

City of Mississauga  
**Corporate Report**



<p>Date: May 6, 2024</p>	<p>Originator's files:</p>
<p>To: Chair and Members of Environmental Action Committee</p> <p>From: Raj Sheth, P.Eng, Commissioner of Corporate Services</p>	<p>Meeting date: June 4, 2024</p>

## Subject

**5 Year Energy Conservation Plan (2024 – 2028)**

## Recommendation

1. That the Corporate Report entitled, "5 Year Energy Conservation Plan (2024 – 2028)" dated May 6<sup>th</sup>, 2024 from the Commissioner of Corporate Services, be received for information.
2. That the 5 Year Energy Conservation Plan (2024 – 2028) attached in Appendix 1 be published and made available to the public on the City's website in accordance with the Ontario Regulation 507/18 under the Electricity Act 1998.

## Executive Summary

- Under the Ontario Regulation 507/18 of the Electricity Act 1998, all broader public agencies including municipalities are required to develop and implement energy Conservation and Demand Management (CDM) plans starting 2019. Public agencies must also update the plan every 5 years.
- Under the new 5 Year Energy Conservation Plan (2024 – 2028), the City is targeting a 5% reduction in energy consumption and GHG emissions by 2028 compared to 2023, and has planned to implement a number of innovative projects and pilots such as heat recovery, renewable energy generation, building automation system (BAS) upgrades and ongoing building commissioning.
- The targets and planned projects and initiatives of the new 5 Year Energy Conservation Plan (2024 – 2028) support achieving the goals of the City's Climate Change Action Plan, which targets 40% of greenhouse gas (GHG) emissions reductions by 2030 and 80% by 2050 below 1990 levels.
- It is estimated that the planned projects and initiatives will produce 5% energy consumption reduction and 8% GHG emissions reduction by 2028 compared to 2023.

## Background

The Ontario Regulation 507/18 came into effect on January 1, 2019, under the Electricity Act, 1998 and requires broader public agencies: municipalities, municipal service boards, school boards, universities, colleges and hospitals to:

- Report on their energy consumption and GHG emissions annually beginning in 2019;
- Develop and implement energy Conservation and Demand Management (CDM) plans starting in 2019 and update it every 5 years.

The previous 5 Year Energy Conservation Plan (2019 – 2023) was developed as per the Ontario Regulation 507/18 and the new Energy Conservation Plan (2024 – 2028) is an update of the previous plan.

## Present Status

In 2019, the City developed the 5 Year Energy Conservation Plan (2019 – 2023), which targeted 1% reduction in energy consumption each year over the five (5) year period. Further, the City has been reporting annual energy consumption and greenhouse gas emissions data for all its heated and conditioned buildings to the Ontario Ministry of Energy through their Broader Public Sector (BPS) portal every year.

Numerous energy conservation projects and initiatives were implemented over the 2019 – 2023 period such as:

- Installation of VRF Heat Pumps
- Installation of High efficiency boilers & VFDs at various facilities
- Iceplant energy upgrade & operation optimization
- BAS upgrades at various facilities
- Implementation of the Energy Monitoring & Fault Detection System (Sky Spark) to high energy consumer facilities

As a result, the City was able to achieve positive results compared to the baseline of 2018, which have been summarized below. The results do not include new buildings or growth in buildings size since 2018.

- Energy Consumption dropped by 5%
- A total utility cost of \$1,304,700 were avoided
- Total incentives of \$691,288 were received as a result of savings achieved from the projects and initiatives.

Further, the City has received the following awards and achievement during this period:

- ISO 50001 certification for energy management - Frank McKechnie CC (2021 – 2023)
- ENERGY STAR® Building of the year for Ice and Curling Rink – Erin Mills Twin Arena (2023)
- ENERGY STAR® certification for Erin Mills Twin Arena (2019, 2020, 2022)

- Energy Efficiency Leadership Award for Mississauga Civic Centre (2020)
- Energy Manager Award (2019 & 2021)
- Energy in Action Innovation Award & the Living City Energy Efficiency Gold Award (2019)
- Don Harrison Energy Champion Award (2019)

## Comments

The new 5 Year Energy Conservation Plan (2024 – 2028) adheres to ISO 50001 principles and its Plan-Do-Check-Act continual improvement framework. It systematically employs data-driven and fact-based processes, dedicated to ongoing enhancement of energy performance. Within this framework, City staff:

- **PLAN:** Set a target of 1% reduction in energy consumption and greenhouse gas (GHG) emissions each year over the energy consumption of 2023. Planned a list of projects and initiatives to achieve and surpass the target.
- **DO:** Request funding each year and execute the planned projects noted in the Plan during the five (5) year period.
- **CHECK:** Utilize real-time data to track the performance of the projects and diagnose any operational problems.
- **ACT:** Improve energy performance in the facilities further by addressing deficiencies and continually driving energy performance

City staff also ensured that the new 5 Year Energy Conservation Plan (2024 – 2028) focuses on GHG emission reduction measures, to align with the Mississauga Climate Change Action Plan. The identified measures in the plan will contribute towards the Climate Change Action Plan targets of:

- Reducing GHG emissions by 40% below 1990 levels by 2030
- Reducing GHG emissions by 80% below 1990 levels by 2050

Subject to annual project budget approvals within the Improve Green category, City staff have outlined the following projects and initiatives for the period spanning 2024 to 2028:

- Expanding **Pool Heat Recovery** in therapy pools to recover heat from pool drain and transfer to fresh water supply.
- Implementing **Pool Dehumidification heat recovery** to recover heat from the pool dehumidifier to heat the swimming pool water.
- Implementing **Ice Plant Energy Upgrades** that includes a robust ice plant controls and cold water ice resurfacing capabilities.
- Implementing **Ice Plant heat recovery**, to recover heat from the compressors to heat different parts of the building.
- Conduct **Ongoing Commissioning to the City's main facilities** using data analytics/fault detection tool that collects, manages, and analyzes data from various building systems for load profiling, facility benchmarking, asset performance tracking, fault detection, and creating energy dashboard.

- Implementing **HVAC Systems and DHW Systems Energy Upgrades** as part of the Lifecycle Replacements.
- Implementing **Controls Upgrades** at facilities with building automation system to optimize equipment operation further.
- Installing **Metering & Sub-metering Equipment** to utilize real-time data for making smarter operational decisions.
- Implementing **Lighting Upgrades** to newer and efficient technologies, including efficient controls to match occupancy and natural daylight.
- Installing **Renewable Energy Generation**, wherever feasibly possible.
- **Electrify Ice Resurfaces** in Ice Rink Arenas.

## Financial Impact

Funding for implementing the planned projects under the plan will be requested through the Facilities and Property Management's annual capital budget request process. These projects will be submitted for approval under the Improve Green category since they promote energy consumption reduction and encourage a clean and healthy environment.

Subject to annual project budget approvals, it is estimated that the City will be able to achieve the following results over the 2024 – 2028 period:

- 5% reduction in energy consumption and 8.3% reduction in GHG emissions
- A total of \$560,050 utility avoided costs

## Conclusion

The 5 Year Energy Conservation Plan (2024 – 2028) attached in Appendix 1 is an update from the previous (2019 – 2023) plan. It provides a summary of the previous plan's performance, sets the targets for the new period, and describes the planned initiatives and projects to achieve the targets. The plan has been prepared to meet the requirement of Ontario Regulation 507/18 under the Electricity Act 1998, and will support achieving the targets of the City's Climate Change Action Plan. The plan is intended to be made available to the public on the City's website, and requires approval from City's senior management per the Ontario Regulation 507/18 under the Electricity Act 1998.

## Attachments

Appendix 1: 5 Year Energy Conservation Plan (2024 – 2028)



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Raj Sheth, P.Eng, Commissioner of Corporate Services

Prepared by: Yasser Ismail, Supervisor of Energy Programs & Utility Management, F&PM