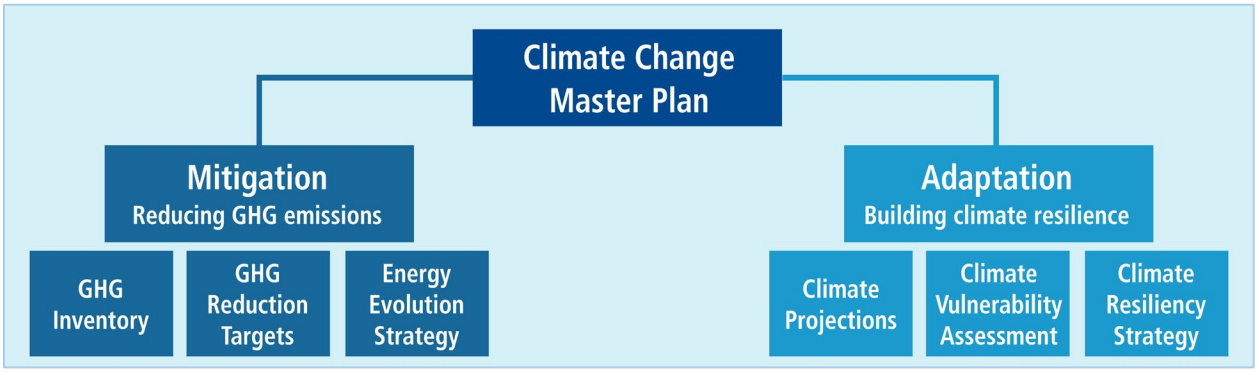


Figure 1: Climate Change Framework

As part of the approved plan, staff committed to providing an annual status update on the Climate Change Master Plan eight priorities. The eight priorities are:

1. Implement Energy Evolution: Ottawa's Community Energy Transition Strategy.
2. Undertake a climate vulnerability assessment and develop a Climate Resiliency Strategy.
3. Apply a climate lens to the new Official Plan and its supporting documents.
4. Apply a climate lens to asset management and capital projects.
5. Explore the feasibility of setting corporate carbon budgets, including piloting them in a small portion of the organization.
6. Explore carbon sequestration methods and the role of green infrastructure.
7. Encourage private action through education, direct and indirect incentives, municipal support, and advocacy for support of individuals and private organizations by senior levels of government.
8. Develop a governance framework to build corporate and community capacity, align priorities, and share accountability in tackling climate change.

The last Climate Change Master Plan status update was received by City Council in October 2021.

Current Status of Climate Change Master Plan Priorities

Overall, seven of the eight Climate Change Master Plan priorities have advanced since the last update in October 2021, with considerable progress made on the first four priorities (Table 1). Most priorities are considered in development, with some identifying as being off track due to the need for further analysis and consultations because of the significant scale and scope of the projects. One priority, Priority #6, has not advanced since the last status update. This is primarily a result of allocating limited staff resource and prioritizing the most critical initiatives to advance climate change goals. Table 1 identifies the status of each of priority based on the following:

- **Not started** – Priority has not been initiated
- **In development** – Priority is in the development phase for a project, program or plan
- **Implementation** – Priority has shifted from the development phase into the implementation phase for a project, program, or plan
- **Completed / Monitoring** – Priority has reached the end of the implementation phase and is in the monitoring phase
- **Cancelled** – Priority has been cancelled
- **On Track** – Priority is proceeding according to the revised milestones in the last progress update (October 2021) status update
- **Off Track** – Priority is not proceeding according to the revised milestones in the last progress update (October 2021) status update

Table 1: Status of the Climate Change Master Plan Priorities

#	Priority	Status	Schedule
1	Implement Energy Evolution: Ottawa's Community Energy Transition Strategy	Various (see Table 3)	Various (see Table 3)
2	Undertake a climate vulnerability assessment and develop a Climate Resiliency Strategy	In development	Off track

#	Priority	Status	Schedule
3	Apply a climate lens to the new Official Plan and its supporting documents	Official Plan: Implementation Supporting Documents: In development	Off track
4	Apply a climate lens to asset management and capital projects	In development	On track
5	Explore the feasibility of setting corporate carbon budgets, including piloting them in a small portion of the corporation	In development	Off track
6	Explore carbon sequestration methods and the role of green infrastructure	Not started	Off track
7	Encourage private action through education, direct and indirect incentives, municipal support, and advocacy for support of individuals and private organizations by senior levels of government	Implementation	On track
8	Develop a governance framework to build corporate and community capacity, align priorities, and share accountability in tackling climate change	In development	Off track

Key achievements since October 2021

Staff have made considerable progress in advancing specific projects and programs that help reduce greenhouse gas emissions and/or build climate resiliency. Notable achievements over the past year and a half have been identified in Table 2.

Table 2: Key Achievements Since October 2021

Date	Achievement
November 2021	Better Homes Ottawa Loan Program launched for homeowners to access low-interest, 20-year loans to cover the costs of home energy improvements.
Early 2022	First four zero emission buses went into service.

Date	Achievement
February 2022	Better Buildings Ottawa launched to support large, privately owned buildings to achieve deep energy retrofits.
April 2022	Council approved the High Performance Development Standard, raising the performance of new building projects to achieve sustainable and resilient design.
April 2022	Council approved the four core Asset Management Plans: Drinking Water, Wastewater, Stormwater, and Transportation, which identified potential climate risks and opportunities to contribute to greenhouse gas emission targets.
Spring/Summer 2022	City installed 26 Level 2 charging stations at 12 locations across the city; two additional 62.5 kW charging stations were installed at Bob MacQuarrie Recreation Complex.
June 2022	Council received the Climate Vulnerability and Risk Assessment, which identified 40 priority risks to be addressed in the next one to three years and will form the basis of the Climate Resiliency Strategy.
July 2022	Council approved $1 million in capital close out and $3.7 million in Hydro Ottawa Dividend Surplus to advance Climate Change Master Plan priorities.
July 2022	Council endorsed the Fossil Fuel Non-Proliferation Treaty.
November 2022	Ministry of Municipal Affairs and Housing approved the new Official Plan, an essential tool to meet climate change objectives through land use planning, urban design, regulatory practice, building design and environmental protection.
March 2023	Council approved Budget 2023 with more than $52 million of new investments with moderate or major climate contributions. More than $30 million of investments are expected to reduce greenhouse gas emissions beyond the Energy Evolution business-as-planned scenario and $22 million of investments are expected to make a moderate or major contribution to build climate resiliency. For the first time Budget 2023 also applied a climate lens to capital budget

Date	Achievement
	requests and included stable, consistent funding of $5 million annually for the Climate Change Master Plan.
April 2023	A free, comprehensive GHG calculator tool (funded through the City of Ottawa, City of Calgary and the Regional Municipality of Durham) was developed and made available for organizations and individuals to calculate the GHG impacts from capital projects and municipal policies.

Report Format

The report has been formatted so that each priority includes:

- **Status** – Identifies the current status of the Climate Change Master Plan priority and what has supported or impacted progress since the last update.
- **Progress since October 2021** – Highlights key achievements since the last status update.
- **Looking Ahead** – Highlights expected achievement to come in the short-term (2023-2025) to help advance progress.
- **Key Performance Indicators** – Identifies metrics being used or will be used to track progress.
- **Priority Highlights** – Highlights select initiatives that have made considerable advancements since the last update.

1. IMPLEMENT ENERGY EVOLUTION: OTTAWA'S COMMUNITY ENERGY TRANSITION STRATEGY

Current Status: Various (refer to Table 3)

Energy Evolution: Ottawa's Community Energy Transition Strategy sets the framework for what it will take for Ottawa to meet the Council approved long-term targets to reduce community greenhouse gas emissions by 100 per cent by 2050 and corporate greenhouse gas emissions by 100 per cent by 2040. An integrated energy, emissions and finance model was used to identify what it will take to achieve these targets in five key sectors: Land Use and Growth Management, Buildings (New and Existing), Transportation, Waste and Renewable Natural Gas, and Electricity.

To accelerate action and investment towards achieving the greenhouse gas targets, Energy Evolution identified 20 projects to be undertaken by 2025 across six areas: land use, buildings, transportation, waste and renewable natural gas, electricity, and enabling projects. Table 3 summarizes the status of each Energy Evolution project. Details on the progress, challenges and next steps for each project follows.

Table 3: Status of Energy Evolution Projects

Sector	Priority project	Status	Schedule
Land use	Integration of energy and climate mitigation policies in the new Official Plan and supporting master plans	Implementation	Off track
Buildings	Better Homes Ottawa Loan Program[1]	Implementation	On track
	Better Buildings Ottawa Strategy and Programs[2]	Implementation	On track

[1] Formerly called Residential Building Retrofit Accelerator Program
[2] Formerly called Commercial Building Retrofit Accelerator Program

Sector	Priority project	Status	Schedule
	Better Homes and Better Buildings Loan Programs[3]	Implementation, embedded in Better Homes Loan and Better Buildings Programs	On track
	Energy and Emissions Community Improvement Plans	In development	Off track
	Community Building Heating Strategy	In development	Off track
	High-Performance Development Standard	Implementation	Off track
	Net Zero Municipal Buildings Project[4]	In development	Off track
	Municipal Green Building Policy Update	In development – embedded in Net Zero Municipal Buildings Project	Off track
Transportation	Personal Vehicles Electrification Strategy	In development	Off track
	Zero Emission Commercial Vehicles Strategy	Not started	Off track
	Green Fleet Strategy[5]	In development	Off track
	Alternative Energy Sources for Transit Program	In development	Off track
	Transportation Mode Shift	In development	Off track
Waste and Renewable Natural Gas	Organics Resource Recovery Strategy	In development	Off track
	Renewable Natural Gas Strategy	In development	Off track
Electricity	Electricity Resource Strategy	In development	On track

[3] Formerly called Building Retrofits through Local Improvement Charges
[4] Formerly called Municipal Buildings Renewal and Retrofit Program
[5] Formerly called Update to Municipal Green Fleet Plan

Sector	Priority project	Status	Schedule
Enabling Projects	Better Buildings Network[6]	In progress – embedded into Better Buildings Ottawa project	On track
	Climate Change Education and Outreach Program	Implementation	On track
	Fund the Evolution	In development	Off track

Land Use and Growth Management

Land use and growth management can help reduce Ottawa's emissions. Policies in the new Official Plan promote compact growth, enable sustainable and resilient site and building design as part of new construction, prioritize a shift to energy efficient transportation modes, and enable the use of local renewable energy sources.

Energy Evolution projects that fall under the Land Use and Grown Management sector include:

- Integration of energy and climate mitigation policies in the new Official Plan and supporting master plans

Progress since October 2021:

✓	Council approved the new Official Plan in late 2021; the provincial government approved the plan in November 2022.
✓	Ottawa's new Official Plan is based on a balanced growth management scenario in order to mitigate the effects of growth on land consumption, protect lands having agricultural or ecological importance, efficiently use public services; all of which contribute to reducing the city's carbon footprint and building greater resilience to the effects of climate change.

Integration of energy and climate mitigation policies in the new Official Plan and supporting master plans

This project has moved into implementation but is off track because of the provincial government's new legislation including the More Homes Built Faster Act (Bill 23) and the

[6] Formerly called Climate Ambassadors Network

More Homes for Everyone Act (Bill 109), as well as the delayed provincial approval of Ottawa's new Official Plan.

Looking ahead:

☐	Work is underway to develop a new Comprehensive Zoning By-law to replace the current Zoning By-law 2008-250; purpose of this project is to ensure that the city's zoning regulations conform with and implement the directions for land use, density, site design and building form of the new Official Plan. It is anticipated to be completed by 2025, which meets the three-year timeline required under the Planning Act upon Ministerial approval of the new Official Plan.
☐	Zoning regulations for renewable energy generation and energy storage facilities will be tabled at Committee and Council in Q4 2023.

Key Performance Indicators

Section 3 (Growth Management Framework) of the Official Plan sets out a requirement for the Climate Change Master Plan to report annually on emissions from land use, transportation and energy planning consistent with Council-approved greenhouse gas reduction targets, against a) the projected demand for urban expansion (3.1.7.7) and b) progress on intensification (3.2.7.7). Key performance indicators (KPIs) will be developed to support the following objectives:

a) Alignment with local energy utilities to help control the cost of distribution, facilitate on-site generation and support local distributed energy;

b) Energy efficient built forms and proximity to a mix of land uses;

c) Maximize the energy and emission reduction performance of new development or modifications to existing development;

d) Access to sustainable modes of travel as well as infrastructure to support the electrification of private and public vehicles; and

e) Alignment of intensification targets with progress towards targets for the reduction of greenhouse gas emissions.

KPIs will also be tracked through the annual Official Plan Monitoring Report, with the first plan expected to be tabled at Planning and Housing Committee in Q1 2024. Reporting will be informed by KPIs set out within the supporting master plans.

Buildings (New and Existing)

The buildings sector is currently the largest contributing sector to emissions in Ottawa and the largest energy consumer. Emissions are generated mostly through the combustion of fossil fuels (natural gas, propane, heating oil, and diesel) for heating. Electricity is employed for some heating and most cooling as well as for appliances and lighting; although electricity forms the balance of energy demands, it forms a small contribution to emissions. Key opportunities identified for significant potential greenhouse gas reductions include deep energy retrofits, high-performance buildings, and the use of heat pumps and district energy for space for heating.

Energy Evolution projects that fall under the Buildings (New and Existing) sector include:

- Better Homes Ottawa Loan Program
- Better Buildings Ottawa Strategy and Programs
- Better Homes and Better Buildings Loan Programs
- Energy and Emissions Community Improvement Plans
- Community Building Heating Strategy
- High-Performance Development Standard
- Net Zero Municipal Buildings Project
- Municipal Green Building Policy Update

Progress since October 2021:

✓	Better Homes Ottawa Loan Program and Better Buildings Ottawa launched. The Better Homes Ottawa Loan Program was so successful that it was recapitalized with an additional $30 million (see Project Highlight for further details).
✓	Council approved the High Performance Development Standard, working to raise the performance of new building projects to achieve sustainable and resilient design.

✓	First deep energy retrofit of a municipal building began at the Hintonburg Community Centre. Through the Green and Inclusive Community Buildings Program, Infrastructure Canada will be contributing up to 80% of eligible expenses related to the retrofit project, up to a maximum of $629,971.
✓	The Ontario Energy Board refused to approve Enbridge's plans to replace the St. Laurent North Pipeline, partly because of City input that approving the pipeline would be in direct conflict with Energy Evolution.
✓	Completed a feasibility study for a waste energy transfer system at LeBreton flats.
✓	Contracted studies of the open-loop geothermal resource potential and wastewater energy transfer potential within Ottawa. The data is now available on an interactive map on GeoOttawa.

Challenges:

Half of the projects in the building sector have moved from the development phase into the implementation phase including Better Homes Ottawa Loan Program and Better Buildings Ottawa; half of the projects are still in development. Most projects are considered off track.

Better Homes Ottawa Loan Program, Better Buildings Ottawa, and Better Homes and Better Buildings Loan Programs

These projects have moved to the implementation phase and are on track; however, staff anticipate that scaling these initiatives in line with Energy Evolution may prove to be challenging in the future due to staff capacity, financing, limited program uptake, lack of national or provincial retrofit code, lack of mandatory disclosure and performance standards, potential resistance to regulations, limited price on carbon, and/or the lack of workforce available to support these initiatives. Many of these limitations have been discussed in previous reports. Funding from the $5 million Climate Change Master Plan spending plan will help address staff capacity issues and support additional studies and outreach.

Energy and Emissions Community Improvement Plans

This project is in development but off track because the future of Community Improvement Plans in Ottawa is under review. Staff have completed studies to inform the development of Energy Community Improvement Plans. If Community Improvement Plans will continue in Ottawa, staff aim to bring a Building Performance Standards and Energy and Emission Community Improvement Plan report to Council in Q3 2023 for consideration.

Community Building Heating Strategy

This project is in development but off track due to staff capacity, limited data and cold climate examples, complexity of issues, and lack of defined City roles, responsibilities, or even opportunities. Staff have almost completed a Biogas Optimization study, mapped geothermal and wastewater energy transfer potential, supported a Waste Energy Transfer Pilot project, started exploring Integrated Resource Planning with Enbridge and Hydro Ottawa and launched a Net Zero District Energy feasibility study and high level concept design. Outcomes from each of these will be considered in the development of a Community Building Heating Strategy. Staff are currently assessing what is required to bring this project back on track and whether funding from the $5 million Climate Change Master Plan spending plan is required to help address any of the challenges. Staff anticipate significant challenges with this project because community heating is a complex issue with multiple aspects including:

- the cost and difficulty of improving the energy performance of the existing building stock;
- the cost of and capacity to convert buildings to heat pump-based heating;
- the cost and availability of renewable natural gas; and
- the capital cost of energy delivery systems such as increased electrical capacity and district energy systems.

In addition, utility infrastructure upgrades or system changes have long lead times from planning to implementation and the lack of defined City roles and responsibilities in catalyzing action is anticipated to be a key challenge for this strategy.

High Performance Development Standard

This project is moving into implementation but is off track because of the provincial government's new legislation including the More Homes Built Faster Act (Bill 23) and the More Homes for Everyone Act (Bill 109), as well as delayed provincial approval of Ottawa's new Official Plan. Staff will bring a report to Council in Q2 2023 to revise the High Performance Development Standard implementation timelines and revised Site Plan Control By-law amendments (initially approved in July 2022) to align with new provincial legislation. The High Performance Development Standard is anticipated to come into effect in Q3 2023.

Net Zero Municipal Building Project

This project is in development but off track due to staff capacity, lack of data (e.g., electrical capacity assessment of facilities), lack of funding, complexity of issues (e.g., need to simultaneously consider heating/cooling, EV/small engine charging needs and renewable energy generation and storage), supply chains issues, inflation, and lack of defined roles and responsibilities. A deep retrofit has started at Hintonburg Community Centre and staff have applied for funding to support a deep retrofit at a second community centre. A project charter describing the scope of work and governance for the Net Zero Municipal Building Project has been developed. Funding has been allocated to complete a portfolio assessment, develop case studies and costing, complete an electrical capacity assessment for key facilities and support ongoing renewal or retrofit efforts as they arise. The Net Zero Municipal Building Project will cover: pilot projects, renewals, deep retrofits, new construction, and additions. Staff will assess what is required to bring this project back on track and anticipate that there will be implementation challenges that will require more resources for ongoing and future deep energy retrofits, as well as more detailed costing and policy changes for longer payback periods to support meaningful advancement on deep retrofits.

Looking ahead:

☐	Continuous improvement of the Better Homes Ottawa Loan Program and the Better Buildings Ottawa Programs, including the launch of incentive and retrofit manager programs, virtual audits and building labels, developing additional capacity building and financial tools and exploring regulations.
☐	Staff will bring a report to Council in Q2 2023 to revise the High Performance Development Standard implementation timelines and Site Plan Control By-law amendments. The High Performance Development Standard is anticipated to come into effect in Q3 2023.
☐	Net Zero Municipal Buildings Project to be tabled at Committee and Council in 2024.

PRIORITY HIGHLIGHT – BETTER HOMES OTTAWA LOAN PROGRAM AND BETTER BUILDINGS OTTAWA

The Better Homes Ottawa Loan Program launched in November 2021 with a total of $8 million in zero-interest loans and $4 million in low interest loans for homeowners to pay for home energy improvements that are tied to the property, not the individual. In 2022, the program was recapitalized with a $30 million loan agreement with VanCity Community Investment Bank. As of December 31, 2022, 55 projects have been completed and an additional 975 are in progress. Over $3 million in loan capital has been disbursed so far, and completed projects are averaging a greenhouse gas reduction of 40% per year.

Better Buildings Ottawa launched in February 2022 to support large, privately owned buildings to achieve deep energy retrofits. The City's Benchmarking and Auditing Program invited property owners and managers to voluntarily disclose their buildings' energy and water consumption and display their overall energy performance publicly through an Energy Disclosure Map. In its first year, the Benchmarking and Auditing Program had 334 properties participate. The City of Ottawa also completed neighbourhood-wide thermal scans in the downtown area and Kanata North, analysing approximately 190 buildings.

Key Performance Indicators

Some key performance indicators (KPIs) have been identified to track progress towards reducing emissions within the building sector. KPIs are based off the Energy Evolution model and supporting projects.

INDICATOR	CURRENT	TARGET
Emissions from natural gas usage within residential buildings sector (kt CO_2e)	1,316 kt CO_2e	390 kt CO_2e by 2030
Emissions from natural gas usage within ICI buildings sector (kt CO_2e)	800 kt CO_2e	280 kt CO_2e by 2030
Number of projects being carried out through Better Homes Ottawa Loan Program	55 projects	63,000 total projects undertaken by 2030
Number of Better Buildings Ottawa benchmarking participants	334 participants	1,000 total participants by August 2023

Additional KPIs will be developed through the Better Buildings Ottawa, Better Homes Ottawa Loan Program, High Performance Development Standard, Net Zero Municipal Building Project, Community Building Heating Strategy, and the Energy Conservation and Demand Management Plan with consideration of Energy Evolution targets.

Transportation

The transportation sector is currently the second largest contributing sector to emissions in Ottawa and the second largest energy consumer. It includes five vehicle types (cars, light trucks, heavy trucks, urban buses, and light rail transit) and accounts for emissions generated through the combustion of fossil fuels (diesel and gasoline) as well as alternative fuels (biodiesel, ethanol, and electricity).

Achieving significant greenhouse gas reductions hinges on transforming transportation in two ways: how people and goods move within the city and the National Capital Region and what fuels this movement. A flexible, integrated set of options is required to allow seamless transition between transportation options to reduce reliance on vehicles, leading to a reduction in vehicle kilometres travelled and associated emissions. This includes a robust public transportation system with frequent service, increased active transportation options supported by safe walking and cycling facilities, shared mobility including shared

commuting, auto-share and bike-share programs, and mobility hubs. At the same time, transportation options need to be electrified (or other zero carbon solutions) to drastically reduce greenhouse emissions.

Energy Evolution projects that fall within the Transportation sector include:

- Personal Vehicles Electrification Strategy
- Zero Emission Commercial Vehicles Strategy
- Green Fleet Strategy
- Alternative Energy Sources for Transit Program
- Transportation Mode Shift

Progress since October 2021:

✓	Ottawa's first four battery electric buses went into service in early 2022.
✓	Council approved the funding model and business case for the Zero-Emission Bus program that leverages a $350 million funding grant from Infrastructure Canada and a $380 million loan from the Canada Infrastructure Bank. Electrification plans include charging infrastructure, building upgrades, re-tooling and equipment, and 350 electric buses.
✓	26 Level 2 charging stations at 13 locations were installed across the city; two additional Level 3 charging stations were installed at Bob MacQuarrie Recreation Complex. Usage data for public charging stations installed by the City is now available on Open Ottawa.
✓	Supported the EV Experience project led by EnviroCentre to educate and provide first-hand knowledge to residents on the benefits of electric vehicles. A total of 1,080 electric vehicle test drives were provided at 22 community events across Ottawa in 2022.
✓	Phase three of the Transportation Master Plan consultations was completed and included public engagement on proposed policies and the active transportation projects.

Challenges:

Most projects in the transportation sector are in development; work on the Zero Emission Commercial Vehicles Strategy has not started. All projects in the transportation sector are off track.

Personal Vehicles Electrification Strategy

This project is in development but off track due to staff capacity, complexity of issues, lack of defined City roles and responsibilities, supply chains issues, and funding, including additional costs required for accessible electric vehicle charging station design and installation. A project charter describing the scope of work and governance for the Personal Electric Vehicle Strategy and supporting Corporate Electric Vehicle Policy update has been developed, and staff will be working through known issues. As part of the project, staff will assess what is required to bring this project back on track and what resources will be required to manage risks and support implementation. Staff anticipate implementation challenges associated with lack of charging equipment in rentals/apartments, higher initial purchase price of electric vehicles compared to gasoline vehicles, and potential grid constraints in areas of high demand for electric vehicle charging.

The Personal Electric Vehicle Strategy and supporting Corporate Electric Vehicle Policy update is expected to be tabled at Committee and Council in Q4 2023.

Zero Emission Commercial Vehicles Strategy

This project has not started and is off track due to staff capacity. The project has not been prioritized because there is currently limited supply of medium-heavy duty zero emission vehicles, and the business case for zero emission vehicles is expected to improve in 2025 when more diverse commercial vehicles become available. Given that Zero Emission Commercial Vehicles is one of Energy Evolution's top five actions, staff will assess what is required to bring this project back on track and what role the City has in catalyzing action in the commercial sector.

Green Fleet Strategy

The project is in development but has pivoted from being an update to the Municipal Green Fleet Plan to a Green Fleet Strategy. Where previous Green Fleet Plans targeted short term coverage periods, by providing high level guidelines for light unit replacement only, Fleet Services requires a formal, Council approved, long-term (20+ year) Green Fleet Strategy and roadmap, providing coverage and direction across all unit platforms, aiding the City in reaching its GHG reduction targets in line with Energy Evolution.

The Green Fleet Strategy is expected to be significantly more comprehensive than previously completed Green Fleet Plans with a heavy focus on long-term planning and scenario-based roadmap for a phased transition of all units, including medium and heavy

units. This approach will consider the wide diversity of fleet units, client needs, market conditions, technology, education, training, procurement, monitoring, and potential infrastructure needs as factors to achieving a zero-emission corporate fleet by 2040. The Green Fleet Strategy is scheduled to be tabled at Committee and Council in 2024.

In parallel with the development of the Strategy, even with challenging supply chain constraints, Fleet's first choice will continue to always be to look at hybrid and electric options; even when the market continues to predict that challenges for battery electric vehicles and hybrid electric vehicles availability will continue through 2024.

Alternative Energy Sources for Transit Program

This project is in development but off track due to delays in Infrastructure Canada funding; this means fewer buses will arrive in early years but procurement numbers will increase to deliver 350 zero-emission buses by 2026. Future procurement of zero-emission buses and actual amounts delivered will be identified as part of the annual budget process. Beyond 2026, OC Transpo is committed to purchasing additional zero-emission buses and electrifying Para Transit should the technology meets OC Transpo's operational requirements (transit support vehicles are to align with the upcoming Green Fleet Strategy). OC Transpo continues to monitor the procurement of zero-emission buses in other Canadian transit agencies.

Transportation Mode Shift

This project is in development but delayed. The development of the Transportation Master Plan was impacted by the COVID-19 pandemic, which had a significant impact on travel patterns. As a result, it was necessary to postpone critical data collection activities, including the Origin-Destination travel survey. To advance elements of the Transportation Master Plan that do not rely on the Origin-Destination survey, the project was divided into two parts. Part 1 includes the transportation policies and Active Transportation projects and is to be tabled at Transportation Committee and Council in Q2 2023. Part 2 includes development of the Capital Infrastructure Plan and is scheduled to be completed in 2025. Within Part 2, further analysis of the measures required to achieve mode shift targets will be undertaken, including an assessment of different investment scenarios and their implications for transit ridership, use of active modes, and affordability. Following from the Transportation Master Plan, the City will develop a set of metrics for monitoring progress towards mobility objectives; these will be included in annual reports to Council on the Official Plan.

Looking Ahead:

☐	Installation of up to 20 public electric vehicle charging stations in parking lots to make use of planned EV rough-ins, to supplement existing EV chargers, or to add new charging opportunities for areas with optimized parking turn-over (the final number of charging stations will be dependent on availability of additional grant funding).
☐	Personal Electric Vehicle Strategy and Corporate Electric Vehicle Policy to be tabled at Committee and Council in Q4 2023.
☐	Installation of 25 fleet electric vehicle charging stations over the next three years to support the electrification of the City's light duty vehicle fleet.
☐	Part 1 of the Transportation Master Plan to be tabled at Transportation Committee and Council in Q2 2023; Part 2 of the Transportation Master Plan to be tabled in 2025.
☐	26 more electric buses are expected to be procured in 2023.
☐	Green Fleet Strategy to be tabled at Committee and Council in 2024.

Key Performance Indicators

Some key performance indicators (KPIs) have been identified to track progress towards reducing emissions within the transportation sector. KPIs are based off the Energy Evolution model and supporting projects.

INDICATOR	CURRENT	TARGET
Emissions from gasoline and diesel within city-wide transportation sector (kt CO_2e)	2,002 kt CO_2e	910 kt CO_2e by 2030
Percentage of electric vehicle registrations in Ottawa	7,252 battery electric vehicles; 4,260 plug-in hybrid electric vehicles*	90 per cent of new personal vehicle sales are EVs by 2030
Percentage of zero emission buses in City's transit fleet	<1 per cent zero emission buses	100 per cent zero emission bus fleet by 2036

* Percentage of electric vehicles registered in Ottawa could not be determined as data for total number of registered vehicles in Ottawa was not available at the time of this report.

Additional KPIs will be developed through the Personal Vehicles Electrification Strategy, Zero Emission Commercial Vehicles Strategy, Green Fleet Strategy, and Transportation Master Plan with consideration of Energy Evolution targets.

PRIORITY HIGHLIGHT – ELECTRIC BUSES

On June 23, 2021, Council approved a plan to purchase Zero-Emission Buses (ZEBs) going forward if the technology meets OC Transpo's operational requirement.
The Canada Infrastructure Bank (CIB) has invested $380 million with the City of Ottawa. This is to help finance up to 446 more ZEBs through 2027. The CIB's loan will go towards upfront costs of the battery-electric buses and repayment is expected to be covered through the reduced operating costs over the life of the ZEBs as compared to diesel buses. Currently, average diesel use per bus is about 35,000 litres each year. The 450 ZEBs are estimated to save approximately 38,500 tonnes of greenhouse gas (GHG) emissions each year. Thanks in part to CIB and INFC funding, the aim is to procure 26 more in 2023, and another 320 by the end of 2026. With the gradual phase-out of diesel buses as they reach the end of their life cycle, OC Transpo could achieve a fully zero-emission bus fleet by 2036.

Waste and Renewable Natural Gas

Although the waste sector is currently one of the smaller sources of emissions in Ottawa, the development of renewable natural gas is one of the top five actions identified in Energy Evolution to reduce emissions. It is comprised of emissions from solid waste and wastewater and opportunities to displace conventional fossil fuels such as natural gas. The Energy Evolution model assumes that achieving additional GHG reductions within the waste

sector hinges on two steps: eliminating organics from the landfill and converting all available waste organic material into usable energy using anaerobic digestors or gasifiers to generate renewable natural gas (RNG). Additionally, smaller contributions from waste heat, power to gas and district energy are part of the overall emission reduction opportunities in this sector.

Energy Evolution projects that fall within Waste and Renewable Natural Gas sector are:

- Organics Resource Recovery Strategy
- Renewable Natural Gas Strategy

Progress since October 2021:

✓	Solid Waste Master Plan Engagement Series 2 was completed; 4,500 residents participated through a public survey, online dialogue sessions and/or focus groups.
✓	Development of draft Solid Waste Master Plan underway.

Challenges:

Organics Resource Recovery Strategy

The Solid Waste Master Plan, a milestone under the Organics Resource Recovery Strategy, has been delayed due to need for further analysis and public consultation due to the scale and scope of the project, but is on track for tabling for Council consideration later in 2023. An assessment of the ICI sector's organics processing has been delayed due to limited staff capacity. Staff will assess what is required to bring this latter project back on track and whether the City has a role in catalyzing action in the commercial sector beyond ongoing advocacy work alongside the Association of Municipalities of Ontario and the Municipal 3Rs Collaborative to have the Province mandate organics diversion in the IC&I sector and ban organics from landfill by 2030 across the Province. A lack of regulatory authority for municipalities to catalyze wide-spread action in the commercial sector is anticipated to be a key challenge for this strategy.

Renewable Natural Gas (RNG) Strategy

This project is in development but off track due to limited staff capacity and delays associated with Biogas Optimization Study. Staff believe there is high potential for renewable natural gas and are in discussions about the resources required to develop a business case and coordinated corporate approach across departments for RNG development at ROPEC. Solid Waste Services has begun the next step following the

Biogas Optimization Study which is developing a pre-feasibility study and business case for the anerobic digestion of food waste and generation of RNG from biogas, a component project of the Solid Waste Master Plan

Looking Ahead:

☐	Draft Solid Waste Master Plan at Committee and Council in Q3/Q4 2023; the final plan will be tabled in 2024.
☐	Completion of a biogas optimization study, as well as a feasibility and concept design for a renewable natural gas production, at ROPEC

Key Performance Indicators

Key performance indicators will be developed as part of the Solid Waste Master Plan and the Renewable Natural Gas Strategy with consideration of Energy Evolution targets.

Electricity

Reducing emissions to 100% by 2050 will require an increase in electricity production and delivery. Ontario's current electricity supply has a low emissions profile; however, it is projected there will be a doubling of electrical demand as electrification of transportation, heating and population growth drive demand. The additional requirements for renewable electricity generation will reflect the need to both meet new demand and offset anticipated carbon intensity of the provincial grid as forecasted by the Ontario Ministry of Energy. Eliminating electricity generated from fossil fuel in Ontario's electrical supply will be a long-term activity and provincial commitments in this area could partially replace the need to install capacity in the community.

Energy Evolution projects that fall within this sector include:

- Electricity Resource Strategy

Progress since October 2021:

✓	In a first, an Independent Electrical Systems Operator (IESO) Regional Electricity Plan will have a scenario to reflect a municipal energy plan, by integrating with Ottawa's Energy Evolution. As a result, the Greater Ottawa Regional Electrical Plan, due October, 2024 will consider Energy Evolution.

✓	Successfully advocated to IESO, Provincial Ministry of Energy, Ontario Energy Board and Hydro Ottawa on a range of issues including net metering and electricity rates.
✓	Established a working group with Hydro Ottawa to explore the potential for enhanced community net metering and further enable distributed energy resources.
✓	Identified three suitable roofs at City-owned facilities to increase renewable electricity generation through leasing solar rooftop equipment for net metering.
✓	Council endorsed the Fossil Fuel Non-Proliferation Treaty.

Challenges:

Electricity Resource Strategy

This project is in development and on track. However, staff anticipate significant project challenges in the coming years because of the low cost of natural gas, the capital cost of energy delivery systems, the long lead times associated with utility infrastructure upgrades or system changes, public concerns about renewable energy generation, and the lack of defined City roles and responsibilities in catalyzing action. Staff also anticipate challenges associated with increased emissions forecasted from the provincial bulk electricity system. Compounding this challenge is the fact that regulatory impediments at the provincial level are a barrier to installing local renewable generation and the provincial government may allow the environmental attributes of Ontario's zero emissions electricity sources to be sold.

Looking Ahead:

☐	Complete next round of solar panel installations at City facilities.
☐	Advocate to the provincial government to increase renewable market access.
☐	Interim zoning regulations on renewable energy generation and energy storage facilities will be tabled at Committee and Council in Q4 2023.

Key Performance Indicators

Key performance indicators have not been identified for the electricity sector at this time. The Province controls how much fossil fuels are used to generate electricity in Ontario. The role of the City is to advocate to the Province to remove fossil fuels from the grid and provide more tools, such as virtual net metering, to influence local emissions generation intensity. Key performance indicators will be developed as part of a distributed energy framework with consideration of Energy Evolution targets.

Enabling Projects

Three enabling projects support other Energy Evolution Projects:

- Better Buildings Network
- Climate Change Education and Outreach Program
- Fund the Evolution

The Better Buildings Network has been incorporated into Better Buildings Ottawa in the Building Sector above and progress is captured under Climate Change Master Plan priority #7 later in this report. The status, progress, challenges and next steps associated with Climate Change Education and Outreach Program and the Fund the Evolution project are also described under the Climate Change Master Plan priority #7.

2. UNDERTAKE A CLIMATE VULNERABILITY ASSESSMENT AND DEVELOP A CLIMATE RESILIENCY STRATEGY

Current Status: In development / Off track

The purpose of the Climate Resiliency Strategy is to assess how Ottawa is vulnerable to climate change and identify strategies to mitigate the greatest risks. The strategy will assess and mitigate climate risks to Ottawa's community, infrastructure, environment and economy. It will be developed in close coordination with internal and external stakeholders to align and integrate with initiatives such as the Official Plan and Master Plans, Comprehensive Asset Management Plan, Hazard Assessment Mitigation and Prevention Program, and Climate and Health Vulnerability Assessment and Plan.

Progress since October 2021:

✓	Climate Vulnerability and Risk Assessment (CVRA) was received by Council in June 2022. Close to 150 potential climate impacts on the City and the community were assessed, of which 40 were identified as priority risks that require action in the next one to three years. These include risks related to higher temperatures and more precipitation, as well as more extreme weather like flooding, severe winds and ice storms.
✓	Separate climate risk assessments were also completed for water, wastewater and stormwater services and assets, including the drinking water and wastewater treatment plants, to inform the Infrastructure Master Plan and Asset Management Plans.
✓	Public education and engagement continued through the dedicated Climate Resiliency Engage Page (11,600 views) and Climate Change newsletter. Key public concerns are reflected in the What We Heard Report
✓	$1 million was approved by Council as part of the Hydro Ottawa Dividend Surplus and capital account close-out to support early actions to address known risks, supporting wildland fire risk assessment, updated flood forecasting models, and community education on risks and solutions.
✓	Continued alignment with other City initiatives such as asset management planning, Ottawa Public Health's climate change health vulnerability assessment and Emergency Service's Hazard Assessment, Mitigation and Prevention Program.

Challenges:

This priority is in the development phase and is currently off track from the timelines identified in the October 2021 update. While the final CRS report is delayed due to staff capacity, funding, and complexity of scope and engagement, the process enabled better understanding of climate risks across City departments and within the community and supported integration of climate risks and resiliency into key City plans and programs.

Looking Ahead:

☐	Draft Climate Resiliency Strategy to be tabled at Council in Q4 2023; final strategy and implementation plan by Q2 2024. Revised timeline allows for extensive internal, external and public engagement and integration of climate risks and resiliency into key City plans and programs in 2023.
☐	Continue to collaborate with regional partners such as National Capital Commission, Public Services and Procurement Canada, Ville de Gatineau, Hydro Ottawa, Conservation Authorities and others to identify shared risks and opportunities.
☐	Monitor and respond to funding opportunities through the renewed Disaster Mitigation and Adaptation Fund and Green Municipal Fund.

Key Performance Indicators

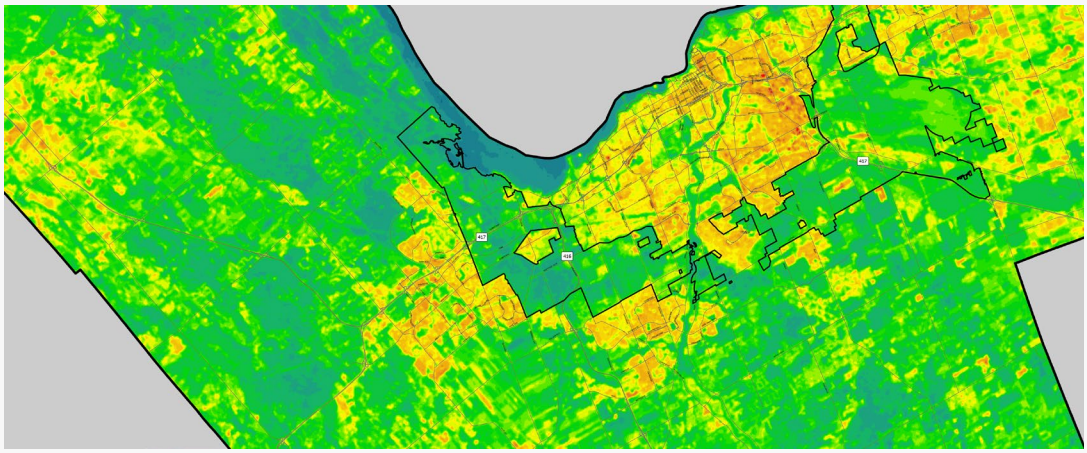
Key performance indicators will be developed as part of the Climate Resiliency Strategy.

PRIORITY HIGHLIGHT - EARLY RESILIENCY ACTIONS

The City continues to take action to understand and address priority risks while the Climate Resiliency Strategy is being developed and embed climate resiliency considerations into key plans, policies and programs such as the Official Plan, Master Plans and Asset Management Plans.

Early action to mitigate extreme heat risks

- The Inter-Agency Extreme Heat, Cold and Smog Committee coordinates communications and supports at risk populations during extreme heat events.
- OPH is completing a climate change health vulnerability assessment on extreme heat that will inform a corporate risk mitigation strategy and community outreach.
- An interactive Places to Cool Map is available on OPH's Beat the Heat website.
- An Urban Heat Island map is available on Engage Ottawa.



Early action to mitigate flood risks

- Flood response plans are in place for Britannia and Lemieux Water Purification Plants and a permanent solution is being investigated.
- Mapping of more severe riverine flooding (350-year event) was released publicly in April 2022 to support public awareness and new Official Plan policies.
- Rideau River flood forecasting will be enhanced in partnership with Rideau Valley Conservation Authority to support flood warning and response.
- Mitigation of inland flooding continues through Wet Weather Management Plan.

Early actions to prepare for extreme weather events

- ROPEC CoGen project planning is underway and will provide back-up power.
- $1.8 million approved in June 2022 for emergency generators at various community facilities.
- Wildland Fire Risk Assessment is to begin in 2023.

3. APPLY A CLIMATE LENS TO THE NEW OFFICIAL PLAN AND ITS SUPPORTING DOCUMENTS

Current Status: Implementation / Off track

The Official Plan (OP) provides a vision for the future growth of the city and a policy framework to guide the city's physical development. The plan's vision is for Ottawa to grow to be the most liveable mid-sized city in North America. To achieve this vision, Ottawa must be an energy conscious city where people can live, work, and play in all future climate conditions. The Official Plan is an essential tool to meet climate change objectives through land use planning, urban design, regulatory practice, building design and environmental protection.

The new Official Plan took an innovative approach by translating health, inclusivity and sustainability into growth planning and land use policy. Strategic Directions specific to "Healthy and Inclusive Communities" and "Energy and Climate Change" were woven into the new OP as cross cutting issues, which are essential to the achievement of a sustainable and resilient city. Eight strategic goals were identified to support climate change mitigation and/or adaptation.

Updates to the Transportation Master Plan (TMP), Infrastructure Master Plan (IMP), Greenspace and Urban Forest Master Plan (GUFMP), Parks and Recreation Facilities Master Plan, Solid Waste Master Plan (SWMP), the new comprehensive Zoning By-Law, and the Development Charges By-law are to align with the policy directions set out in the new Official Plan and Council's greenhouse gas emissions reduction targets.

Progress since October 2021:

✓	The new OP was approved by Council in November 2021 and by the Ministry of Municipal Affairs and Housing in November 2022.
✓	The Residential Growth Management Strategy for the new OP accommodates 51% of overall residential growth through intensification, with an intensification target that increases to 60% in the 2041 to 2046 period. Intensification is a critical component of meeting Ottawa's long-term climate targets and sustainability goals.

✓	The new OP directs the intensity of growth in both the built-up areas of the city and in the design of new greenfield communities. The OP provides for a mix of housing options with increasing access to services and workplaces in order to reduce trip distances and enable greater use sustainable transportation modes .
✓	The new OP's commitment to monitoring fulfills the direction of Council to review intensification targets and land supply within five years of adoption of the Plan.
✓	The new OP includes climate resiliency policies to reduce the urban heat island effect, reduce risks from more severe flooding, and also protect trees, natural heritage and food production.
✓	The SWMP, IMP, TMP, and GUFMP continue to consider ways to meet greenhouse gas targets and build resiliency to future climate conditions.
✓	TMP policy document identifies specific policies and actions to address climate risks to transportation systems, such as updating design guidelines, implementing shade along priority corridors, and assessing flood risks.
✓	Greenspace and Urban Forest Master Plan will contain policies and actions to support adaptation to extreme heat and the urban heat island through access to urban greenspace and the urban tree canopy. It will support the Urban Forest Management Plan in growing and managing the urban forest, including improving the resiliency of the urban forest to climate change impacts.
✓	IMP policies and programs are being informed by a separate climate risk assessment completed for water, wastewater and stormwater services.
✓	A Zoning Discussion Paper on Energy and Climate Change was released in March 2023 and is open for public comment.

Challenges:

This priority is in the implementation phase and is off track from the initial timelines due to delays in provincial approval of the new Official Plan and changes in provincial policy (Bill 109 and Bill 23).

Looking Ahead:

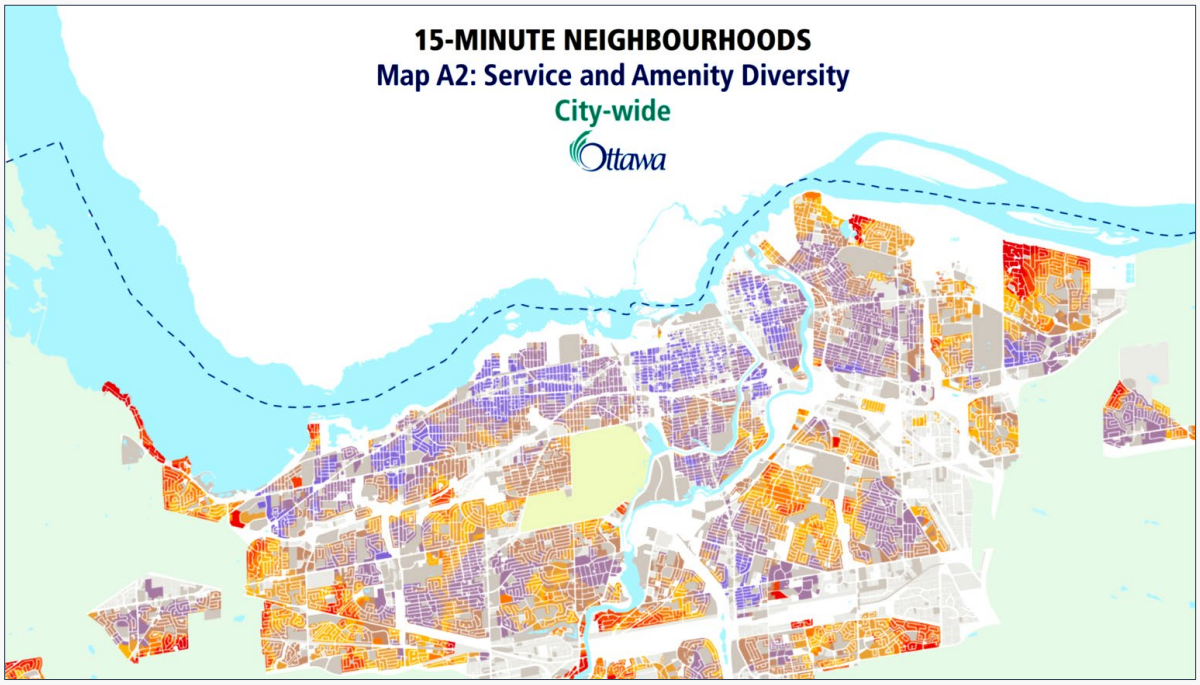
☐	The new Zoning By-Law will include requirements for trees, soft landscaping and other relevant climate resiliency measures. On the mitigation side, the new Zoning By-Law will include regulations on compact built form, vehicle and bicycle parking as well as new regulations for renewable energy generation and storage facilities.
☐	A study of the Official Plan growth projections will be modeled against assumptions of greenhouse gas emissions from building and transportation emissions as well as embodied carbon. The purpose of the study is to be able to compare and contrast the impact of intensification within different areas of the city to inform Zoning By-law consultations.
☐	Interim zoning regulations on renewable energy generation and storage facilities will be brought to Committee and Council in Q4 2023.
☐	Release of first draft of Zoning By-law in Q1 2024, followed by one year of consultation and engagement. New Zoning By-Law expected to be tabled at Committee and Council in Q4 2025.
☐	The TMP (Part 1), SWMP, and IMP will be presented to Council in 2023, the GUFMP in 2024, and the TMP (Part 2) in 2025.
☐	The first Official Plan Monitoring Report will be tabled at Committee and Council in Q1 2024.

Key Performance Indicators

Key performance indicators will be developed to support climate mitigation and resliency objectives.. KPIs will be tracked through the annual Climate Change Master Plan Update and Official Plan Monitoring Report, with the Monitoring Report plan expected to be tabled at Planning and Housing Committee in Q1 2024. Reporting will be informed by KPIs set out within the supporting master plans.

PRIORITY HIGHLIGHT – 15-MINUTE NEIGHBOURHOODS

Where we live has a huge impact on our ability to make choices that reduce emissions. We can drive less and use walking, cycling, and transit more by encouraging walkable "15-minute neighbourhoods". 15-minute neighbourhoods are compact, well-connected places with a clustering of a diverse mix of land-uses; this includes a range of housing types, shops, services, local access to food, schools and day care facilities, employment, greenspaces, parks and pathways. They are complete communities that support active transportation and transit, reduce car dependency, and enable people to live car-light or car free, if they so choose. Walkable neighbourhoods with higher-density housing mean fewer emissions, less pollution, more affordable housing and better social connections. Implementing the principles of 15-minute neighbourhoods is integral to the strategic directions contained in the new Official Plan.



4. APPLY A CLIMATE LENS TO ASSET MANAGEMENT AND CAPITAL PROJECTS

Current Status: In development / On track

The Comprehensive Asset Management (CAM) program guides the management of the City's assets. Risk management and asset resiliency are already core principles of asset management. Further integrating climate considerations into CAM enables climate change to be considered alongside additional challenges such as aging infrastructure, growth, and limited resources. This involves embedding climate change considerations into the management of existing assets, the design of new capital projects, and City asset management policies and practices. It supports the City to meet provincial regulation (O. Reg 588/17) which requires municipalities to commit to considering climate change in asset management planning, and better positions the City to respond to external funding opportunities and integrate these considerations into municipal budgets and long-range financial plans processes.

Progress since October 2021:

✓	Asset Management Plans for core services (water, wastewater, stormwater, and transportation) were approved by Council in 2022 as per the regulatory deadline. These AMPs identified potential climate risks and opportunities to contribute to greenhouse gas emission targets.
✓	Budget 2023 was the first year that a climate lens was applied to new capital budget requests to better understand whether they contributed to reducing greenhouse gas emissions and building climate resiliency and if yes, what level of contribution.
✓	Budget 2023 included more than $30 million of capital investments to support greenhouse gas emission reductions beyond the Energy Evolution business-as-planned scenario, including funding to purchase new electric buses and undertake energy retrofits to municipal buildings.
✓	Budget 2023 included more than $22 million of investments that will considerably build resiliency, including continued floodplain mapping updates, Wet Weather Management Plan, slope stabilization projects, integrated infrastructure renewal projects, and forestry and greenspace protection.

Challenges:

The priority is on track as it is meeting its milestones as defined in the Climate Change Master Plan. However, it is anticipated that there will be challenges once the project moves out of the development phase and into the implementation phase. The Asset Management Plans will incorporate climate change mitigation and resiliency, but additional staff capacity and funding would be required to do detailed analysis, risk assessment, costing, and implementation planning for actions required to meet GHG targets and build resiliency to climate risks. Additional capacity is also required to advance integration of a climate lens into capital planning.

Looking Ahead:

☐	Asset Management Plans for all other services are being developed to meet the 2024 regulatory deadline. These AMPs will identify the climate risks and opportunities to contribute to greenhouse gas emission targets.
☐	The City's Asset Management Strategy is being updated and will include the application of a climate lens.
☐	Additional analysis of mitigation and adaptation strategies will be integrated into future updates of the Asset Management Plans that will define target levels of service.
☐	Climate-related financial risks and opportunities impacting the City's infrastructure will be quantified as part of the new Task Force on Climate-Related Financial Disclosures (TCFD) reporting initiative.
☐	A climate lens will continue to be applied to future capital budget requests to track investment towards achieving the City's climate change targets and objectives.

Key Performance Indicators

Key performance indications for asset management are to be developed as part of the 2024 Asset Management Plans and will build off Energy Evolution and Climate Resiliency Strategy.

5. EXPLORE THE FEASIBILITY OF SETTING CORPORATE CARBON BUDGETS, INCLUDING PILOTING THEM IN A SMALL PORTION OF THE ORGANIZATION

Current Status: In development / Off track

Around the world, more and more cities are adopting or exploring the implementation of a carbon budget to support projects that reduce greenhouse emissions and can be applied to both city-wide and corporate emissions. Developing a carbon budget for Ottawa would involve establishing a local emissions budget and making decisions about how we "spend" our greenhouse gas budget within that context. Corporately, a carbon budget could be embedded within the financial budgetary framework. For a carbon budget in Ottawa to be successful, an implementation and monitoring framework would be required.

Progress since October 2021:

✓	Budget 2023 was the first year that a climate lens was applied to new capital budget requests to better understand whether they contributed to reducing greenhouse gas emissions and building climate resiliency and if yes, what level of contribution.
✓	A free, comprehensive GHG calculator tool (funded through the City of Ottawa, City of Calgary and the Regional Municipality of Durham) was developed made available for organizations and individuals to calculate the GHG impacts from capital projects and municipal policies.
✓	Monitored progress and exchanged information with other municipalities moving forward on a carbon budget and accounting framework.

Challenges:

The priority is in development but off track because of staff capacity to develop a carbon budget and challenges in piloting a carbon budget for a small portion of the organization, when an integrated, whole government approach is required. Budget 2023 was a great first step towards building a climate change accounting framework to support decision makers and there were many lessons learned through that process that will be considered going forward, including:

- Difficulty in quantifying an investment's project energy and emissions savings due to insufficient program or project details
- Climate implications not being considered early enough in the project or program's scope
- Lack of policy, direction, or sufficient funding to go beyond Energy Evolution's business-as-planned scenario

Embodied carbon (i.e. GHG emissions arising during manufacturing, transport and construction of building or infrastructure materials with end-of-life emissions) is currently out of scope in Council's GHG reduction targets and annual GHG emission inventories. Emerging bodies of research suggest that embodied carbon is a considerable source of emissions and requires further research on to how best to embed it in the GHG emissions inventories and targets. Staff recommend revising the scope of Priority #5 from "Explore the feasibility of setting corporate carbon budgets, including piloting them in a small portion of the organization" of the Climate Change Master Plan to ""Establish a carbon budget and accounting framework and explore the feasibility of including embodied carbon".

Looking Ahead:

☐	Future budgets will build upon the climate lens work completed as part of Budget 2023.
☐	A plan for instituting a climate change accounting framework, including establishing a carbon budget, will be developed and is to be considered ahead of Budget 2024.
☐	Staff to be trained on using the GHG calculator tool and consideration will be given to how to incorporate the tool into future capital planning and budget exercises.

PRIORITY HIGHLIGHT – BUDGET 2023

Budget 2023 was enhanced with the application of a climate change lens to provide information on relevant impacts from climate related capital investments and better understand how the City is investing to reduce greenhouse gas (GHG) emissions and increase Ottawa's resilience to current and future impacts of climate change. Overall, Budget 2023 included more than $52 million of new investments with moderate or major climate contributions, including more than $30 million of investments towards reducing greenhouse gas emissions beyond the Energy Evolution business-as-planned scenario and $22 million of investments towards building climate resiliency. It also included stable, consistent funding of $5 million annually for the Climate Change Master Plan. This was the first year that a climate lens was applied to new capital budget requests and is the first step towards building a climate change accounting framework to support decision makers. Future budgets will build upon this exercise, including establishing a carbon budget.

Key Performance Indicators

GHG emissions will continue to be tracked annually through the GHG community and corporate emissions inventories. Additional key performance indicators will be developed through the development of the carbon budget and accounting framework.

6. EXPLORE CARBON SEQUESTRATION METHODS AND THE ROLE OF GREEN INFRASTRUCTURE

Current Status: Not started / Off track

Carbon sequestration is the process through which forestry, agricultural, and wetlands practices capture carbon dioxide caused by activities such as burning fossil fuels and stores it over the long-term. It does not replace the need for action to mitigate climate change and transition off fossil fuels; rather, it complements it. The value of carbon sequestration was identified in both the City's Urban Forest Management Plan and the Significant Woodlands Policy. Understanding and quantifying the climate benefits of trees, forests and wetlands will support the justification for the active management of the City's forests and wetlands.

To help better understand the potential for carbon sequestration in Ottawa, a number of initiatives have been identified including:

- Inventorying forests as carbon sinks
- Monitoring and evaluating changes in carbon in agricultural soils
- Mapping wetlands as functioning carbon sinks
- Exploring carbon market options

Progress since October 2021:

✓	Tree inventory for wooded urban parks underway.
✓	Completion of city-wide canopy cover data collection and preliminary analysis.

Challenges:

This project has not started and is off track due to staff constraints and prioritizing the resources available to address the most critical initiatives to advance climate change goals. Staff will assess what is required to bring this project back on track. While there has been a lot work done in urban forest management, this priority needs to be properly scoped to define what would be included in the research as it could range from natural assets such as forestry, wetlands and agricultural soils to other carbon sequestration methods such as emerging technologies and building materials. Work is underway to capture natural assets in Asset Management Plans, including estimating replacement value where sufficient data is

available; however, the valuation exercise is not currently scoped to include carbon sequestration.

Looking Ahead:

☐	Next management period for the Urban Forest Management Plan to be tabled at Committee and Council in 2023 will include a valuation of the urban forest canopy that will explore carbon sequestration.
☐	Priority #6 will be reevaluated to determine the scope of the project, the level of effort required and whether it is still a priority in the short-term.

Key Performance Indicators

Key performance indicators will be identified following re-evaluation of priority action.

7. ENCOURAGE PRIVATE ACTION THROUGH EDUCATION, DIRECT AND INDIRECT INCENTIVES, MUNICIPAL SUPPORT, AND ADVOCACY FOR SUPPORT OF INDIVIDUALS AND PRIVATE ORGANIZATIONS BY SENIOR LEVELS OF GOVERNMENT

Current Status: Implementation / On track

To mobilize climate mitigation and adaption actions across all sectors, the City of Ottawa needs to play a leadership and coordinating role in:

- Climate education that helps residents understand the causes and implications of climate change, the actions to take now to reduce emissions and build resilience against a changing climate, and the benefits in doing so
- Leveraging external funding and other resources where feasible
- Recommending, advocating for, and promoting incentives to catalyze action (e.g., utility rebates, home protection grants, etc.)
- Advocating to senior levels of government for accelerated action and ambition to meet the urgency of climate change and provide additional resources for municipalities and the public to reduce their greenhouse gas emissions and build climate resiliency

This priority is in the implementation phase and is on track based on the milestones under the Climate Change Master Plan. Going forward staff anticipate that measuring the impact of the City's education efforts and incentive programs to encourage behavioural change will be difficult because they do not result in direct emission reductions or increased resiliency. There are also challenges in ensuring that an equitable and inclusive approach is being taken, that senior levels of government may not support accelerated action and that external challenges such as the COVID-19 pandemic, rising inflation costs, and supply chain issues may have a significant impact on climate change action.

Progress since October 2021:

Successful Funding Applications

✓	$350 million funding grant from Infrastructure Canada and a $380 million loan from the Canada Infrastructure Bank for zero emission buses.

✓	$30 million in loans committed from VanCity Community Investment Bank to support the Better Homes Ottawa Loan Program.
✓	Up to $629,970 from Infrastructure Canada to cover 80% of eligible expenses related to the retrofit of Hintonburg Community Centre.
✓	$175,000 grant from the Federation of Canadian Municipalities for neighbourhood-wide thermal scans in downtown and Kanata North and capacity building to support Better Buildings Ottawa.
✓	$125,000 from Natural Resources Canada for 25 electric vehicle charging stations to support the electrification of the City's light duty vehicle fleet over the next three years.
✓	$75,000 grant from EcoCanada to support the hiring of three interns to support the Climate Change and Resiliency team.
✓	$34,650 grant from the Federation of Canadian Municipalities for the development of a greenhouse gas emissions calculator tool.
✓	$15,000 from ICLEI Canada to support a volunteer program advancing community resiliency private action.

Communications and Outreach

✓	Developed and implemented an annual climate change communications and engagement plan to support private action and the roll out of community focused Energy Evolution and climate resiliency projects.
✓	Launched ClimateActionOttawa.ca and a social media campaign in collaboration with the Ottawa Climate Action Fund to highlight the top actions residents can take reduce their greenhouse gas emissions.
✓	Circulated a monthly climate change newsletter with over 8,000 subscribers that features climate change news, engagement opportunities and events.
✓	Energy Evolution education and outreach included a virtual speaker series for Earth Day, a Home Retrofit Webinar series in partnership with SMARTNet Alliance, a Science Literacy Week webinar with Ottawa Public Library and presentations to community groups (attracted over 1,600

	registrants and have over 1,600 views of the recordings available on YouTube).
✓	Sponsored EnviroCentre to deliver an additional two EV Experience events that allowed residents to test drive an electric vehicle in a familiar, friendly and non-sales environment. Across the two events there were 113 test drives and rides.
✓	Added 69 thermal cameras to the Ottawa Public Library catalogue, allowing homeowners to identify opportunities to improve the comfort and energy performance of their homes.
✓	Supported 51 homeowners through Rain Ready Ottawa with $190,156 in grants to manage rainwater on their property and reduce harmful runoff and leveraging an additional $738,731 of private investment through homeowner contributions to projects.

Advocacy

✓	The Mayor sent letters to seven provincial and federal government minsters to advocate for funding, policy and regulatory supports needed to implement the Climate Change Master Plan and Energy Evolution.
✓	In response to the letters, staff met with provincial ministries including Energy, Municipal Affairs and Housing, and Transportation and federal departments including NRCan, CanMET, Environment and Climate Change, and Infrastructure to discuss project and policy alignment.
✓	Staff briefed other municipalities through Association of Ontario Municipalities, Federation of Canadian Municipalities, and Clean Air Caucus on the key topics.
✓	Staff attended COP 27 with the Federation of Canadian Municipalities and representatives from other Canadian cities.
✓	Staff submitted comments and participated in a number of the Independent Electricity System Operator (IESO)'s engagement opportunities, including Annual Planning Outlook, Regional Planning Process Review Update, Long-Term RFP and regional electricity planning in the Greater Ottawa Region.
✓	Staff submitted comments to the Ontario Energy Board on Enbridge's 2023 – 2025 Demand Side Management Program. Input was reflected in the final decision and order.

Looking Ahead:

☐	Continue to develop climate change education and outreach programs to support private action and the roll out of community focused Energy Evolution and climate resiliency projects
☐	Continue to monitor and pursue funding and advocacy opportunities to support implementation of the Climate Change Master Plan including Energy Evolution and climate resiliency projects.

Key Performance Indicators

Key performance indicators have been identified to track progress towards encouraging private action.

INDICATOR	CURRENT	TARGET
Number of projects being carried out through the Rain Ready Ottawa Program	91 projects	160 projects by 2030
Funding awarded and leveraged through the Rain Ready Ottawa Program	Committed funding: $198,171 Private investment leveraged: $743,166	Committed funding: $350,000 Private investment: $1 million by 2030
Funding distributed and leveraged through the Better Homes Loan Program	Loans distributed: $3 million Private investment leveraged: $22.76 million	Loans distributed: $42 million by 2025 Private investment leveraged: $51.7 million by 2025
Number of newsletter subscribers	8,500 subscribers	10,000 subscribers by end of 2023
Number of visits to climate change and resiliency pages on Engage Ottawa	29,500 visits	35,000 visits by end of 2023

Staff will continue to advocate, leverage funding, and encourage private actions when opportunities arise.

8. DEVELOP A GOVERNANCE FRAMEWORK TO BUILD CORPORATE AND COMMUNITY CAPACITY, ALIGN PRIORITIES, AND SHARE ACCOUNTABILITY IN TACKLING CLIMATE CHANGE

Current Status: In development / Off track

Transitioning to a clean, renewable, and resilient city will require broad and deep participation in mitigation and adaptation efforts. Major stakeholders in the National Capital Region including the senior levels of government, the National Capital Commission, the City of Gatineau, Hydro Ottawa, the conservation authorities, community groups, not for profits, and institutions such as universities also have strategies underway to address climate change. However, there is currently no forum in which large or leading organizations can come together to coordinate efforts, align priorities, and mobilize the broader community. This priority will explore governance approaches to support and encourage collaboration over the course of what will be a profound transition.

Progress since October 2021 – Internal Governance:

✓	Added two new climate change related risks to the corporate risk registry: Extreme weather events and GHG reduction targets.
✓	Enhanced capital budgets with the application of a climate change lens to provide information on relevant impacts from climate related capital investments.
✓	Identified $5 million of stable, annual funding to the 2023 Capital Budget to support projects under the Climate Change Master Plan, Energy Evolution, and the Climate Resiliency Strategy.
✓	Continued working with key stakeholders and technical working groups to advance the CCMP priorities.

Progress since October 2021 – External Governance:

✓	Established quarterly meetings with the National Capital Commission and the City of Gatineau to support regional information exchange.
✓	Continued meeting with the Climate Change Council Sponsors Group, Climate Change Tiger Team and Senior Leadership Team.

✓	Continued working with key stakeholders and technical working groups to advance the CCMP priorities.
✓	Continued monthly meetings with Hydro Ottawa to support information exchange with utilities and established a working group to explore the potential for enhanced community net metering and further enable distributed energy resources.
✓	Continued regular exchange of information with climate change colleagues across the country through the Canadian Urban Sustainability Practitioners network.
✓	Participated in the International Urban and Regional Cooperation program and partnered with Zaragoza, Spain to facilitate and promote cooperation to exchange international best practices.
✓	Continued participation on the Board of the Ottawa Climate Action Fund.
✓	Launched the Better Buildings Network to build capacity and peer to peer learning opportunities on commercial building retrofits.

Challenges:

The priority is in development but off track due to delays because of staff capacity. The Climate Change Master Plan's current governance structure focuses primarily on internal governance and decision-making processes within the City. It includes roles for a Council Sponsor's Group, a Tiger Team of General Managers and key climate advisors (Directors and Managers from across the corporation). It does not:

- Account for recent changes to Committees of Councils (e.g., the addition of a new Emergency Preparedness and Protective Services Committee), departmental restructuring or staff changes;
- Identify or recommend how members of Council who represent the City on other boards (e.g., the Federation of the Canadian Municipalities, the Association of Municipalities of Ontario, Hydro Ottawa, Conservation Authorities, and the Ottawa Climate Action Fund) can advocate for or support implementation of the Climate Change Master Plan; or
- Provide an external structure to ensure that all levels of government, utilities, stakeholders, and the broader community can work together to effect change and develop joint solutions.

Looking Ahead:

☐	Refresh the internal and external governance structure in Q2 2023.
☐	Reestablish the Climate Change Council Sponsors Group in Q2 2023.
☐	Complete the City's first set of climate-related financial disclosures in Corporate Finance's Annual Financial Report in Q3 2023.
☐	Develop a Climate Change Resource Plan for consideration in Budget 2024.
☐	Develop a strategy for the City and key stakeholders to engage senior levels of government on climate issues.
☐	Establish processes for: • Identifying and informing management and Council about climate-related issues • Departments to coordinate and discuss climate risks and opportunities and apply a similar process to the way they integrate climate-related opportunities and risks into their decision-making processes.
☐	Continue working internally with the Climate Change Council Sponsors Group, Climate Change Tiger Team or Senior Leadership Team, key advisors, and externally with key stakeholders, municipal colleagues, and partners to: • Coordinate implementation of climate mitigation and adaptation actions • Scope, design, deliver and scale up community wide projects, programs, or policies resulting in observable increase in action to reduce GHG emissions or to increase resiliency. • Influence and mobilize organizations and residents that would not otherwise be and motivate to take action.

Key Performance Indicators

Progress on governance will be tracked annually through the Task Force on Climate-Related Financial Disclosures (TCFD) section of Corporate Finance's Annual Financial Report. The first climate-related financial disclosures will be brought forward in Q3 2023 and will include an update on TCFD recommendations for City Council and Management below. It is expected to take up to five years to achieve all of these governance-related recommendations.

a) City Council

- ☐ City council is continuously informed by all relevant departments about key climate-related risks, opportunities, impacts, and city initiatives and progress on goals and targets.
- ☐ City council is reviewing climate- related risks and opportunities when reviewing other (non-climate) areas.
- ☐ City council is not only informed but also considers climate-related issues as part of the city's strategy, budgetary and capital planning.
- ☐ The Environment and Climate Change Committee receives regular updates from city management. The committee provides information to the rest of city council and ensures climate-related issues are being integrated into council's decision-making.
- ☐ City council considers climate-related issues as part of its review of the city's strategy, budget and capital planning.
- ☐ A framework is established for how city council considers climate in its decision-making process.
- ☐ City council evaluates the city's progress toward its goals/targets on climate initiatives as it is reviewing strategic plans, budgets and capital expenditures.
- ☐ The city is disclosing publicly the types of climate-related information council is receiving and how it is integrating this information into its decision-making.

Key Performance Indicators (continued)

b) City Management

- ☐ City management is continuously informed by all relevant departments about key climate-related risks, opportunities, impacts, and City initiatives and progress on goals and targets.
- ☐ Management receives both qualitative and quantitative information on climate issues to inform decision-making.
- ☐ The city continues to refine and improve its process for keeping management informed of climate- related issues.
- ☐ Management continues to provide information to city council and sub-committees on climate.
- ☐ Climate-related responsibilities are assigned to managers or committees.
- ☐ Department heads are not only coordinating and discussing climate risks and opportunities together, but they are also applying a similar process to the way they integrate climate-related opportunities and risks into their decision-making processes.
- ☐ Climate-related risks and opportunities continue to be further integrated as part of the city's strategy, budgetary and capital planning processes.

NEXT STEPS AND LEGISLATIVE AGENDA

Staff will continue to move forward on initiatives that support climate change action and investment. Table 4 lists key reports that are expected to be tabled at Committee and Council in 2023.

Table 4: Key 2023 Legislative Agenda Items that Support City's Climate Change Goals

Timing	Report	Committee(s)
Q1	Climate Lens in Budget 2023	All
Q1	Wastewater Energy Transfer Pilot Project	ECCC
Q2	Transportation Master Plan (Part 1)	Transportation
Q2	Better Homes Ottawa Loan Program Update and Program Amendments	FCSC
Q2	Climate Change Master Plan Annual Status Update	ECCC
Q2	High Performance Development Standard Site Plan Control Bylaw Update	ECCC
Q2	Community Climate Change Strategic Initiative	FCSC
Q2	Better Buildings Ottawa Loan Program Creation Report	FCSC
Q3	Task Force on Climate-Related Financial Disclosures section of Corporate Finance's Annual Financial Report	Memo to Council
Q3	Building Performance Standards and Emissions Community Improvement Plan	ECCC
Q3	Draft Solid Waste Master Plan	ECCC
Q3/Q4	Update to Asset Management Strategy	FCSC
Q4	Update to Infrastructure Master Plan	PHC

Timing	Report	Committee(s)
Q4	Updated Corporate EV Policy	ECCC
Q4	Personal EV Strategy	ECCC
Q4	Draft Climate Resiliency Strategy	ECCC

There are also major plans, projects, and programs that are currently in development that will have a direct impact or influence on reducing emissions and building climate resiliency. These are anticipated to be tabled at Committee and Council in 2024 and 2025 and highlights include:

- Final versions of the Transportation Master Plan, Solid Waste Master Plan, and Climate Resiliency Strategy;
- A new Zoning By-Law and updates to the Greenspace and Urban Forest Master Plan;
- Asset Management Plans for all other City services;
- New Municipal Green Fleet Strategy; and
- New Net Zero Municipal Building Project / Update to the Green Building Policy.

Staff will also continue to advocate, leverage funding and encourage private action as opportunities arise.