

Date: November 2, 2021

To: Chair and Members of General Committee

From: Jodi Robillos, Acting Commissioner of Community Services

Originator's files:

Meeting date:
December 1, 2021

Subject

Progress Update on Mississauga's Climate Change Action Plan

Recommendation

That the Corporate Report entitled "Progress Update on Mississauga's Climate Change Action Plan," dated November 2, 2021 from the Acting Commissioner of Community Services be received for information.

Executive Summary

- In December 2019, City Council approved the City's first comprehensive Climate Change Action Plan (CCAP). This plan and the 89 supporting actions present the City's roadmap to reduce greenhouse gas (GHG) emissions and adapt to the impacts of climate change over the next 10 years.
- The City has committed to reporting annually on CCAP progress. **Appendix 1** includes the City's first progress report, which focuses on actions implemented in 2020 and 2021.
- The City continues to make progress on climate action: almost 65% of the CCAP actions are underway or ongoing and two actions have been completed.
- Since the CCAP was approved, staff have focused on laying the foundation for future climate action and have advanced on both mitigation and adaptation projects. While progress has been made, City staff recognize that climate change action needs to be accelerated to meet the global goal of limiting global warming to 1.5°C compared to pre-industrial levels.

- Over the next year, City staff will work on refining the pathways to achieve the corporate GHG emission reduction targets, focusing on the corporation's two main sources of GHG emissions: MiWay operations and municipal buildings. At the same time, staff will continue to advance actions to support our community and make our city more resilient to the changing climate.

Background

In December 2019, City Council approved the City's first comprehensive Climate Change Action Plan (CCAP). This plan presents the City's roadmap to reduce GHG emissions and adapt to the impacts of climate change over the next 10 years. The CCAP has two main goals: (1)

Mitigation: reduce GHG emissions 40% by 2030 and 80% by 2050 (compared to 1990 levels); and (2) **Adaptation:** increase resilience and the capacity of the city to withstand and respond to current and future climate events.

The CCAP includes 89 actions, which are divided into five categories (or "Action Pathways"): (1) Buildings & Clean Energy; (2) Resilient & Green Infrastructure; (3) Accelerating Discovery & Innovation; (4) Low Emissions Mobility; and (5) Engagement & Partnerships. Every City department was involved in the development of the CCAP, and every City department is now involved in implementing its actions. This is a truly collaborative effort.

Present Status

The City has committed to reporting annually on CCAP progress. **Appendix 1** includes the first CCAP progress report, which provides an update on implementation progress and focuses on actions implemented in 2020 and 2021.

1. Corporate and Community GHG inventories

The City tracks GHG emissions related to municipal operations and services (referred to as "corporate emissions"), as well as emissions from the city as a whole (referred to as "community emissions").

Figure 1 shows the trends in corporate emissions from 2017 – 2020. In 2019, GHG emissions were approximately 81,000 tonnes CO₂e, an increase of ~20% relative to the 1990 baseline. In 2020, the City's GHGs decreased by about 12,000 tonnes CO₂e compared to 2019 levels (a ~15% decrease). This decrease can be attributed in large part to COVID-19, as there were partial building shutdowns and City services were significantly reduced (e.g., decreased MiWay service and City programs).

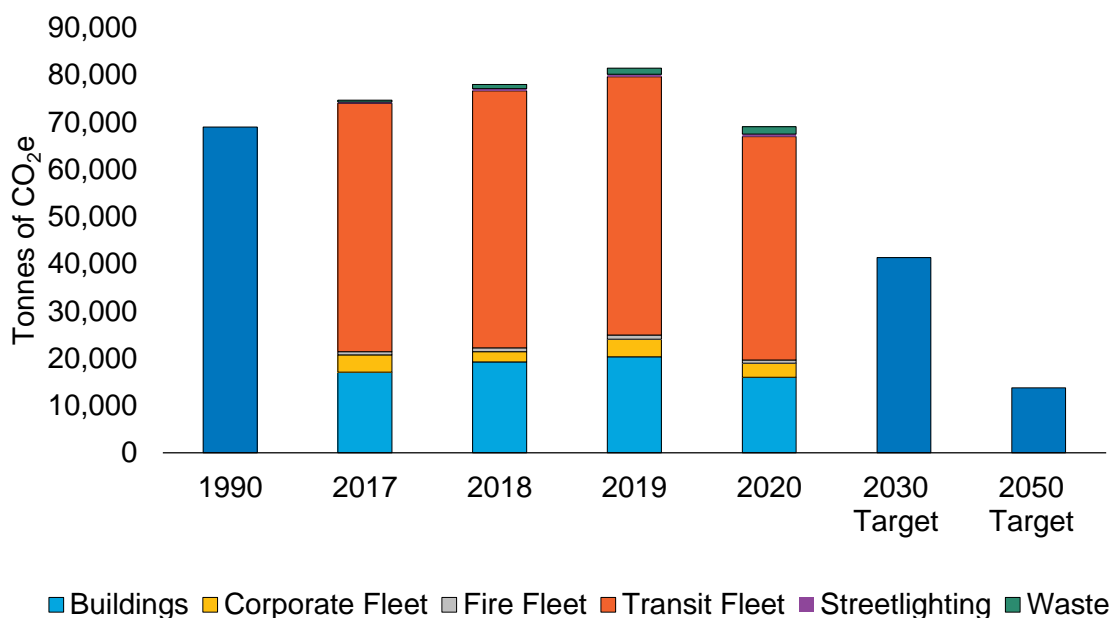


Figure 1: GHG emissions from municipal operations (note that 2020 numbers are preliminary)

Figure 2 shows the trends in community emissions from 2017 – 2020. In 2019, Mississauga's community emissions exceeded 8 million tonnes CO₂e, an increase of 2% (~160,000 tonnes CO₂e) relative to 1990 levels. In 2020, community emissions decreased approximately 10% relative to 1990. Like corporate emissions, 2020 was considered an anomalous year due to the COVID-19 pandemic.

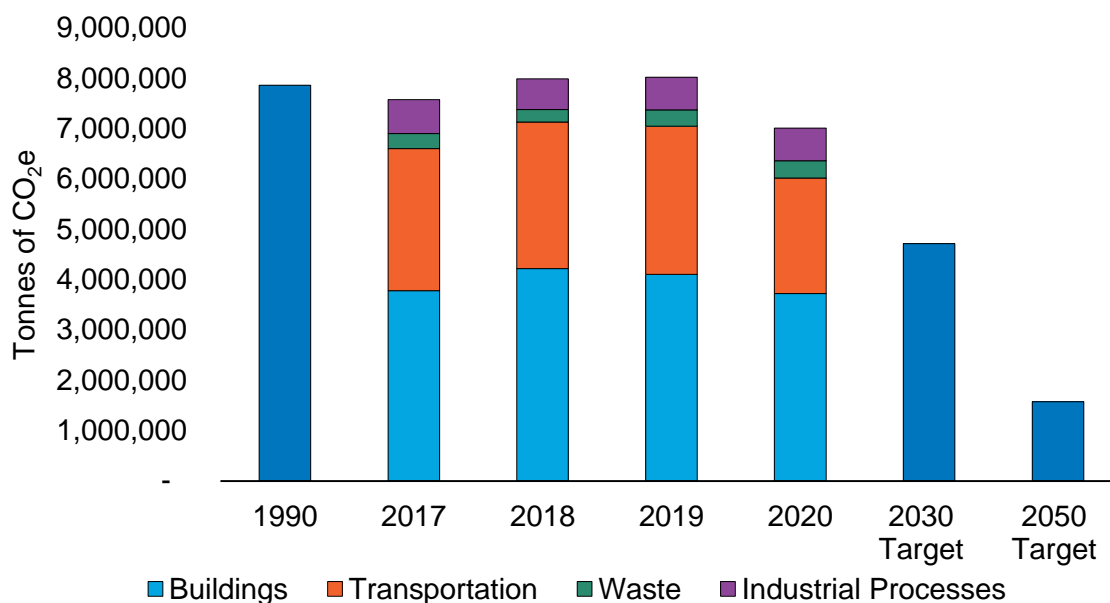


Figure 2: GHG emissions from Mississauga as a whole (note that 2020 numbers are preliminary)

The city must accelerate its efforts to reduce emissions, especially from the buildings and transportation sectors, in order to meet its GHG reduction targets.

2. Status of CCAP Actions





The City has made progress on climate action, with most CCAP actions underway or ongoing and some completed (see **Figure 3** for a snapshot of the current status of the CCAP actions). To date, the focus has been on foundational actions: actions that lay the groundwork for climate action in the city moving forward.


89 Actions Total



Figure 3: Snapshot of CCAP action status

Some of the highlights from the report include:

Action Pathway	Highlights
 Buildings & Clean Energy	<ul style="list-style-type: none"> Implementing the corporate green building standard Conducting a district energy (DE) feasibility study for the Downtown and supporting DE at Lakeview Village
 Resilient & Green Infrastructure	<ul style="list-style-type: none"> Integrating natural assets (e.g., trees, wetlands) into municipal asset management planning Expanding the use of green infrastructure to manage stormwater runoff
 Discovery & Innovation	<ul style="list-style-type: none"> Integrating climate-related information into financial reporting Implementing the dog waste program to help divert dog waste from landfill
 Low Emissions Mobility	<ul style="list-style-type: none"> Working on the electrification of MiWay buses and fleet vehicles Installing electric vehicle chargers in the community

	Engagement & Partnerships	<ul style="list-style-type: none"> • Completing the Climate Change Youth Challenge to engage youth in developing sustainable solutions for Mississauga • Continuing to implement the City's community gardens program in partnership with Ecosource
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3. Next Steps

While progress has been made on the CCAP, City staff recognize that climate change action needs to accelerate. A recent report from the United Nations' Intergovernmental Panel on Climate Change (IPCC) is unequivocal that human-induced climate change is affecting weather and climate extremes across the globe, and that the climate is warming faster now than in previous decades. Many of these changes are irreversible for centuries to millennia. The IPCC report is an urgent call to action: significant reductions in GHG emissions are needed to limit further climate change and limit global warming to 1.5°C.

Comments

The City is committed to meeting its CCAP goals to reduce GHG emissions and to increase the city's resilience to current and future climate events. Over the next year, City staff will work to refine the pathway to achieve the corporate GHG emission reduction targets. Below is an outline of this pathway.

1. Corporate GHG Emissions

The two largest sources of corporate GHG emissions are MiWay transit and municipal buildings, which together constitute about 90% of emissions.¹ The City plans to focus on decreasing emissions from these two sources.

A. Municipal Buildings

Municipal buildings are responsible for approximately 20% of corporate GHG emissions. In 2019, City Council approved a Corporate Green Building Standard, which is a set of performance requirements that apply to new construction and major renovations at City-owned and operated buildings. This Standard does not apply to existing municipal buildings unless they undertake a major renovation. That leaves numerous municipal buildings that will need deep retrofits in order to meet the corporate GHG emission reduction and resilience targets.

Decreasing GHGs in existing buildings typically requires a switch to electric-based heat pumps, on-site renewable energy generation, high-performance building enclosure, and a cleaner grid. Today, the cost for such actions is in the range of about \$25,000 to \$35,000 per tonne of CO₂e reduction.

¹ Based on the City's preliminary 2020 corporate GHG inventory.

The City's energy management team has completed two studies on municipal buildings: one for the Clarkson Community Centre and another for the Mississauga Valley Community Centre (CCAP Action 4-1). As these studies make clear, site-specific analysis is needed to determine a retrofit strategy. These studies help clarify issues like the impacts of the construction schedule, potential GHG reductions, estimated costs, and estimated savings from the retrofits.

While it is not feasible to analyze every municipal building, City staff recommend studying representative buildings of the eight main types of municipal buildings: (1) office; (2) recreation centre; (3) fire hall; (4) transit station; (5) ice rink; (6) transit repair station; (7) library; and (8) swimming pool. This will enable City staff to map out a path forward for retrofitting the City's existing building stock.

B. MiWay Operations

MiWay operations are the largest source of corporate GHG emissions, contributing roughly 70% to total emissions. In order to reach corporate targets, the MiWay transit fleet will need to transition to a lower emission propulsion technology immediately, and explore options for zero-emission vehicles in the near-term. This could be with either battery-electric or hydrogen fuel cell electric buses, or a combination of the two. While MiWay continues to analyze the different options, it has already concluded that an all battery-electric bus fleet is unlikely to be feasible: current battery-electric buses do not have enough range to complete certain MiWay bus routes. While on route charging provides a way to address this issue, MiWay does not own all of the on-street infrastructure (e.g., stations and terminals). This means that there are limited opportunities for on-route charging.

This makes hydrogen fuel cell electric buses an attractive alternative. MiWay has partnered with the Canadian Urban Transit Research & Innovation Consortium (CUTRIC) to conduct a feasibility study for hydrogen buses. While this study will help MiWay understand the costs, GHG emissions, and operational impacts of using hydrogen buses, it is a desktop exercise. A deployment of a small number of hydrogen buses is needed to determine if it is feasible to use this technology in MiWay's fleet at scale.

To move forward with this pilot, funding is needed. MiWay is working with CUTRIC in order to secure funds for this project: the City, in collaboration with CUTRIC, has submitted a funding proposal to the Infrastructure Canada Zero Emission Transit Fund (ZETF). Since this work is critical to electrifying the MiWay fleet, MiWay will need to find funding for this pilot.

2. Mapping the Pathway Forward

In addition to refining the pathway to achieve corporate GHG emission reduction targets, the City also intends to solidify its plans to increase the resilience and capacity of the city to withstand and respond to climate events, as well as to support residents and businesses decrease their GHG footprint. While a number of actions are already underway, developing clear action pathways will ensure the city is on track to achieve its GHG reduction and resilience targets by 2030.

Financial Impact

There are no financial impacts resulting from the recommendation in this report.

Conclusion

While the City continues to make progress on the CCAP, climate change action needs to accelerate in order for the city to meet its goals and to avoid the most catastrophic impacts of climate change.

Attachments

Appendix 1: Climate Change Action Plan: Progress Report 2021

A handwritten signature in black ink, appearing to read "Jodi Robillos", is positioned above a horizontal line.

Jodi Robillos, Acting Commissioner of Community Services

Prepared by: Teresa Chan, Climate Change Supervisor