



City Operations

Edmonton

Automated Traffic Enforcement Report 2022

saferoads@edmonton.ca
edmonton.ca/VisionZero

TABLE OF CONTENTS

1. Safe Mobility Strategy 2021 - 2025	PG 2
2. Automated Traffic Enforcement Technology Guideline	PG 2
3. Automated Enforcement Summary	PG 3
4. Mobile Speed Enforcement	PG 3
5. Intersection Safety Devices	PG 6
6. Automated Enforcement Targets	PG 9
7. Automated Enforcement Revenue	PG 10
8. Other Speed Management Initiatives	PG 10
9. Conclusion	PG 12

Introduction

This report has been prepared by the City of Edmonton in accordance with Alberta's [Automated Traffic Enforcement Technology Guideline](#). This report provides all required data and information as specified in Section Q - Annual Public Report of the guideline and demonstrates the main guiding principles behind the use of Automated Traffic Enforcement (ATE) in Edmonton. This report also describes automated enforcement program measures and targets that align with long term transportation safety outcomes as outlined in Section D - Transportation Safety Outcomes of the guideline.

The City of Edmonton is committed to achieving Vision Zero, the internationally recognized goal of zero traffic-related fatalities and serious injuries, through safe and livable streets by 2032.

Safe speeds are fundamental to achieve this goal by giving people more time to react to the unexpected, to reduce crash frequency and severity, and to increase driver field of vision. Automated enforcement, including Mobile Photo Enforcement (MPE) and Intersection Safety Devices (ISDs) are proven countermeasures to reduce speeding, so, it plays an important role in combination with other safe mobility programs to make streets safer and more livable for all. Research to investigate the safety impacts of MPE conducted by the City of Edmonton's Research Chair in Urban Traffic Safety at the University of Alberta has shown that efficient and effective strategic deployment of MPE reduces both speed and collisions, underscoring the significance of this tool for improving traffic safety.¹

¹ Agina, S. (2022). *Impact of Mobile Speed Enforcement (MPE): An Analysis of the Duration between Collisions at Enforced Sites*. [A Master's Thesis, University of Alberta]. <https://doi.org/10.7939/r3-7wbp-de32>.

Safe Mobility Strategy 2021 - 2025

The City of Edmonton's *Safe Mobility Strategy 2021-2025* is an innovative approach designed to accelerate our journey to Vision Zero.

The *Safe Mobility Strategy* sets out deliberate actions to address the systemic factors that contribute to serious crashes, including unsafe speeds. In Edmonton safe speeds are encouraged through a combination of measures including driver feedback signs (DFS), engineering upgrades, education and awareness campaigns and automated enforcement in coordination with in-person enforcement by the Edmonton Police Service (EPS). The locations with predominant speeding and red light problems are selected for automated enforcement after in-depth traffic analysis and consideration of engineering and design standards.

'*Strategic Collaboration with the Edmonton Police Service*' is a Key Action in the *Safe Mobility Strategy*, which includes supporting the strategic location selection and scheduling of both in-person traffic enforcement and City-led automated enforcement. The *Safe Mobility Strategy 2021-2025*, is included as [Attachment 1](#).

Automated Traffic Enforcement Technology Guideline

In response to the revised [Automated Traffic Enforcement Technology Guideline](#) the City of Edmonton established new processes and made the following changes in practice:

- Data collection and annual reporting was addressed by collecting the average daily traffic data at all locations and implementation of supplementary equipment where traffic data during deployment was not available.
- All sites that were previously approved based on 'conventional enforcement by the EPS deemed unsafe' and 'complaints from community members' criteria and locations where the speed limit is less than 50 km/h (with the exception of designated Playground Zones which have a speed limit of 30 km/h, and construction zones) were deactivated and removed from deployment schedule.
- Ticket review software was updated to ensure only one ticket can be issued to the same vehicle within a five-minute period.
- The new site approval process with accompanied datasets was developed to comply with the new requirement and site assessment form supplied in the revised guideline. As a result, 560 mobile speed enforcement sites and 105 intersection safety device locations were approved by EPS. In addition, the site assessment for each site, outlining the reason and criteria for selection and approval was posted at edmonton.ca/enforcement through the [Safe Streets Map](#).
- 2023 Traffic Safety Plan, included as [Attachment 2](#), indicating the commitment of the City to provide a transparent and accountable automated enforcement program, was created.

Automated Enforcement Summary

Automated traffic enforcement is deployed in Edmonton at approved sites in accordance with the Automated Traffic Enforcement Technology Guideline set out by the Province of Alberta. The City's automated enforcement program is delivered and managed by the Safe Mobility Section within the City Operations Department with oversight and direction from the Edmonton Police Service. The program consists of Mobile Photo Enforcement, photo radar and photo laser units which move among active enforcement sites, and Intersection Safety Devices (ISDs), which are deployed at fixed locations.

Please find below a summary of the outcomes of the City of Edmonton's automated enforcement program for 2022, prepared by the City of Edmonton Safe Mobility Section.

Mobile Speed Enforcement

The City of Edmonton operates 18 photo radar units and 17 photo laser units used to enforce speeding violations at approved automated enforcement sites.

The City has made a significant effort to ensure that the automated enforcement program is transparent and focused on safety. Mobile speed enforcement vehicles have bright yellow wraps or decals to be more visible to drivers and are parked so that they can be seen without obstruction by the direction of traffic they are monitoring.

Edmontonians may:

- Explore the [Safe Streets Map](#) which includes locations of all active mobile speed enforcement site, which changes weekly
- View a list of all [mobile speed enforcement sites](#) on Open Data
- View a list of all [intersection safety device locations](#) on Open Data
- View the Site Assessments* for each automated enforcement sites through [Open Data](#) or on the [Safe Streets Map](#)

Once sites have been approved, the deployment of available automated enforcement visits across eligible sites is carried out through the application of an optimization tool designed by the University of Alberta. The tool considers several factors for each site and provides the optimal distribution of visits to maximize the safety impact. The factors considered by the deployment tool for each site include:

- Frequency and severity of crashes
- Frequency and severity of vulnerable road user crashes
- Speed compliance rates
- Number of speed complaints filed by residents
- Historical violation rates

Mobile Photo Enforcement General Statistics

To assess the impact of mobile speed enforcement, traffic flow data, violation rates, ticket numbers and crash data for 2019 to 2022 were gathered for each site, as provided in [Attachment 3](#). General statistics for the mobile photo enforcement program are summarized in Table 1.

There are a number of key highlights related to the performance and outcomes of the mobile photo enforcement program in 2022:

- The deployment of available automated enforcement sites was strategized to distribute visits to a large number of sites in order to maximise the safety impact. The number of sites visited each year increased noticeably since 2019. In 2022 there was a drop in the total number of sites visited compared to 2021, due to the fact that the City ceased enforcement at 174 sites with a speed limit of 40 km/h in accordance with the new Guideline.
- The number of playground zone sites visited each year had a steady increase from 2019 to 2021. Although the number of visited playground sites in 2022 remained the same, the number of hours spent at these sites has more than doubled since 2019. This shows the priorities of our program and the importance of maintaining safe speeds in these areas.
- The number of vehicles receiving multiple tickets per year has been decreasing steadily since 2019

Table 1. Mobile Photo Enforcement General Statistics (2019 - 2022)

Year	2019	2020	2021	2022
Total Sites Visited	413	426	532	470
Total Hours	52,827	52,753	53,015	54,745
Number of Vehicles Monitored	12,304,378	8,885,954	7,282,519	8,446,403
PGZ Sites Visited	129	193	212	212
PGZ Sites Hours	5,262	6,125	10,308	12,482
Total Violations*	383,294	145,478	140,287	139,491
Total Tickets*	332,303	124,179	120,110	113,248
Ticket Conversion Rate	86.7%	85.4%	85.6%	81.2%
High Speed Violations (21+ Over Speed Limit)	41,712	19,708	19,384	21,691
High Speed Tickets (21+ Over Speed Limit)	34,760	15,959	15,739	16,787
Violation Rate	7.26	2.76	2.65	2.55
High Speed Violation Rate (21+ Over Speed Limit)	0.79	0.37	0.37	0.40
Number of License Plates Receiving Multiple Tickets	58,970	15,475	14,463	13,227
Maximum Number of Tickets per 1 License Plates	32	15	21	18

*A violation is defined as a vehicle captured exceeding the threshold speed on a given roadway. A violation results in a ticket only following a thorough review process whereby a determination is made to issue a ticket to the registered owner of the offending vehicle.

Table 2. illustrates the impact of mobile photo enforcement on speeds and driving behavior. In 2021 and 2022, mobile photo enforcement was deployed to the same 399 sites for at least one hour. At those sites, the average violation rate per site dropped by 0.16 violations per hour, the average traffic speed per site dropped by 0.44 km/h, and the average compliance rate per site increased by 0.58%. During that period, over 14.8 million vehicles were monitored which translates into almost 50,000 drivers reducing their speeds.

Table 2. Comparison between 2021 and 2022

Sites Visited in Both 2021 & 2022	399
Average Change in Violation Rate per Site	-0.16
Average Change in High Speed Violation Rate per Site	0
Average Change in Average Traffic Speed per Site	-0.44
Average Change in Compliance Rate per Site	0.58%

Table 3 provides the crash statistics for the 470 mobile enforcement sites visited in 2022.

Interpreting Crash Statistics

It is important to highlight that in September 2022, collision reporting centres were launched in Edmonton. This new process marks a significant change in the crash data collection and reporting process for citizens as well as how the data is managed and reported. These centres have provided crash reports that differ in consistency and accuracy from the data previously received from the Edmonton Police Service. Efforts are being made to investigate these inconsistencies and collaborate with EPS partners to identify required changes to the process to ensure the ongoing reliability of data. As a result of mentioned changes, caution must be exercised when comparing the 2022 crash numbers to the previous 3 year average. At this point in time, there was a notable decrease in total crashes and PDO crashes. At the same time the increase in the number of crash injuries being captured in the data compared to data trends from previous years, may be as a result of the process shift rather than an increase in injury causing collisions themselves.

Changes in traffic volumes have also impacted crash trends. At the start of the COVID-19 pandemic in 2020, Edmontonians were asked to stay home as a public health safety measure. As a result 2020 was an outlier year in terms of vehicle volumes, travel patterns and crash numbers. Since 2021, travel patterns have started returning to normal, however, traffic volumes are still lower than the pre COVID average.

Table 3. Crash Statistics for Mobile Photo Enforcement Sites

Crash Type*	2019-2021 (Yearly Average)	2022**
Total Crashes	176	152
Fatal Crashes	0	0
Injury Crashes	20	26*
PDO Crashes	156	126
Fatalities & Injuries	29	33*

*The crash reporting process changed in 2022 resulting in a shift in the reporting threshold for injuries. This change must be considered when comparing the 2022 injury numbers to the previous 3 year average.

**2022 crash numbers are subject to change as reports are still being received at the time of submission of this report.

Intersection Safety Devices

Intersection Safety Devices (ISDs) are installed at 105 locations/approaches (76 intersections)² to enforce red light running and speeding.

Intersection Safety Device Statistics

In order to assess the impact of ISDs, traffic flow data, violation rates, ticket numbers and crash data for 2019 to 2022 were gathered for each site, as provided in [Attachment 4](#). General statistics for the intersection safety devices are summarized in Table 4.

It is important to note that between 2019 and 2020 there was an increase in the number of ISD sites across the city, resulting in an increase in ISD days of operation, and subsequent violation and ticket numbers during that time.

There are a number of key highlights related to the impact of ISDs in Edmonton. Most notably, there has been a steady decline in a number of key indicators including:

- Speeding tickets per 100,000 monitored vehicles
- High speed tickets for 21+ km/h per hour over the speed limit
- Number of license plates receiving multiple speeding tickets

There was an increase in red light tickets in 2022. The number of red light tickets issued is often impacted by weather conditions and may be due to increased snowfall. The City will continue to encourage drivers to slow down and drive to the conditions so they can safely come to a stop when required at intersections.

Table 4. ISD Sites General Statistics (2019-2022)

Year	2019	2020	2021	2022
Total ISD Days	24,185	37,188	37,667	35,954
Number of Vehicles Monitored	315,111,321	436,346,470	476,181,954	479,328,213
Total Speeding Violations	312,606	412,958	330,041	330,998
Total Speeding Tickets	271,127	353,419	276,973	265,141
Speeding Violation Conversion Rate	86.70%	85.60%	83.90%	79.80%
High Speed Violations 21+ km/h Over the Speed Limit	17,020	22,354	17,825	18,382
Total Speeding Tickets 21+ km/h Over the Speed Limit	13,019	16,058	11,891	11,553
Total Red Light Violations	51,202	56,960	62,315	67,465
Total ISD Red Light Tickets	26,094	27,905	28,211	32,201
Red Light Violation Conversion Rate	51.00%	49.00%	45.30%	47.70%
Speeding Tickets per ISD Day	11.21	9.5	7.35	7.37

² 8 sites are currently not operational due to LRT construction and the Yellowhead Freeway Conversion project. 1 site was deactivated in 2021 while 7 sites were deactivated in 2022.

Year	2019	2020	2021	2022
Speeding Tickets 21+ km/h per ISD Day	0.54	0.43	0.32	0.32
Red Light Tickets per ISD Day	1.08	0.75	0.75	0.9
Speeding Tickets per 100,000 Monitored Vehicle	86.04	81.00	58.17	55.32
Speeding Tickets 21+ km/h per 100,000 Monitored Vehicle	4.13	3.68	2.50	2.41
Red Light Tickets per 100,000 Monitored Vehicle	8.28	6.40	5.92	6.72
Number of License Plates Receiving Multiple Speeding Tickets	49,041	66,328	49,403	46,508
Number of License Plates Receiving Multiple Red Light Tickets	910	1,189	1,175	1,445

*A violation is defined as a vehicle captured exceeding the threshold speed on a given roadway. A violation results in a ticket only following a thorough review process whereby a determination is made to issue a ticket to the registered owner of the offending vehicle.

Table 5 provides average violation rates and speeds per site between 2021 and 2022 and demonstrates the impact of ISDs on speeds and driving behavior. During this time nearly one billion vehicles were monitored by ISDs across the city. We can see the following:

- The average speeding violation rate per site dropped by 2.44 violations per 100,000 vehicles
- The average speeding violation rate for 21+ km/h over the speed limit per site dropped by 0.03 violations per 100,000 vehicles
- The average red light violation rate per site increased by 1.5 violations per 100,000 vehicles
- The average traffic speed per site dropped by 0.3 km/h

Table 5. Comparison between 2021 and 2022

Average Change in Speeding Violations per 100,000 Vehicles per Site	-2.44
Average Change in Speeding 21+ km/h Violations per 100,000 Vehicles per Site	-0.03
Average Change in Red Light Violations per 100,000 Vehicles per Site	1.50
Average Change in Average Traffic Speed per Site	-0.3 km/h

The statistics provided in Table 6 and Table 7 indicate that there was an increase in crashes at ISD monitored intersections across the city in 2022. During this time, there was also an increase in the number of vehicles passing through intersections monitored by ISDs. The average number of vehicles monitored per day increased from 12.5k between 2019 and 2021 to 13.3k in 2022. The comparison period of 2019-2021 also includes the time period impacted by the pandemic, where changes in traffic patterns were experienced across the city.

Notably, the increase in crashes at ISD sites is the same as what we see across the city at other intersections. Between 2019 and 2021, 32,448 intersection crashes averaged 10,816 crashes per

year. In 2022, there were 11,883 intersection crashes. Based on this, intersection crashes increased by 9.9% city-wide during the same study period.

Table 6. Intersection Crash Statistics for ISD Sites

Intersection Crashes	2019-2021 (Yearly Average)	2022
Total Crashes	2,603	2,854
Fatal Crashes	0	1
Injury Crashes	282	472
PDO Crashes	2,321	2,381
Fatalities & Injuries	353	763

*The crash reporting process changed in 2022 resulting in a shift in the reporting threshold for injuries. This change must be considered when comparing the 2022 injury numbers to the previous 3 year average.

**2022 crash numbers are subject to change as reports are still being received at the time of submission of this report.

Table 7. Through Lane Crash Statistics for ISD Sites

Intersection Through Lane Crashes	2019-2021 (Yearly Average)	2022
Total Crashes	807	888
Fatal Crashes	0	1
Injury Crashes	93	149
PDO Crashes	714	738
Fatalities & Injuries	110	254

*The crash reporting process changed in 2022 resulting in a shift in the reporting threshold for injuries. This change must be considered when comparing the 2022 injury numbers to the previous 3 year average.

**2022 crash numbers are subject to change as reports are still being received at the time of submission of this report.

Case Study to Showcase the Safety Value of ISDs

In December 2018 a new ISD was installed at 111 St and Whitemud Drive to address the high number of crashes seen at the intersection. As shown in Figure 1, since the installation of the ISD, the number of crashes per year have dropped significantly.

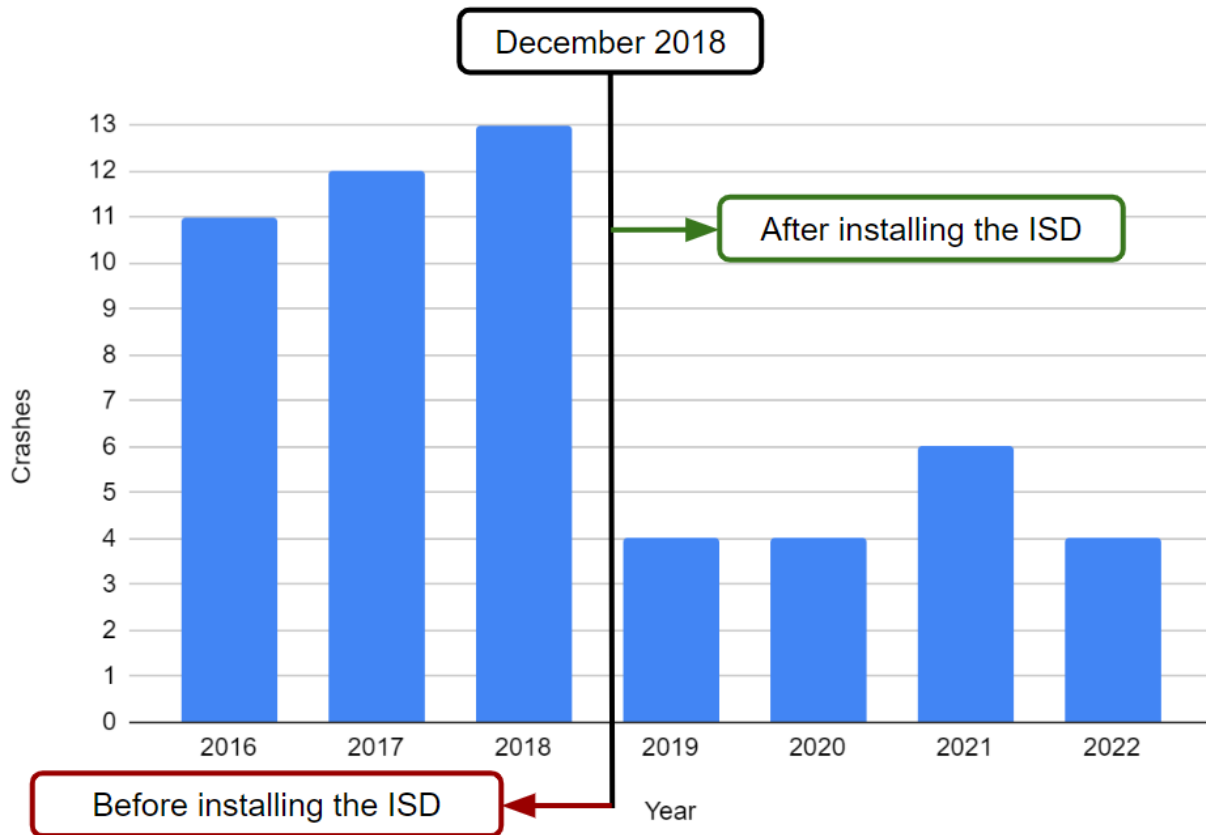


Figure 1. Crashes per year at the ISD site monitoring at 111 St & Whitemud Drive EB

Automated Enforcement Targets

The City of Edmonton's Traffic Safety Plan tracks three performance measures for the automated enforcement program which are:

- Repeat violators: the percentage of license plates that had at least one ticket from the current quarter and had at least one ticket in the past year.
- High speed violations: the percentage of total violations that exceed 21+ km/h over the speed limit.
- Location impact: the percentage of total deployment hours spent conducting enforcement at high injury network sites. The City's high injury network are streets and intersections where crashes and traffic-related serious or fatal injuries have occurred more frequently over the last several years and are publicly available on the Safe Streets Map. The City uses this information to prioritize improvements, identify high risk areas, and create solutions to make our streets safe for all Edmontonians.

Table 8. illustrates the City of Edmonton's performance on the three measures defined above against the targets for each measure.

Table 8. Automated Enforcement Performance Measures

Performance Measures	Repeat Violators	High Speed Violations	Location Impact
Target	Less than 45%	Less than 7.3%	More than 12%
Q1 2022	41.3% - On Target	6% - On Target	10.5%
Q2 2022	39.3% - On Target	7.8% - Opportunity to Improve	13% - On Target
Q3 2022	39.5% - On Target	8.2% - Opportunity to Improve	12.1% - On Target
Q4 2022	41.4% - On Target	7.4% - Opportunity to Improve	12.6% - On Target

Automated Enforcement Revenue

The automated enforcement program in Edmonton generated 29.86 million dollars in 2022. As outlined in [City Policy C579B Traffic Safety Automated Enforcement Reserve](#), automated enforcement revenue generated by the City of Edmonton program is reinvested back into safe mobility initiatives such as crosswalk upgrades, safe street toolkits, road design improvements, and public education campaigns to help reach Vision Zero; and do not go into general City revenues.

Other Speed Management Initiatives

Projects and programs to encourage safe speeds are a significant focus for the City of Edmonton. Learn more about how the city is making streets safer city wide at edmonton.ca/VisionZero.

Lower speeds translate into fewer crashes, injuries and fatalities on our streets and afford greater protection to our most vulnerable road users including pedestrians, cyclists, users of micro mobility, seniors and children and therefore constitute a critical factor in creating a safe system for all people.

Shifting public understanding and expectations as to what constitutes safe and acceptable speeds will further contribute to a larger, more transformational shift in traffic safety culture and help us reach our goal of Vision Zero.

Driver Feedback Signs

The City of Edmonton uses driver feedback signs to share vehicle speed information with drivers and alert them to when they are speeding. In 2022, there were 215 DFS deployed across the City on major roadways, in neighborhoods and near playgrounds. In addition, portable DFS are now available upon request by citizens as part of the [Safe Speeds Toolkit](#) program.

The City of Edmonton's Research Chair in Urban Traffic Safety at the University of Alberta, conducted research on the effectiveness of DFS use on different roads and intervention types. Results showed

significant collision reductions in all scenarios ranging from 31.0% to 41.6%. DFS were more effective in reducing collisions for arterials compared to collectors. Also, the combined use of DFS and mobile photo enforcement had a slightly higher impact on safety.³

Speed Limit Reduction

Speed limit reduction is a *Key Action* outlined in the *Safe Mobility Strategy*, reflecting the fact that speed is a factor in every crash. In alignment with the internationally recognized evidence on the relationship between speed and traffic fatalities and serious injuries, in 2021, Edmonton implemented a reduction in the default speed limit from 50 km/h to 40 km/h, with a focus on residential streets, the downtown core and high pedestrian areas. Learn more at edmonton.ca/SafeSpeeds.

Engineering

Safe Mobility Engineering proactively builds new streets and upgrades existing streets with design features that are intended to prevent crashes or reduce the severity of outcomes when crashes occur. This includes designing and implementing measures to reduce speeds such as speed humps, speed tables, raised crosswalks, curb extensions where appropriate for the type of road.

The City of Edmonton works to improve safety around schools, along priority corridors and at priority crossings. Learn more at edmonton.ca/SafetyByDesign.

Education and Community Activation

The City has three programs to give everyone the opportunity to get involved and help make their streets safer: Vision Zero Street Labs, the Safe Speeds Toolkit and the Vision Zero School Kit.

- Vision Zero Street Labs are temporary community-led, customized, creative, and flexible solutions to address neighbourhood traffic safety concerns
- Edmontonian can use the Safe Speeds Toolkit to address concerns about speeding in their neighbourhood
- The Vision Zero School Kit can be used to help build street safety awareness around schools and create new experiences and conversations to contribute to more livable neighbourhoods

Learn more [here](#).

Operation 24 Hours is a high-visibility, enforcement campaign coordinated with the Edmonton Police Service, to reduce speed and other traffic violations. In 2022, the City supported this campaign during the months of June and October, featuring the message "BIG TICKET EVENT - DON'T SPEED" on DMS across the city. A total of 1,296 hours were dedicated to this campaign.

To support the Speed Limit Reduction initiative, the Safe Mobility team developed a suite of tools to address potential misperceptions and alleviate concerns, such as those related to the expectation of longer travel times, the costs of the project, and signage pollution, and to place emphasis on the positive outcomes that lower speed limits have on safety and livability.

³ Wu, M., El-Basyouny, K. & Kwon, T. (2020). *A Safety Assessment of Driver Feedback Signs and Development of Future Expansion Program*.

This suite of tools includes a [webpage](#) with up to date information, a [Frequently Asked Questions \(FAQs\)](#) section, and the [Estimated Time of Arrival \(ETA\) tool](#), developed in partnership with the University of Alberta. This tool encourages people to test the impact of the speed limit change on their personal travel times. A series of [Awareness Videos](#) and an interactive [Speed Limit Map](#) to help people understand which roads were included in the speed limit reduction, along with 6,454 hours of advertising through dynamic message signs (DMS), and a postcard sent to every household in Edmonton, rounded out the suite of tools.

Finally, the [Safe Speeds Toolkit](#) was created to help Edmontonians promote safe speeds and support the implementation of the 40 km/h default speed limit in their neighbourhoods. This program provides citizens with educational resources, access to free community signage designed to encourage drivers to follow the new reduced speed limit and the option to request portable DFS to be placed in their neighbourhood.

Conclusion

Automated enforcement continues to be an essential tool to work in combination with educational and engineering safe mobility programs. The City of Edmonton is proud of achievements made towards safer and more livable streets.

In 2022, an international study named Edmonton as a top three city across 64 countries for progress towards eliminating crash-related fatalities. According to the [International Transport Forum's report](#), "these cities were able to significantly reduce road fatalities thanks to the implementation of robust and data-driven road safety policies". This highlights that our data-driven approach is on the right track, though there is more work to be done.

Through the Safe Mobility Strategy, the City will continue to support safe speeds on Edmonton's streets, and within communities.

KEY CONTACT

Rajna Tufegdzcic Automated Enforcement Manager Safe Mobility, Parks and Roads Services City Operations	780-655-0085	rajna.tufegdzcic@edmonton.ca
---	--------------	------------------------------