

Date: December 9, 2025

To: Members of the Active Transportation Advisory Committee

From: Amanda Mcilveen, Manager, Transportation Right of Way and Safety

Re: Leading Pedestrian Intervals (LPI) in the City of Brampton

Leading Pedestrian Intervals (LPIs) are traffic-signal timing strategies that provide pedestrians with a head start, typically 3 to 7 seconds, before parallel vehicle traffic receives a green light. This timing adjustment is increasingly used in urban areas to enhance pedestrian safety and improve intersection operations.

LPIs can offer advantages. Most importantly, they can increase pedestrian visibility by allowing people to enter the crosswalk before vehicles begin turning. This head start can reduce conflicts with turning vehicles, especially left- and right-turning drivers who may otherwise overlook pedestrians. LPIs also support vulnerable populations, such as children, older adults, and individuals with mobility challenges, by giving them additional time to establish themselves in the intersection. Another key benefit is the low cost of implementation, as LPIs require only signal timing modifications rather than major infrastructure changes.

Despite their potential benefits, LPIs also have some drawbacks. By allocating more time to pedestrians, LPIs can increase vehicle delay, particularly at intersections with heavy traffic volumes or congested corridors. The City of Brampton currently experiences high rates of traffic congestion during the morning and afternoon peak periods, in several cases maxing out signal cycle lengths of 160 seconds. Typically, this maximum cycle length is considered only in special cases such as:

- Large intersections with many phases and/or protected phases
- Heavy traffic demand
- Long, coordinated corridors
- Locations with transit signal priority

In the City of Brampton, 30% of intersections are currently running 160s cycle lengths due to high volumes, transit signal priority and Zum corridor coordination. This is considered a high number of locations where reducing delays is prioritized over pedestrian experience because of the needs to move people, services and goods efficiently throughout the city. LPIs offer limited value at intersections with lower pedestrian activity or where high-speed traffic dominates, as operational impacts might outweigh safety gains in these contexts. In some cases, LPIs must be paired with other safety measures such as curb extensions, protected turn phases, or no right turn on red by-laws, to fully address pedestrian risk factors.

The effectiveness of LPIs depends heavily on driver awareness, compliance, and pedestrian predictability because the safety benefits are based on clear expectations about who enters the intersection and when. LPIs work by giving pedestrians a head start before parallel vehicle traffic receives a green light, but if drivers are not accustomed to seeing pedestrians already in the crosswalk when their signal turns green, their reactions may be inconsistent. Some drivers may inch forward or begin turning without fully scanning for pedestrians, reducing the intended protection that the LPI provides. This is especially true in areas where LPIs are newly implemented or where drivers have limited experience with pedestrian-priority signal treatments.

LPIs rely on predictable pedestrian behavior: pedestrians are expected to enter the crosswalk promptly during the walk interval. If pedestrians hesitate or start crossing late in the cycle, drivers may not anticipate their presence, weakening the visibility advantage that LPIs are designed to create. A lack of driver education or clear signage can further diminish compliance, as drivers may not understand why pedestrians appear to “jump the light” or may incorrectly assume that the walk signal is malfunctioning.

Lastly, there is currently no standard LPI implementation or warrant process within the Ontario Traffic Manuals for LPI. While there is general guidance, each municipality with LPI has created its own standards in terms of timing, pedestrian volumes and turning vehicle movement counts.

Due to these concerns, in a recent municipal round table discussion with other cities in Southern Ontario some municipalities were considering the removal of LPI at intersections where increased pedestrian/vehicle conflicts were present and to review the decision making before moving forward with further implementation.

LPIs can provide a cost-effective approach to improving pedestrian safety, particularly at intersections with frequent turning movements and substantial pedestrian activity. It is important that balanced approved is taken when implementation this safety tool as not every intersection is a good fit for this type of signal programming. Brampton is currently implementing a new Advanced Traffic Management System to give Staff increased capabilities to adjust signal timings in real time based on live traffic data. Once implemented, we can begin to establish a warrant process and identify locations where LPI may be effective to increase safe streets.