City of Mississauga
Corporate Report

MISSISSAUGA

Date: April 30, 2025	Originator's files:
To: Chair and Members of General Committee	
From: Sam Rogers, MBA, Commissioner of Transportation and Works	Meeting date: May 21, 2025

Subject

Safety Risks of Lithium-ion Battery Powered Electric Scooters and Bikes on MiWay Buses

Recommendation

1. That Council approve the ban of lithium-ion battery powered electric scooters (e-scooters) and electric bicycles (e-bikes) on all MiWay buses as outlined in the corporate report "Safety Risks of Lithium-ion Battery Powered Electric Scooters and Bikes on MiWay Buses" dated April 30th, 2025, from the Commissioner of Transportation and Works.
2. That staff be directed to implement clear, system-wide communication to riders regarding the ban of e-scooters and e-bikes on-board MiWay buses, including on-board signage, digital messaging, and updating the Transit By-law.

Executive Summary

- Safety concerns have emerged related to the risks associated with lithium-ion batteries, which power most e-scooters and e-bikes.
- A system-wide ban of lithium-ion battery powered scooters and e-bikes will mitigiate the identified safety risks.
- Medical mobility devices will continue to be permitted on Mi-Way buses as they are subject to regulated maintenance & safety standards and serve as essential tools for daily living and dignified mobility.
- Implement clear, system-wide communication to riders regarding the ban of e-scooters and e-bikes on-board MiWay buses, including on-board signage, digital messaging, and updating the Transit By-law to take effect as of July 1st, 2025.

Background

An e-scooter is defined as a personally owned lithium-ion battery powered transportation device equipped with two or more wheels, a handlebar for steering and a platform to stand on, some models are entirely foldable. E-scooters equipped with a lithium-ion battery, whether said battery is charged or depleted are included in this definition. Mobility aids used for medical purposes are not included in this definition.

An e-bike is defined as a personally owned lithium-ion battery powered bicycle having two or more wheels. E-bikes equipped with a lithium-ion battery, whether said battery is charged or depleted are included in this definition.

Safety concerns have emerged related to the risks associated with lithium-ion batteries, which power most e-scooters and e-bikes. If not constructed to meet recognized industry standards, these batteries are more susceptible to failure due to physical damage, exposure to extreme temperatures and degradation from road salt and moisture during winter months. When compromised, lithium-ion batteries, especially those which do not meet safety standards such as the ANSI/CAN/UL 2849, can overheat, catch fire, or explode. An incident from 2023 involving a fire on a TTC subway car caused by an e-bike battery has brought attention to these safety risks.

Present Status

E-scooters and e-bikes are considered micro-mobility devices and provide transportation alternatives that are low emission helping residents move around their city. MiWay currently permits the transportation of personally owned e-scooters and e-bikes on buses subject to space availability, with e-bikes being allowed on external bike racks.

In June 2024 the City of Mississauga implemented its first shared system of e-scooters and e-bikes. The City’s contract with Bird Canada and Lime Technologies Inc requires both operators to have robust battery management, maintenance and monitoring programs, including devices fitted with batteries which meet recognized standards. These shared e-scooters and e-bikes have always been prohibited from boarding MiWay buses. Therefore, shared devices are not being considered in this report and are not the focus of the proposed ban.

Many reputable manufacturers of electric scooters (e-scooters) and electric bicycles (e-bikes) follow standards of OEM testing, and these products are considered safe for consumers. However, since there is no regulatory body monitoring the sale, resale, or after-market care for devices, there is no way to manage what happens to the battery once the consumer has it in their possession. Furthermore, a lack of knowledge for consumers and the ability to purchase significantly lower-cost after-market batteries, increases the risk for a lithium-ion fire incident. As a result, non- medical devices remain a higher risk.

Comments

Benchmarking

In 2022 there were 22 fires in City of Toronto that resulted from the failure of lithium-ion batteries. In 2023 that number increased to 55 with the majority involving e-scooters and e-bikes. In October 2024 the TTC announced a seasonal ban on e-scooters and e-bikes lasting from November – April. This ban followed an incident on December 31st, 2023, when the lithium-ion battery of an e-bike suddenly ignited on a TTC subway car resulting in one person being treated for non-life-threatening injuries, significant damage to transit infrastructure and subsequent service delays.

The City of Brampton currently does not permit lithium-ion powered e-scooters or e-bikes on board their buses due to concerns with unregulated batteries in addition to limited space aboard buses.

Data from the Mississauga Fire Department on lithium-ion thermal events is unclear. It is only upon attending calls that firefighters become aware that the source of a fire was a lithium-ion battery that had malfunctioned, or experienced damage which compromised it resulting in ignition.

Safety and Risk of Lithium-ion Battery Failures

Lithium-ion batteries pose a significant and unpredictable fire risk, particularly in the confined space of buses. The risk is heightened by factors such as physical damage, winter road salt exposure, and improper charging or maintenance practices by owners. Unlike traditional mechanical failures, fires originating from lithium-ion batteries ignite suddenly, burn at extremely high temperatures and emit toxic gases such as hydrogen chloride and methane. The fires are difficult to extinguish, and the gases emitted are not only damaging if inhaled by humans and animals but are also flammable, and in enclosed spaces can create a vapor cloud explosion.

An internal Hazard Assessment was conducted by Health and Safety staff in late 2024. The Hazard Assessment report supports MiWay's recommendation for a complete ban of e-scooters and e-bikes on MiWay buses due to the fire risk lithium-ion batteries pose to riders and operators. Once a battery is compromised, whether due to rough handling, wear and tear, or exposure to winter conditions, it has the potential to critically endanger transit riders. Given these risks, a complete ban on buses is the most effective risk mitigation measure.

Lithium-ion Powered Medical Mobility Devices

Unlike e-cooters and e-bikes which are exposed to rough handling, frequent impacts, extreme weather conditions and improper charging practices, medical-grade mobility devices are engineered for durability, reliability, and controlled energy management. They adhere to strict safety regulations and are designed for long-term stable use, reducing the likelihood of battery failures. Mobility aids are subject to regulated maintenance and safety standards that prioritize user protection. Distinct from personally owned e-scooters and e-bikes, medical mobility devices

serve as essential tools for daily living and dignified mobility, they will experience a different level of care and maintenance. For these reasons, medical mobility devices will continue to be permitted.

Implement System-wide Communication Plan
In addition to updating the Transit By-law, MiWay will communicate the change to customers and the community via an integrated communication campaign which will include public education and awareness inclusive of the effective date of July 1st 2025. MiWay will also deliver an internal communication and education campaign regarding this change to all MiWay and Transit Enforcement employees.

Financial Impact

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

Conclusion

Implementing the recommended system-wide ban of lithium-ion battery powered electric scooters (e-scooters) and electric bicycles (e-bikes) will mitigiate the identified safety risks and ensure a safe, efficient and accessbie transit network that prioritizes passenger and operator safety.

Sam Rogers, MBA, Commissioner of Transportation and Works

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