



**Report**  
**Staff Report**  
 The Corporation of the City of Brampton  
 10/23/2024

**Date:** 2024-08-09

**Subject:** **Timing Traffic Signals and Pedestrian Crossings at Intersections – All Wards (RM 43/2022)**

**Contact:** Shane Loftus, Manager, Transportation Right of Way and Safety, Road Maintenance, Operations and Fleet

**Report number:** Public Works & Engineering-2024-660

**RECOMMENDATIONS:**

1. That the report from Shane Loftus, Manager, Transportation Right of Way and Safety, Road Maintenance, Operations and Fleet to the Committee of Council Meeting of October 23, 2024, re: **Timing Traffic Signals and Pedestrian Crossings at Intersections – All Wards (RM 43/2022)**, be received.

**OVERVIEW:**

- **This report provides information to Council regarding the Timing of Traffic Signals and Pedestrian Crossings at Intersections.**
- **The report identifies technologies currently being piloted at various locations in the City that provide an enhanced pedestrian experience while maintaining safety and promote efficiency in traffic management.**
- **This report identifies the goal of Traffic Operations to continue to leverage stakeholder projects and to deploy technological solutions to maximize the capabilities of the Advanced Traffic Management System.**
- **Staff will continue to deploy various advanced smart detectors, and sensors at various locations across the City, relying on technology to maximize the safety and efficiency in the traffic system.**

**BACKGROUND:**

In 2023 concerns were received from residents having missed pedestrian walk opportunities at various intersections by failing to activate the walk signal when arriving at an intersection.

Direction was received from Council to explore having the pedestrian walk signal activate automatically whenever the traffic signals turned green for any vehicle direction, a process called "Automatic Pedestrian Recall".

Staff conducted two separate information sessions for the Chair and Vice Chair Councillors for Public Works and Engineering as well as the Councillors from Wards 2 & 6, where the resident concerns originated.

Through the information session, staff were able to communicate the negative effects that Automatic Pedestrian Recall would present, including introducing significant inefficiency and delay into the traffic system, but also removing the ability for Transit Signal Priority (TSP) and Fire Pre-emption to work, increasing Transit and Emergency Services response times.

Several options were explored that would maintain efficiency within the traffic system but would also provide efficiencies for pedestrians and cyclists as well. Staff demonstrated advanced detector systems piloted at Williams Parkway and Graymar Road as well as Chinguacousy Road and Sandalwood Parkway West. These advanced detector systems can identify pedestrians, cyclists, various vehicle types including e-scooters, collision conflict hotspots and vehicle speeding trends among many other smart features. By being able to detect pedestrians and cyclists, the system can identify those waiting to cross an intersection and can automatically initiate a "call" to activate the walk/ride signal without the pushbutton being activated, among the various other functions that prioritize traffic safety and efficiency.

## **CURRENT SITUATION:**

In the City of Brampton, our Pedestrian, and Traffic signals typically work independently. The pedestrian "walk" signal does not automatically activate when the traffic signal turns green. The pedestrian signal must be activated by using the push button, located near the curb depression for the crossing.

When a push button is activated for a pedestrian signal, it's communicated to the traffic controller that there is a pedestrian waiting to cross and the controller will activate the pedestrian crossing interval (Walk and Flashing Don't Walk). The maximum vehicle green time is activated simultaneously with a pedestrian crossing call, overriding the programmed vehicle green lengths. If a pedestrian does not activate the push button, it can lead to pedestrians still being in the intersection when the traffic signals change and/or create jaywalking incidents; both situations create dangerous vehicle-pedestrian conflict situations.

Pedestrian crossing intervals are calculated using mathematical formulas to determine how long it will take a pedestrian to cross the intersection using predetermined walk speeds and the width of an intersection. If a push button is not activated, the traffic

controller will use the minimum green time required by vehicular traffic, which is significantly lower than pedestrian crossing time requirements.

When pedestrian walk phases are not activated there is a significant amount of unused green time which is saved in a “bank” of available green time. The bank can be used to allow additional future movements (i.e., left turn arrows, advance green time, etc.) while maintaining overall system efficiency. This banked green time is also used to provide Signal Priority for buses and emergency vehicles.

#### Automatic Pedestrian Recall:

If the traffic signal green time was always maximized for each vehicle phase due to automatic pedestrian recall, the available bank would be zero. Without having a bank of available green time that can be deployed at an intersection, TSP and Fire Pre-emption would not be possible and vehicles would be left waiting at a red light when there was no demand on the cross street. Increased delay and inefficiency would lead to a significant rise in resident/driver complaints due to increased travel times, drivers making unsafe movements and a significant increase in pedestrian non-compliance.

#### Advanced Detector Systems:

Smart detector systems can work in conjunction with an Advanced Traffic Management System (ATMS) and the traffic controllers to create a smart and connected system that is capable of capturing data from an intersection or along a corridor, analyzing the data collected in the cloud and making signal timing changes in real time based on observed field conditions. Advanced detector cameras, that work in conjunction with detectors such as those deployed at Williams Parkway and Graymar Road and deployed at Chinguacousy Road and Sandalwood Parkway West are capable of monitoring live data, categorizing it by vehicle class, identifying specific road conditions, measuring congestion levels, identifying collision risk factors and communicating with the traffic controller through the ATMS to change local and corridor signal timings or to implement special actions such as activating a dynamic Leading Pedestrian Intervals (LPI) to reduce the probability of vehicle-pedestrian conflicts.

Staff have worked with internal stakeholders to ensure that the 360-degree camera systems being deployed at select intersections across the City are compatible with the traffic signal detectors and software, which will greatly increase the number of intersections where the City will be able to leverage smart detection technology.

These detectors, along with Intelligent Count Stations, which can monitor vehicle speeds, volumes, traffic density and travel times, will be the eyes and ears of a smart traffic solution that along with our new ATMS and traffic controllers will provide the City of Brampton with a traffic system that is industry leading in terms of efficiency and safety for all right of way users.

#### **CORPORATE IMPLICATIONS:**

**Financial Implications:**

There is no financial impact resulting from the recommendations in this report

**STRATEGIC FOCUS AREA:**

This report fulfills the strategic focus of Healthy and Safe City by improving the safety and efficiency for all road users. By modernizing the traffic signal system, we will be able to efficiently move people and goods on the City's road network.

**CONCLUSION:**

Traffic Signals staff will continue to deploy various advanced smart detectors (subject to budget approval), and sensors at various locations across the City, relying on technology to maximize the safety and efficiency in the traffic system.

Advanced Smart Detectors, Intelligent Count Stations and other sensors will be installed at appropriate locations throughout the City with a focus on all major intersections and along all major collector corridors, subject to Capital Budget approval.

Public Works and Engineering staff will work with Strategic Communications to create a communication plan that informs residents how the pedestrian and cyclist signals operate and to communicate that the “push” button must be pressed to activate the pedestrian “walk” signal.

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