The City of Spruce Grove Enforcement Services

2023-2025

Traffic Safety Plan

Provided to the City of Spruce Grove's Community Peace Officers, this plan outlines current and past statistics of traffic enforcement, in an effort to prevent and reduce traffic related injuries and deaths.

Table of Contents

Introduction

The City of Spruce Grove is a thriving city, located 9 km west of Edmonton and adjacent to the Town of Stony Plain. It encompasses an area of approximately 36.79 square kilometers. Through the years, the community has evolved from having a strong agricultural focus to that of a self-contained city which has experienced rapid growth. In 2001 its population was 15,069, in 2008 it was 19,496, in 2021 it was 37,645.[1]

The city boasts a mix of industry, commerce and community living. The local business environment features everything from national store chains, boutique retailers and local health and personal services companies. Spruce Grove's industrial and commercial lands have expanded. It is a regional service center and serves as a commercial destination for a trade catchment population of 138,000. Spruce Grove is also a bedroom community for the greater Edmonton region. Spruce Grove offers a wide variety of residential neighbourhoods connected by walking trails; pathways which are also in proximity to parks, schools, and medical centers.

The City of Spruce Grove has approximately 255.07 kilometers of roads and 75.35 kilometers of walking trails and pathways. It features 40 parks, 11 sports and recreational areas, 2 dog-off-leash parks, 16 schools and 13 churches. The philosophy of Spruce Grove's development plan is to create broad accessible streets and paths and to utilize technologies to facilitate the smooth flow of people, whether on foot, cycle, vehicle or other modes of transportation. As a consequence of infrastructure design planning, Spruce Grove has 3 defined school zones and 7 defined playground zones.

Purpose:

A Traffic Safety Plan is a mandatory requirement for all Authorized Employers of Community Peace Officers who conduct moving traffic enforcement. It further is a requirement of the province for those communities who utilize Automated Traffic Enforcement technologies as one of their traffic safety initiatives. The intent of the plan is to document and analyze data, engage stakeholders and prioritize initiatives to improve road safety. This plan supports Alberta's traffic safety strategies for coordinated, collaborative and community-based delivery of traffic safety programs, initiatives and communication. It supports the Capital Region Integrated Safety Partnership's joint vision, and Canada's Road Safety Strategy – 2025. It builds upon the previous traffic safety plans for the City in its goal to eliminate all traffic fatalities and severe injury collisions while increasing safe and healthy mobility for all.

[1] Statistics Canada, Census Profile, 2021 Census of Population – Profile Table – Spruce Grove

Traffic Enforcement Profile

The City contracts the RCMP to provide municipal police services. The RCMP also provides policing services for the Municipal District of Parkland County, the Town of Stony Plain, and two first nations communities. In 2021 the RCMP assigned 1 officer dedicated to municipal traffic enforcement duties. The RCMP Integrated Traffic Unit (ITU) also conducts traffic enforcement operations in the Spruce Grove area on a rotational basis. ITU are provincial resources. Other traffic enforcement duties are conducted by local detachment members when time permits.

Traffic Enforcement is augmented with agreements by way of Memorandum of Understandings (MOUs) between the RCMP and the City of Spruce Grove, as well as a Tri-municipal MOU between the enforcement services departments of the City of Spruce Grove, Town of Stony Plain and Municipal District of Parkland County. This allows for joint operations and initiatives.

The City of Spruce Grove Enforcement Services employs nine Community Peace Officers (CPO) and two Bylaw Enforcement Officers. An Inspector manages Enforcement Services, Safe City and the Automated Traffic Enforcement (ATE) program. Spruce Grove Enforcement Services personnel are divided into two watches, where each team is supervised by a Sergeant. Each watch is comprised of (3) three CPO I officers and (1) one Bylaw officer. Only CPO I officers have authority to enforce moving traffic violations. On each watch, one CPO I officer is exclusively dedicated to conduct traffic enforcement operations.

The CPOs fulfill several important roles within the community. Some of these roles include the enforcement of city bylaws, providing community education, working with and providing assistance to external agencies like the RCMP and Spruce Grove Fire Services. The CPOs enforce statutes beyond municipal bylaws and have authority to enforce numerous Provincial Statutes such as:

- Animal Protection Act
- Dangerous Dog Act
- Environmental Protection and Enhancement Act
- Gaming, Liquor and Cannabis Act
- Innkeepers Act
- Provincial Administrative Penalties Act
- Provincial Offences Procedures Act
- Petty Trespass Act
- Tobacco, Smoking and Vaping Reduction Act
- Traffic Safety Act
- Trespass to Premises Act

The hours of operation for Spruce Grove Enforcement Services are normally between 0600 to 2200 hours daily. These hours are extended based on seasonal needs and availability. Very few calls for services are received beyond these hours and additionally, the types of investigations conducted beyond these hours frequently cross into the realm of Criminal Code offences, which CPOs do not currently have authority to investigate.

In addition to the CPOs, the City employs automated technologies commonly referred to as "photo radar" or “photo enforcement" to assist in the enforcement of speeding, red light

infractions, and stop sign violations at various locations throughout the city. This system is reviewed on a regular basis to determine if it is meeting its goals of collision reduction and a reduction in collision severity.

Spruce Grove Traffic Analysis

Collision data

The population of Spruce Grove from 2016 to 2021 continued to increase, as did the number of licensed drivers[2]. The population increase during this period was 11.93%. Likewise, the number of licensed drivers over the same time frame increased 8.36%.

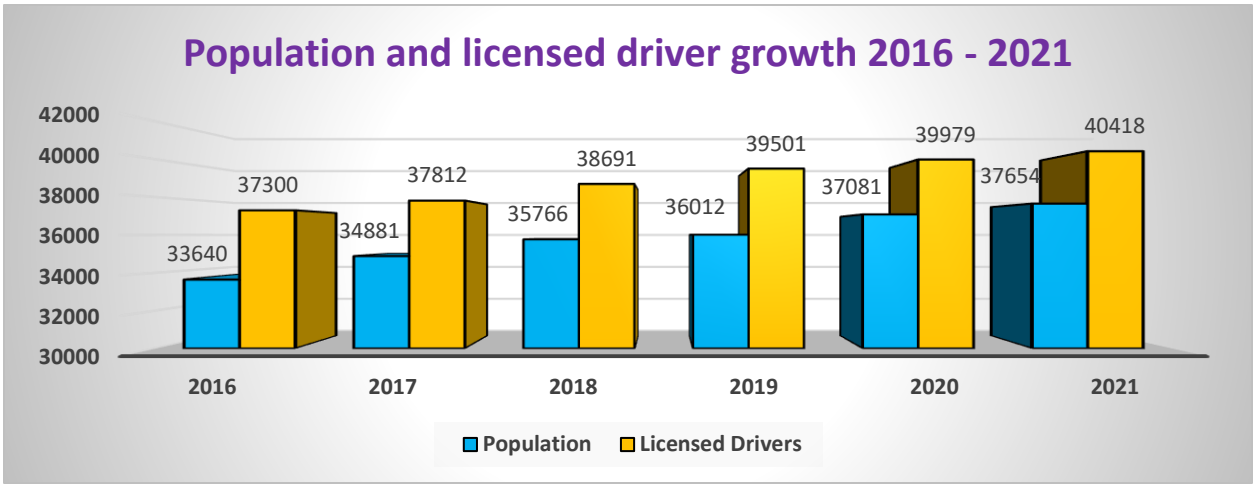


Table 1: Change in population & licensed drivers 2016-2021.

During the period 2016 to 2021 the number of injury and total collisions did not increase relative to the City's population and number of licensed drivers. In fact, a decrease was noted.

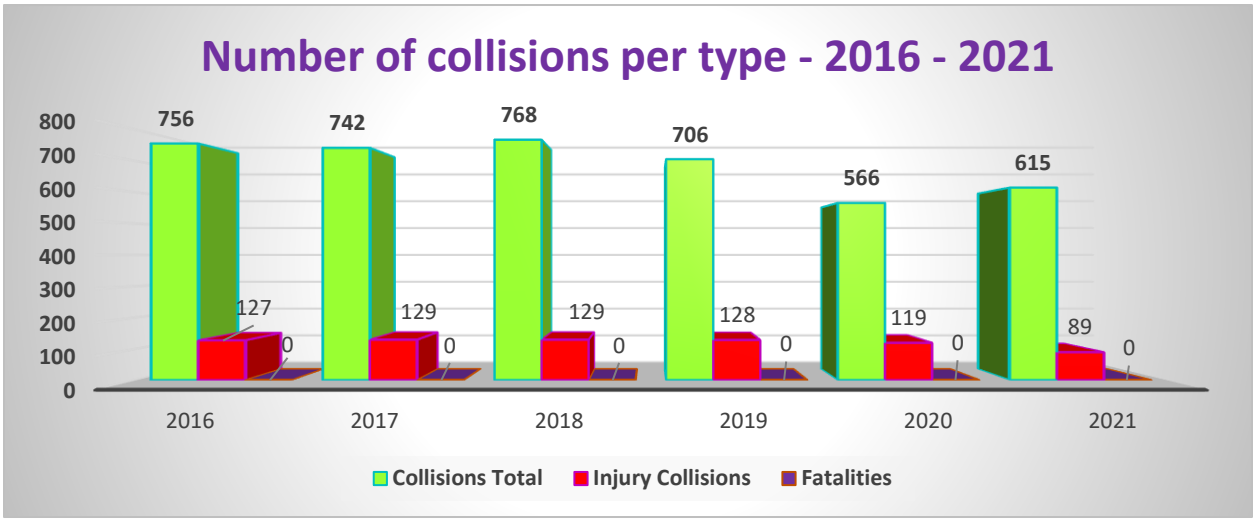


Table 2: Total number of collisions, injury collisions, fatality collisions 2016-2021.

[2] Licensed driver's exceed population as some rural residents utilize Spruce Grove post office mail boxes as their mailing address.

In 2019 there was a marked decrease of –8.07 % in the total number of collisions from 2018 to 2019. When utilizing the total number of collisions in 2016 as a baseline, the decrease in the total number of collisions for 2019 was -6.61%, for 2020 it was -25.13%, and for 2021 it was -18.65%.

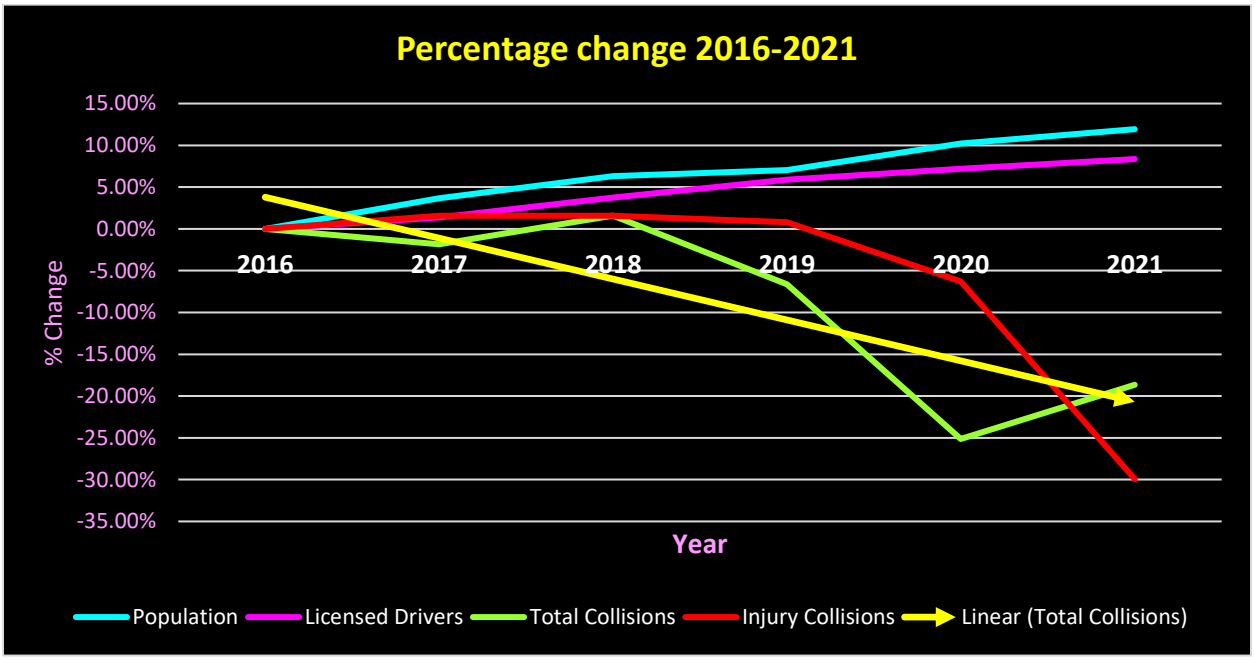


Table 3: Population, licensed drivers, total collisions, and injury collisions changes in Spruce Grove between 2016 to 2021 in percentages.

The number of injury collisions held relatively steady from 2016 to 2019 fluctuating between 127 to 129. A significant change is noted for 2020 (-6.30%) and 2021 (-29.92%) compared to 2016 numbers. The global COVID-19 pandemic resulted in numerous public safety measures being implemented which restricted population mobility. These measures impacted traffic volumes. It should also be noted that traditionally, traffic collision data was received from the RCMP. Commencing in 2022 the source of collision data received changed from the RCMP to Alberta Transportation. These factors need be considered when conducting collision trend analysis in future years.

Collisions on primary transportation corridors

The primary (arterial and collector) transportation corridors through the city of Spruce Grove are:

- Highway 16A – Oriented east to west – highway - arterial
- Jennifer Heil Way – Oriented north to south – arterial
- Century Road – Oriented north to south - arterial
- Grove Drive – Oriented east to west - arterial
- McLeod Avenue – Oriented east to west - collector
- Calahoo Road – Oriented north to south - arterial

The 2016 Traffic Safety Plan prioritized efforts to reduce collisions on Highway 16A. The 2019-2022 Traffic Safety Plan expanded upon the 2016 initiatives and prioritized the reduction of collisions along the City's arterial roadways.

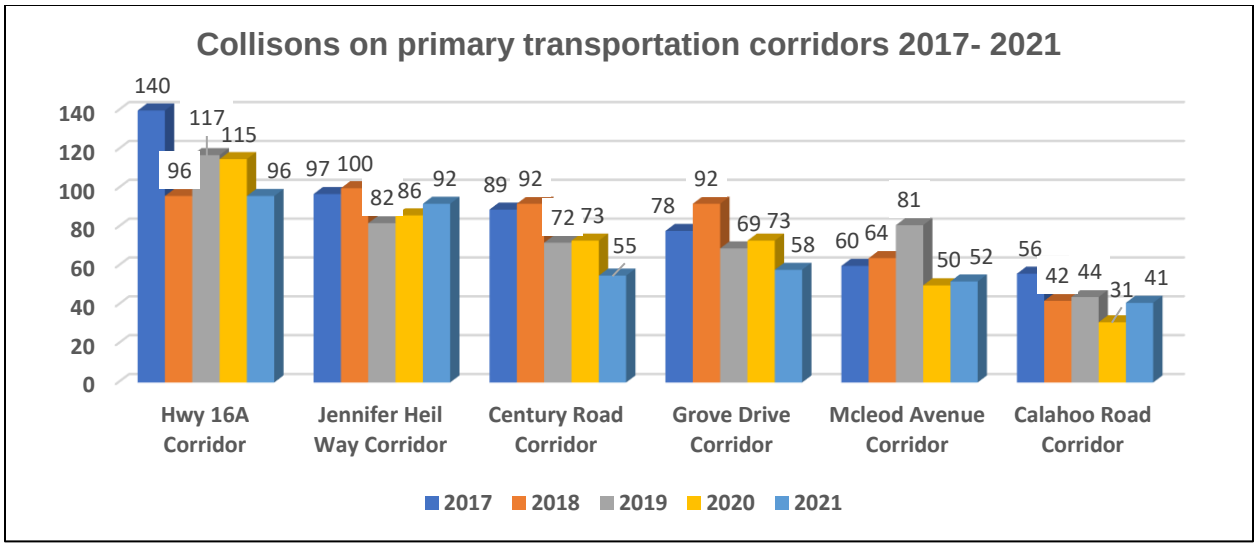


Table 4: Total number of collisions on primary traffic corridors in Spruce Grove from 2017 to 2021.

The above bar graph illustrates the number of collisions along these primary transportation corridors from 2017 to 2021. The graph illustrates a downward trend in overall collisions along these transportation corridors.

Traffic Corridor	2017 Collisions	Average Collisions 2018-2021	% Change 2017 vs 4 year Average	% Change 2017 vs 2021	2019 Collisions	Average Collisions 2019-2021	% Change 2019 vs 3 year Average	% Change 2019 vs 2021	2021 Collisions
Hwy 16A Corridor	**140**	**106**	**-24.29%**	**-31.43%**	**117**	**109.33**	**-6.55%**	**-17.95%**	**96**
Jennifer Heil Way Corridor	**97**	**90**	**-7.22%**	**-5.15%**	**82**	**86.67**	**5.69%**	**12.20%**	**92**
Century Road Corridor	**89**	**73**	**-17.98%**	**-38.20%**	**72**	**66.67**	**-7.41%**	**-23.61%**	**55**
Grove Drive Corridor	**78**	**73**	**-6.41%**	**-25.64%**	**69**	**66.67**	**-3.38%**	**-15.94%**	**58**
McLeod Avenue Corridor	**60**	**61.75**	**2.92%**	**-13.33%**	**81**	**61.00**	**-24.69%**	**-35.80%**	**52**
Calahoo Road Corridor	**56**	**39.5**	**-29.46%**	**-26.79%**	**44**	**38.67**	**-12.12%**	**-6.82%**	**41**

Table 5: Change in collision comparison from 2017 to 2021 and from 2019 to 2021 along with change in the average number of collisions during those time frames.

In 2016 data was only collected on intersections that had 10 collisions or more. Refinements in data collection from 2017 onwards allowed for an analysis to be conducted on the effectiveness of the previous traffic safety plan. The total number of collisions for 2017 along these transportation corridors was used as a baseline. This would have aligned with the 2016 Traffic Safety Plan. The 2019 collisions were also used as a baseline to illustrate the changes relative to the 2019-2022 Traffic Safety Plan. In so doing, one notes that collisions along these traffic

corridors decreased on average -23.42% from 2017 to 2021 values. When one compares the number of 2017 collisions vs the average number of collisions from 2018 to 2021, a 4-year period, an average decrease of -13.74% is noted. A small increase was noted on the McLeod Avenue Corridor of 2.92% when one compares the 2017 collisions vs the number of collisions for the 4-year average between 2018 – 2021.

If one restricts the analysis simply between the period of 2019 to 2021, one notes the following: The average number of collisions along all these corridors combined dropped from 2019 to 2021 by -14.65%. If one compares the 2019 collision numbers vs the 3-year average number of collisions from 2019 to 2021, one notes an overall average decrease of -8.08%. An increase was noted along the Jennifer Heil Way corridor. This may be explained by continued residential expansion in the Harvest Ridge, Spring Gate, Deer Park, Heatherglen and McLaughlin sub-divisions. This corridor also includes the intersections of Hwy 16A and Jennifer Heil Way / Campsite Road and Jennifer Heil Way at Grove Drive. In fall of 2021 a fixed Intersection Safety Device (ISD) Automated Traffic Enforcement camera system was installed at Jennifer Heil Way and Grove Drive. The effectiveness of this system will need a few years to be evaluated. The new ISD Automated Traffic Enforcement camera system allows for video recording of collisions at these intersections. As a result, a cause of collision assessment was conducted at the intersection of Hwy 16A and Jennifer Heil Way / Campsite road, which led to a recommendation of installing a protected left hand turn signal at that intersection. This should assist in the reduction of collisions at that intersection and consequently along both the Jennifer Heil Way and Highway 16A transportation corridors.

Collision severity and collision types were examined between the period of 2018 to 2021. This was conducted to understand the primary impact types for collisions. Although there are a number of factors that may be attributed to the causes for collisions, some general observations may be made.

> *Intersection* collisions are defined as collisions at intersections whereby the primary cause for the collision may be attributed to a driver cutting across the path of another vehicle, or the collision occurred at an approximate right angle. The driver's behavior of these types of collisions is suggestive of a driver having failed to stop at a traffic control device, attempting to turn or cross when unsafe, as well as other causes.
>
> *Rear End* collisions are defined as collisions where the primary impact was from the rear. The driver behavior in these types of collisions is indicative of the operator driving without due care and attention, driving while distracted, following too close, traveling at excessive speeds, or other causes.
>
> *Vulnerable User* collisions are defined as collisions where a vehicle impacted a pedestrian, cyclist, mobility assisted individual or scooter. The primary factors that contribute to these collisions include drivers not stopping at cross walks, pedestrians and drivers not checking both ways before crossing, or cyclist errors.
>
> *Other* collisions were defined as collisions where an individual lost control of their vehicle and drove off the road, lost control of their vehicle and side swiped a parked vehicle, icy road conditions, or distracted by other factors such as children, bees or other unique factors. In short, where the cause of collision did not fit another category.
>
> *Parking Lot/Driveway* collisions were defined as collisions that occurred on unnamed or non-recognized roadways. They include retail parking lots, private apartment parking

lots, school parking lots or on private driveways where the vehicle did not enter a named roadway.

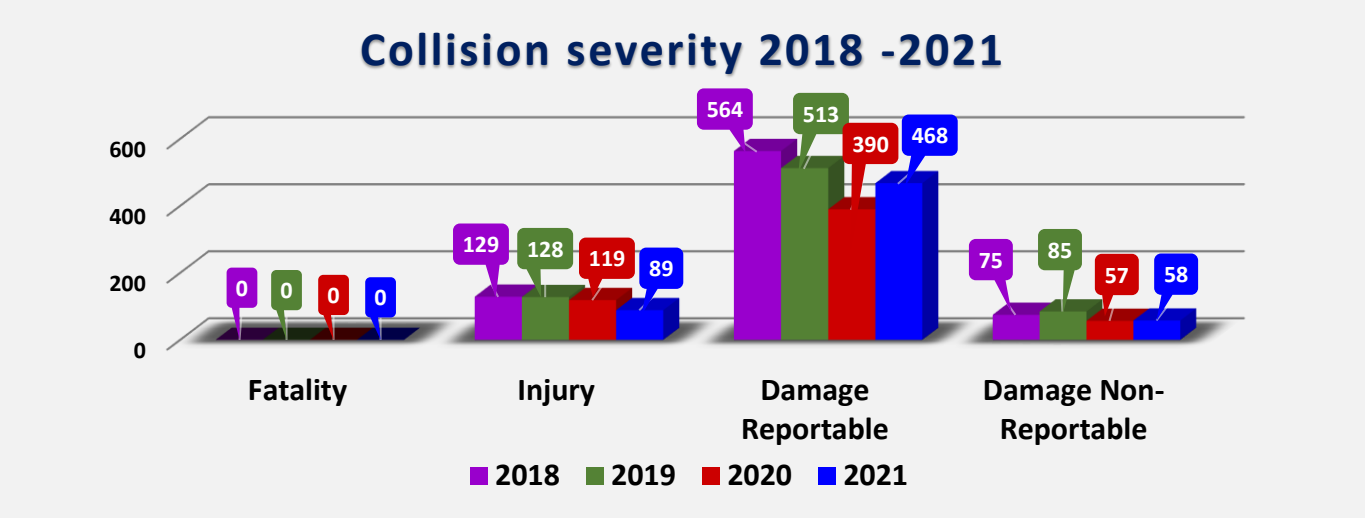


Table 6: Change in collision severity between the period 2018 to 2021 for the City of Spruce Grove.

Between 2018 to 2021 there were no traffic collision fatalities. All severity categories illustrate a downward trend, or a decrease during this period.

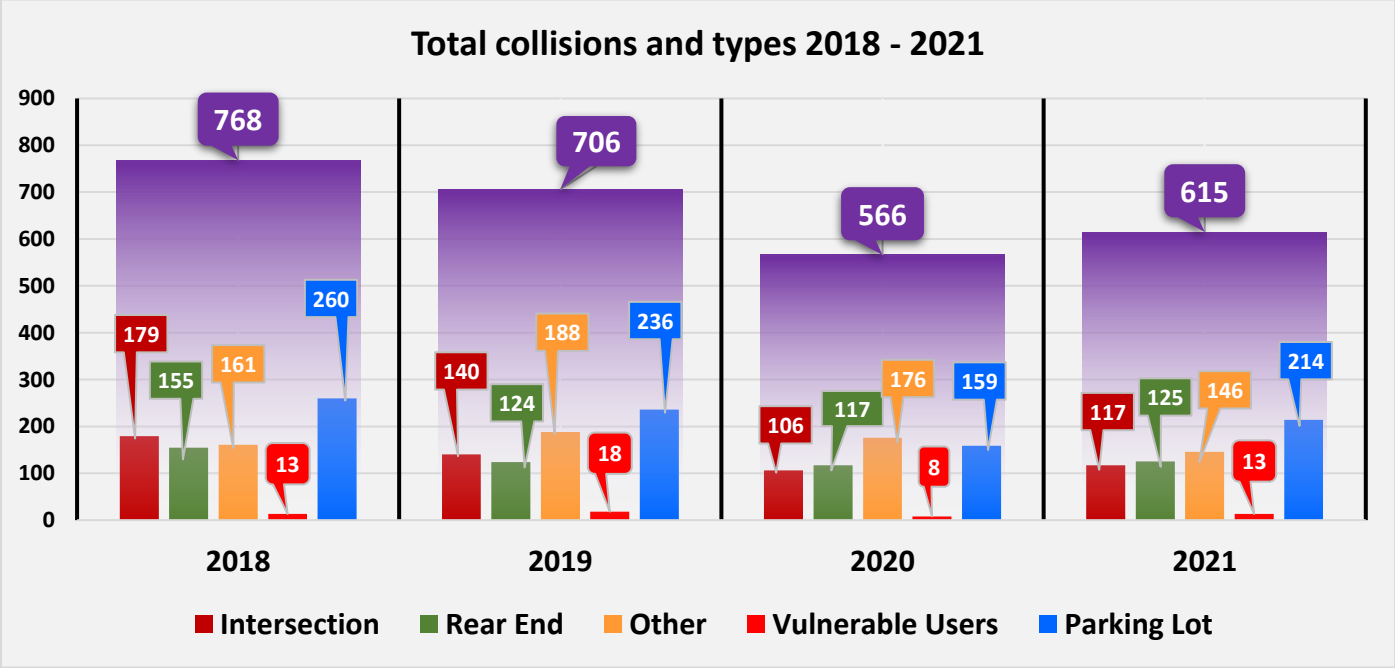


Table 7: Total collisions between 2018 to 2021 separated by type or manner of collision.

The above chart illustrates that there has been a marked decrease in intersection collisions between 2018 to 2021. In 2018 there were 179 intersection collisions. In 2021 intersection type collisions accounted for only 117 collisions. This is a decrease of -34.63%. Rear End collisions decreased from a high in 2018 of 155 to 125 in 2021. This is a decrease of -19.35 %. Other collision types do show a decease, from 2018 to 2021 of -9.32%, however increases are noted

in 2019 and 2020. Vulnerable user collisions stayed relatively steady with an increase noted in 2019 but a decrease in 2020. Collisions in parking lots accounted for approximately 1/3 of the total collisions per year. In 2018 they accounted for 33.85% of the total number of collisions. In 2019 it was 33.43%, in 2020 there was a slight decrease in the overall percentage to 28.09% and in 2021 they accounted for 34.80% of the total collisions.

Collision fatality reduction

Spruce Grove has persistently worked towards achieving “Vision Zero”. Vision Zero is a strategy to eliminate all traffic fatalities and severe injury collisions, while increasing safe, healthy, equitable mobility for all. It is a multi-disciplinary approach to road safety. It is a systems approach where such practices as the 5 E’s of traffic safety are employed. It is a coordinated effort to examine Engineering (Building in safety), Education (changing behaviour), Enforcement (automated and staffed), Engagement (partnerships), and Evaluation (data analysis) systems collectively to improve traffic safety outcomes.

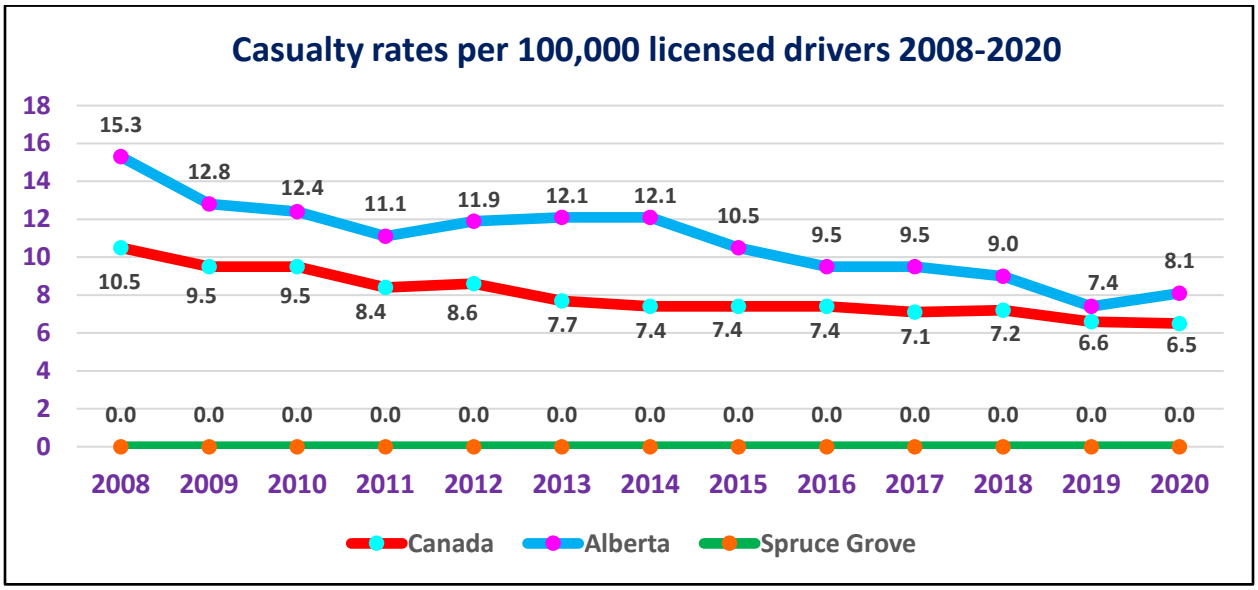


Table 8: Casualty Rates per 100,000 Licensed Drivers for the years 2008 – 2020.

Spruce Grove has had zero traffic collision fatalities for 13 years. As was previously cited Spruce Grove did not register a traffic collision fatality for 2021. Transport Canada data for Canadian traffic fatalities and Alberta traffic fatalities were not yet available at the time this report was written, thus they are not reflected on Table 8. Previously cited injury collisions for the City of Spruce Grove have also decreased, despite community population growth.

Cost of Collisions:

Traffic collisions impact not only those directly involved in the collision, but also others who respond to and are required to address the aftermath of the collision. Frequently people do not understand the burden traffic collisions have on the community and society. In any collision there are direct costs associated to the damages and/or injuries incurred. These costs include such things as: damage to private or public property, medical response or treatment, insurance costs, delays to traffic operations, injuries requiring rehabilitation treatment and resultant costs

to the health care system, economic loss of productivity as well as, in some circumstances, legal and other incidental costs.

There are also indirect costs associated with traffic collisions. Indirect costs resulting from fatal, or injury collisions would include such considerations as: pain and suffering, permanent injuries impacting potential discounted future earnings, or physical limitations. There are various models that may be used to examine the indirect costs of collisions. One such model or technique to calculate these costs is known as Human Capital Costs method. Another method is known as Willingness to Pay. The Human Capital Costs method does not explicitly account for the value and enjoyment of a life that is lost or compromised resulting from permanent injuries sustained in a collision. The Willingness to Pay Costs method does and involves obtaining estimates from persons within a population to assess their trade-offs between wealth and the potential for physical risk and harm.

To estimate the costs of collisions, the Capital Region Intersection Safety Partnership (CRISP) commissioned a study in 2018 to examine these costs. It is stressed that these are estimated costs to illustrate the impact collisions have to municipalities and society. The study utilized 2017 dollar values for cost estimates. Current costs would most likely be higher.

Collision Severity Classification (Collisions)

Fatal: A collision that results in at least one death resulting from that collision, and which occurred either at the scene or within 30 days from the date of collision.

Injury: A collision that results in at least one readily apparent injury, or vehicle damages that would support the claim of an injury from an involved individual.

Property Damage Over (PDO): A collision that involves property damage to vehicle or other property, which is required to be reported due to its dollar value, and with no apparent injuries or death.

Collision Type	Direct Costs	Indirect Costs "Human Capital"	Indirect Costs "Willingness to Pay"
Fatal	$225,558	$2,224,580	$6,707,228
Injury	$48,341	$89,408	$158,654
Property Damage Over	$14,065	$0	$0

Table 9: Cost of Collisions by Severity Classification.

The above costs were utilized to estimate the costs of collisions for the City of Spruce Grove for the collisions which occurred between 2018 and 2021. It is noted that there were no fatalities registered in Spruce Grove during that period.

The below noted tables illustrate the total cost of collisions. They illustrate the direct costs, the indirect costs utilizing the Human Capital method, the indirect costs utilizing the Willingness to Pay method, and then the total cost of collisions when the direct and indirect costs are combined.

Direct cost of collisions 2018 - 2021							
Year	Fatal Collisions	Direct Cost Fatal Collisions	Injury Collision	Direct Cost Injury	PDO Collisions	Direct Cost PDO	Total Direct Costs
2018	0	$0.00	129	$ 6,235,989.00	564	$ 7,932,660.00	$ 14,168,649.00
2019	0	$0.00	128	$ 6,187,648.00	513	$ 7,215,345.00	$ 13,402,993.00
2020	0	$0.00	119	$ 5,752,579.00	390	$ 5,485,350.00	$ 11,237,929.00
2021	0	$0.00	89	$ 4,302,349.00	468	$ 6,582,420.00	$ 10,884,769.00
Total	**0**	**$0.00**	**465**	**$ 22,478,565.00**	**1935**	**$ 27,215,775.00**	**$ 49,694,340.00**

Table 10: Direct cost of collisions 2018 – 2021.

Indirect cost of collisions "Human Capital" model 2018-2021							
Year	Fatal Collisions	Indirect Cost Fatal Collisions	Injury Collision	Indirect Cost Injury	PDO Collisions	Indirect Cost PDO	Total Indirect Costs
2018	0	$0.00	129	$ 11,533,632.00	564	$0.00	$ 11,533,632.00
2019	0	$0.00	128	$ 11,444,224.00	513	$0.00	$ 11,444,224.00
2020	0	$0.00	119	$ 10,639,552.00	390	$0.00	$ 10,639,552.00
2021	0	$0.00	89	$ 7,957,312.00	468	$0.00	$ 7,957,312.00
Total	**0**	**$0.00**	**465**	**$41,574,720.00**	**1935**	**$0.00**	**$ 41,574,720.00**

Table 11: Indirect cost of collisions "Human Capital" model 2018-2021.

Indirect cost of collisions "Willingness to Pay" model 2018-2021							
Year	Fatal Collisions	Indirect Cost Fatal Collisions	Injury Collision	Indirect Cost Injury	PDO Collisions	Indirect Cost PDO	Total Indirect Costs
2018	0	$0.00	129	$20,466,366.00	564	$0.00	$20,466,366.00
2019	0	$0.00	128	$20,307,712.00	513	$0.00	$20,307,712.00
2020	0	$0.00	119	$18,879,826.00	390	$0.00	$18,879,826.00
2021	0	$0.00	89	$14,120,206.00	468	$0.00	$14,120,206.00
Total	**0**	**$0.00**	**465**	**$73,774,110.00**	**1935**	**$0.00**	**$73,774,110.00**

Table 12: Indirect cost of collisions "Willingness to Pay" model 2018-2021.

Total cost of collisions 2018-2021					
Year	Total Direct Costs	Total Indirect Costs "Human Capital	Total Cost of Collisions (Direct and Human Capital)	Total Indirect Costs "Willingness to Pay"	Total Cost of Collisions (Direct and Willingness to Pay
2018	$ 14,168,649.00	$ 11,533,632.00	**$ 25,702,281.00**	$ 20,466,366.00	**$ 34,635,015.00**
2019	$ 13,402,993.00	$ 11,444,244.00	**$ 24,847,237.00**	$ 20,307,712.00	**$ 33,710,705.00**
2020	$ 11,237,929.00	$ 10,639,552.00	**$ 21,877,481.00**	$ 18,879,826.00	**$ 30,117,755.00**
2021	$ 10,884,769.00	$ 7,957,312.00	**$ 18,842,081.00**	$ 14,120,206.00	**$ 25,004,975.00**
Total	**$ 49,694,340.00**	**$ 41,574,740.00**	**$ 91,269,080.00**	**$ 73,774,110.00**	**$ 123,468,450.00**

Table 13: Total Cost of Collisions 2018-2021.

The direct cost of collisions from 2018 to 2021 equated to $49,694,340.00; on average $12,423,585.00 per year. When one combines the indirect costs with direct costs, the total costs of collisions equate to $91,269,080.00 when utilizing the Human Capital method for indirect cost calculations; on average $22,817,727 per year. When one utilizes the Willingness to Pay method to calculate the total cost of collisions, the total costs are $123,468,450.00; on average $30,867,112.50 per year.

Strategies and initiatives identified in the 2019-2022 Traffic Safety Plan have resulted in significant societal cost savings through the overall reduction of collision incidents. There is a direct cost of collision decrease from 2019 to 2021 of -$2,518,224.00. The total cost of collisions for the same years, saw a change between -$6,005,156.00 to -$8,705,730.00 depending on which indirect cost calculation model one employs. It is stressed that any fatality collision would have significantly impacted these figures and would also impact these costs moving forward in current dollar values.

Speed management

A significant factor determining the survivability of an individual involved in a collision, is speed. Increased speed increases the risk of collisions, injury, and death. Speed related risks are even more pronounced for pedestrians, cyclists, and motorcyclist. A pedestrian struck by a motor vehicle at 30 km/hr has a 5% chance of being killed. The likelihood of a fatal outcome increases to 55% at speeds of 50 km/hr, and at 60 km/hr the likelihood of the pedestrian becoming a fatality increases to 90%.

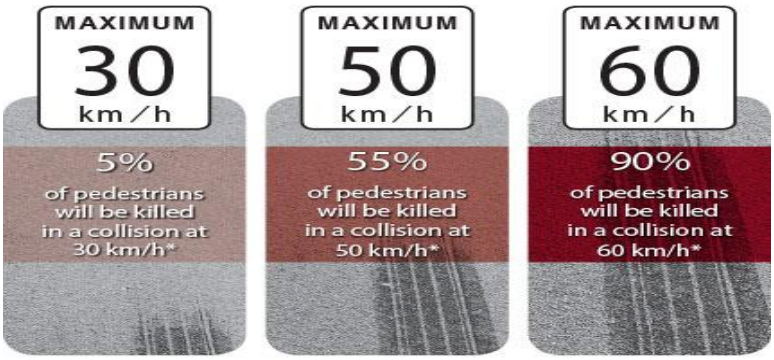


Table 14 Likelihood of pedestrian fatality with increased speed.

The World Health Organization in its 2018 Global Status report on Road Safety stated:

"The speed at which a vehicle travels directly influences the risk of a crash as well as the severity of injuries and the likelihood of death resulting from that crash. Effective speed management is, as such, central to most road safety intervention strategies" [3]

In 2018 the Capital Region Intersection Safety Partnership commissioned a Traffic Safety Culture Survey. The report *2018 Edmonton and area traffic culture survey* queried participants with regards to what would incentivize them to follow the speed limit.

INCENTIVES TO FOLLOW THE SPEED LIMIT	
Presence of Digital Feedback signs indicating vehicle speed	67%
More police officers issuing speeding tickets	55%
Causing a collision	52%
Presence of more mobile radar or photo laser	51%
Presence of traffic controlling measures such as speed bumps	51%
Demerit points	47%
Presence of an intersection safety camera	47%
Increased insurance costs	41%
Increased fines	40%
Passenger giving you a hard time	26%
Other	8%
None	2%

Table 15: Incentives to follow the speed limit.

Those incentives identified, which are directly in the City of Spruce Grove's control, are being employed. Incentives such as causing a collision, increased insurance costs, passenger giving you a hard time, other and none are beyond the City's control.

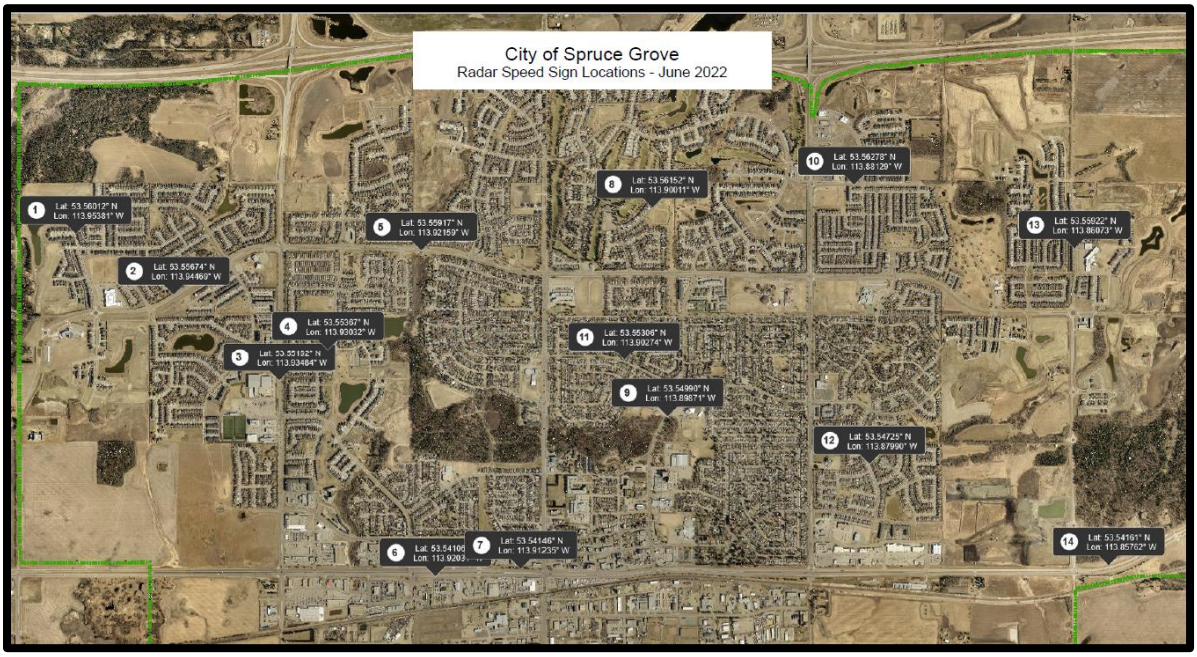
Presence of digital speed display signs

Digital Speed display signs track vehicle speeds and displays it back to the driver. This approach creates awareness in the driver of their driving behaviour. These devices further record traffic data which may be analyzed. It collects information such as traffic volume, the number of vehicles exceeding the speed limit, peak periods of when excessive speeds occur as well as other data.

The City utilizes 14 digital speed display signs. They are strategically located throughout the city. These signs are further rotated through various locations in the City every 6 to 9 months. Additionally, the City has developed a virtual map which the public may access through the City of

[3] Global Status Report on Road Safety 2018, Geneva: World Health Organization; 2018 P. 27

Spruce Grove's website. The public may see where these signs are located. They are able to examine some traffic data collected from these devices.



Location of digital speed display signs as of June 2022.

The City possesses and deploys a mobile Ver-Mac speed display trailer which can be deployed in areas where driver behaviour speed modification is required.

The City is responsive to the community's traffic safety concerns. The City possesses three Houston Radar Boxes. These are small portable boxes that may be affixed to nearby utility poles. These devices are able to monitor traffic volume, speeds and frequency of speeding incidents. They are deployed in areas where citizens have identified speeding concerns. These devices are also regularly deployed throughout the city for short periods of time, to ensure speed limit compliance. This provides law enforcement with information of when to effectively deploy resources.

Traditional (staffed) enforcement operations

Traditional staffed enforcement occurs when a police officer or peace officer pulls a vehicle over upon observing a traffic violation. The law enforcement officer speaks with the driver whereby a corrective method is applied by imposing a penalty against the violator. This is done mostly by means of fines and/or through demerits. Traditional staffed enforcement mostly takes place overtly or covertly. This method is not as efficient in identifying violators as

automated traffic enforcement systems. It however is one of the tools utilized to change driver behavior.

Staffed traffic enforcement within Spruce Grove is conducted jointly by Spruce Grove Enforcement Services and RCMP Parkland Detachment. It is augmented by the RCMP Capital West Integrated Traffic Unit. This is a regional integrated traffic enforcement unit comprised of RCMP Officers and Provincial Sheriffs. This unit conducts traffic enforcement operations throughout various areas in and around Edmonton's western capital region on a rotational basis.

In 2021, Spruce Grove Enforcement Services conducted a pilot project where two enforcement officers were dedicated solely to traffic enforcement duties. In 2022 these positions became permanently established position. The below chart illustrates the number of violation tickets issued by the RCMP Parkland Detachment and Spruce Grove Enforcement Services from 2016 to 2021.

Violation Type	2016 SGES	2017 SGES	2017 RCMP	2018 SGES	2018 RCMP	2019 SGES	2019 RCMP	2020 SGES	2020 RCMP	2021 SGES	2021 RCMP
Total	**1261**	**1890**	**963**	**1247**	**924**	**1008**	**29**	**689**	**637**	**1662**	**986**
General Moving Traffic	98	129	309	80	409	51	16	31	386	286	629
Distracted Driving	36	62	0	67	0	112	0	74	0	100	0
Speed	695	855	505	414	251	365	2	261	155	670	227
Operator / License / Plate Violations	349	686	84	577	36	369	6	285	36	457	15
Intersection	49	94	53	59	32	94	1	35	37	121	71
Pedestrian	6	6	0	3	0	10	0	3	0	25	0
School Bus	15	31	0	22	0	0	0	0	0	3	0
Occupant Restraint	13	27	12	25	196	7	4	0	23	0	44

Table 16: Traffic Violation tickets issued by Spruce Grove Enforcement Services and RCMP Parkland Detachment from 2016-2021.

All officers have a visible presence simply driving through the community in marked enforcement vehicles. If the officer notes a traffic offence the officer will conduct a traffic stop. Officers also conduct specific targeted traffic operations such as seat belt compliance, distracted driving, crosswalk compliance, etc. These are also tracked by Spruce Grove Enforcement Services (SGES). The number of dedicated traffic operations conducted by Spruce Grove Enforcement Services between 2016 to 2021 ranges from a low of 75 in 2016 to a high of 868 in 2021.

Enhanced visibility is ameliorated by combined force operations. Spruce Grove conducts joint force operations (JFO) to maximize the visible presence of traffic enforcement officers. These joint force operations include joint operations with the RCMP Parkland Detachment, RCMP Capital West Integrated Traffic Unit, Stony Plain Enforcement Service, or Parkland County Enforcement Services individually or combined. The number of Joint Force Traffic Operations is listed below. It should be noted that data collection enhancements were made commencing

2017. There is also a difference in how data is recorded between the RCMP and Spruce Grove Enforcement Services as they use different records management systems.

Year	Dedicated Traffic Operations SGES	Joint Force Traffic Operations
2016	75	-
2017	530	16
2018	444	26
2019	668	49
2020	638	33
2021	868	31

Table 17: Dedicated Traffic Operations conducted by SGES and Joint Force Traffic Operations 2016 to 2021.

School Zone Enforcement

A School Zone is where there is a school caution sign with a designated speed limit posted below the caution sign. A School Area does not have a posted speed limit sign posted below the school caution sign. In a school area the sign simply cautions the driver that there is a school in the area but does not alter the speed limit for that area. The City of Spruce Grove has (3) identified school zones. These are located along King Street by Brookwood and Woodhaven School, on Greystone Drive by Greystone Centennial Middle School, and along Pioneer Road by the Prescott Learning Centre.

The engineering designs for the other schools located within the city have resulted in these locations being designated school areas where the speed limit does not have to be reduced.

School Zones and School Areas are high pedestrian areas. These locations have a greater concentration of vulnerable road users who are either on foot, on manual propulsion devices, and generally younger in age.

School	2017	2018	2019	2020	2021
Brookwood School	24	32	34	48	48
Ecole Broxton School	3	6	25	25	51
Copperhaven School	-	10	32	31	68
Greystone Centennial Middle School	-	12	27	32	59
Living Waters Christian Academy	-	3	7	6	5
Millgrove School	-	6	21	20	35
Prescott Learning Centre	3	33	63	45	56
Spruce Grove Composite High School	4	14	38	16	13
St. Joseph Catholic School	-	9	26	21	11
St. Marguerite's / St. Thomas Acquinas Catholic School	-	2	14	19	15
St. Peter the Apostle Catholic School	-	18	53	44	26
Woodhaven Middle School	-	13	15	15	13
TOTAL	**34**	**158**	**355**	**322**	**400**

Table 18: School Zone Patrols conducted by Spruce Grove Enforcement Services.

A primary focus in these areas is educating all on the observance of proper road safety etiquette. A greater emphasis on high visibility, uniformed patrols and enforcement has been placed in these areas which can be noted in the above table.

Automated Traffic Enforcement (ATE)

Automated Traffic Enforcement utilizes automated camera technology mounted on the side of the road, above the roadway or in vehicles to detect speeding vehicles, vehicles failing to stop or otherwise committing red light or stop sign violations. Automated Traffic Enforcement may be fixed (at a fixed intersection location), otherwise known as Intersection Safety Devices or mobile, in vehicles.

A 2021 report by TURNER, JOB and MITRA (2021), stated:

"The introduction of speed cameras combined with the promotion of enforcement activity is very effective safety intervention."[4]

The World Health Organization also noted that:

"Operating a mix of highly visible and strategically directed police patrols or speed cameras increases public perception that speed enforcement can happen anywhere and at any time. Unpredictability of where and when speed enforcement operations take place will have a more general deterrent effect by encouraging drivers to drive within the speed limit no matter where or when they are travelling."[5]

Spruce Grove utilizes a mix of traffic safety operation methods to achieve identifiable results. Fixed ISD devices, mobile ATE devices, and strategic traditional high visibility uniformed staff enforcement is achieving behavioural change. These enforcement methods have and continue to create a public perception that enforcement can occur anywhere, and at any time. Consequently, driver behaviour becomes more aligned to remain within the rules of the road and the laws that govern safe driving practices.

Overt Enforcement versus Covert Enforcement

Education is also a significant component of traffic safety. This also holds true with respect to Automated Traffic Enforcement. Visual reminders that Automated Traffic Enforcement measures are being deployed within the city reminds motorists that traffic laws must be obeyed. This is achieved by permanent signage being posted on primary access highways entering the municipality where ATE technology is being used, along routes where speed and / or intersection laws are being monitored, or in advance of intersections, in all directions where permanent fixed I.S.D equipment is installed, or mobile enforcement is conducted.

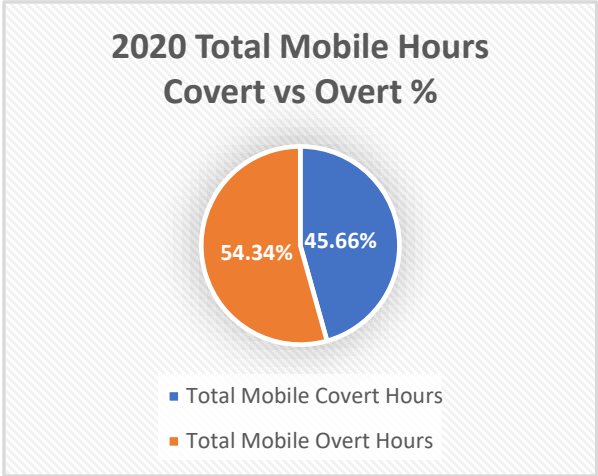
[4] Turner, B., Job, S. and Mitra, S. (2021). Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work. Global Road Safety Facility, 2021, page 33.

[5] W.H.O - Speed Management: a Road Safety Manual, Module 3, what are the tools for managing speed.

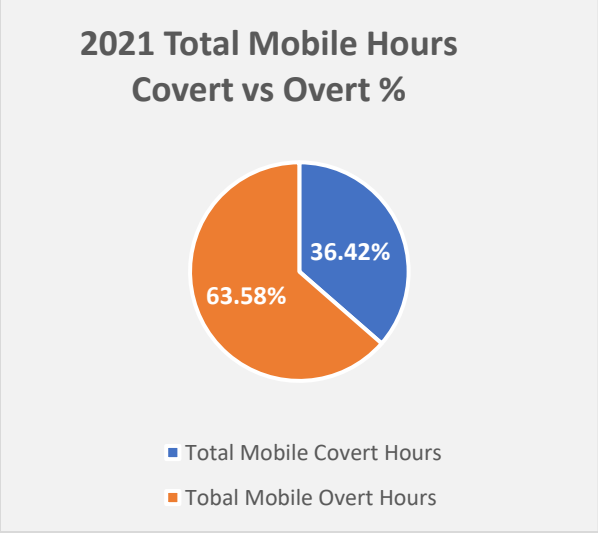
This ethos also holds true with respect to the Automated Traffic Enforcement vehicle utilized within the municipality. Since 2020, Spruce Grove has clearly marked an ATE vehicle to enhance its visibility to motorists. This allows divers to modify their driving behaviour prior to the possibility of a violation occurring.

In 2020 Spruce Grove negotiated a new contract with its Automated Traffic Enforcement provider. Thus, for a significant period during that year there was an interruption of Automated Traffic Enforcement. The total number of mobile Automated Traffic Enforcement hours were monitored. These hours were tracked to ascertain the total number of hours dedicated to overt mobile Automated Traffic Enforcement against the number of hours dedicated to covert mobile Automated Traffic Enforcement. Overt deployment refers to enforcement actions being clearly visible whereas covert deployment refers to an unmarked vehicle being used, using a remote device, or the Automated Traffic Enforcement vehicle is cached from plain view. The ultimate goal is to achieve a 50/50 ratio between overt and covert mobile ATE deployment.

In 2020 the total number of mobile Automated Traffic Enforcement hours were 990 hours. This was comprised of 538 hours of overt mobile Automated Traffic Enforcement and 452 hours of covert mobile Automated Traffic Enforcement hours. This equates to 54.34% of the time conduction overt enforcement and 45.66% of the time conducting overt enforcement. This is slightly above the ideal goal of 50/50 overt versus covert ratio.



Whereas 2020 reflected only a partial year of deployment due to a change in service provider;



2021 saw a full year of mobile Automated Traffic Enforcement deployment. In 2021 there were a total of 1802.28 hours devoted to mobile Automated Traffic Enforcement. The number of covert enforcement hours was 656.35 hours. The total time spent on overt enforcement was 1145.93 hrs. This equates to 63.58% of the time conducting overt enforcement and 36.42% of the time devoted to covert enforcement. In both years visible, overt deployment, exceeded the covert or hidden deployment for mobile Automated Traffic Enforcement.

The below data details the number of tickets issued by the type of Automated Traffic Enforcement conducted, and the number of

vehicles monitored between the period of 2018 to 2021. A detailed analysis is not possible due to several factors which included but was not limited to:

a. Vehicle counts are only captured by the fixed Intersection Safety Devices (I.S.D) or fixed ATE cameras. This information is not captured on mobile technology.
b. During the period of 2018 to 2020 there were periods were the I.S.D. fixed cameras were inoperable.
c. In 2020 contract negotiations resulted in a new service provider being utilized, consequently there was a period of time where no enforcement was conducted during this transition phase.
d. The Covid pandemic impacted the traffic volumes during the times restrictions were in place.

The data is none-the-less presented below for illustrative, and transparency purposes. One notes significant variability in the data as a result of the above cited reasons.

Automated Traffic Enforcement – Mobile – Stop Sign Enforcement	
Year	**Tickets**
2018	3.237
2019	2,780
2020	535
2021	297

Table 19: Mobile Automated Traffic Enforcement – Stop Sign tickets issued 2018 to 2021.

Automated Traffic Enforcement – Mobile – Red Light Enforcement	
Year	**Tickets**
2018	2,169
2019	2,753
2020	450
2021	754

Table 20: Mobile Automated Traffic Enforcement – Red Light tickets issued 2018 to 2021.

Automated Traffic Enforcement – Mobile – Speed Enforcement	
Year	**Tickets**
2018	10,360
2019	9,438
2020	1,414
2021	3,294

Table 21: Mobile Automated Traffic Enforcement – Speeding tickets issued 2018 to 2021

Automated Traffic Enforcement – I.S.D. Fixed System – Speed Enforcement	
Year	**Tickets**
2018	15,403
2019	9,366
2020	6,150
2021	30,689

Table 22: Fixed Intersection Safety Device Cameras – Speeding tickets issued 2018 to 2021.

Automated Traffic Enforcement – I.S.D. Fixed System – Red Light Enforcement	
Year	**Tickets**
2018	57
2019	26
2020	275
2021	2,149

Table 23: Fixed Intersection Safety Device Cameras – Red Light tickets issued 2018 to 2021.

Automated Traffic Enforcement – I.S.D. Fixed System – Traffic Volume	
Year	**Tickets**
2018	10.770,380
2019	8,539.378
2020	6,142,152
2021	19,572.378

Table 24: Fixed Intersection Safety Device Cameras – Traffic Volume – vehicles monitored.

Spruce Grove Traffic Safety Plan 2019-2022 Performance Indicators Review

The 2019 – 2022 Traffic Safety Plan set key performance indicators in its efforts to achieve its traffic safety outcomes. These were separated into 5 categories described as the 5 E's. They included Evaluation, Enforcement, Engagement, Engineering and Education. An assessment report on these performance indicators is provided herewith.

Evaluation (2019-2021)

Goals:

- *Reduce the number of collisions along arterial roadways.*

  Tables 4, 5, 6 and 7 illustrate that this goal was achieved. The total number of collisions from 2019 to 2021 along these corridors decreased, along with the severity of collisions in general. The lone exception is the Jennifer Heil Way corridor.

- *Reduce the 85% percentile speed along Grove Drive West proximal to Spring Gate, Grove Drive by Grove Seniors Village and Grove Drive proximal to Woodside Crescent.*

Grove Drive at or Near Spring Gate				
Year	**2018**	**2019**	**2020**	**2021**
Reporting Period		2019-Oct-01 to Dec 31	2020-Jan-01 to Aug 31	2021-Oct-08 to Dec 31*
# Vehicles Monitored	477,439	129,947	377,196	55,424
85% Vehicle Speed	63 km/hr	57 km/hr	58 km/hr	58 km/hr

Table 25: Speed Monitoring at Grove Drive at or near Spring Gate from 2018 to 2021.

Grove Drive at or near Grove Seniors Village				
Year	**2018**	**2019**	**2020**	**2021**
Reporting Period	5 separate reporting periods	2019-Apr-05 to Apr-09	2020-Oct-27 to Dec 31	2021-Jan-01 to Jun 30
# Vehicles Monitored	Counts not recorded	16,614	206,988	660,123
85% Vehicle Speed	66 km/hr	65.7 km/ hr	61 km/hr	61 km/hr

Table 26: Speed Monitoring at Grove Drive at or near Grove Senior's Village from 2018 to 2021.

Grove Drive at or near Woodside Crescent				
	2018	2019	2020	2021
Reporting Period	2018-Apr-19 to Apr-25	2019-Apr-05 to Apr-09	2020-Jan-01 to July 23	No Readings Taken
# Vehicles Monitored	30,784	19,245	644,805	0
85% Vehicle Speed	66.7 km/hr	65.52 km/hr	64 km/hr	0

Table 27: Speed Monitoring at Grove Drive at or near Woodside Crescent.

Tables 25 to 27 illustrate that the overall 85 percentile speed was decreased in all locations. It should be noted that the readings were obtained either by use of a portable covert speed monitoring device known as a Houston Radar Box or a speed display monitoring sign. There were periods when the speed display monitoring sign was inoperable. This accounts for the low vehicle count in Table 25 for the 2021 year.

- *Continue to enhance data collection for enhanced analysis and review.*

  Data collection enhancements have been made, which includes the publics access to data by of the City of Spruce Grove Enforcement Services Website. This website includes an Automated Traffic Enforcement map with collision data, tickets issued per site and real time location where mobile Automated Traffic Enforcement is occurring.

Enforcement (2019-2021)

Goals:

- *Conduct a minimum of 25 high visibility joint forces enforcement operations, per year along arterial routes.*

  Table 17 illustrates the number of joint force operations conducted from 2017-2021. The goal of 25 joint force operations per year was exceeded between the period of 2019 to 2021. The Covid pandemic impacted the number of joint force operations in 2020 and 2021.

- *Prioritize Automated Traffic Enforcement Operations along arterial roadways for both speed and red-light infractions.*

This has been achieved, a Protective Services Automated Traffic Enforcement Annual Report is prepared which details the effectiveness of this traffic safety tool. This report may be accessed on the City of Spruce Grove's website: https://www.sprucegrove.org/services/emergency-protective-services/automated-traffic-enforcement/

- *Conduct a minimum of 180 high visibility school zone and area patrols.*

  Table 18 details that this goal was achieved and surpassed.

- *Prioritize manned enforcement activities in residential areas, playground and construction areas.*

Traffic Operations in Residential Areas					
Year	**Total Traffic Operations**	**Traffic Operations Hwy 16A**	**Traffic Operations Industrial Area**	**Traffic Operations Residential Area**	**Percent of Traffic Operations in Residential Areas**
2019	668	67	33	568	85%
2020	638	88	52	498	78%
2021	878	64	73	741	84%

Table 28: Locations where dedicated traffic operations were conducted from 2019 to 2021.

Table 28 denotes the number and percentage of traffic operations conducted in residential areas relative to Highway 16A and the industrial area of Spruce Grove.

- *Align other traffic enforcement initiatives with the Alberta Traffic Safety Calendar.*

  Table 16-17 details the number of tickets issued by both the RCMP and Spruce Grove Enforcement Services as well as the number of dedicated traffic operations and joint force operations that were conducted. This includes conducting targeted enforcement operations aligned with the Alberta Traffic Safety Calendar.

Engagement (2019-2021)

Goals:

- *Continue participation in the CRISP.*

  Spruce Grove continues to be part of the Capital Region Integrated Safety Partnership. The name was changed from Capital Region Intersection Safety Partnership to Capital Region Integrated Safety Partnership to more clearly align the group's name with their research and efforts. In March 2019 the *"2018 Edmonton and Area Traffic Safety Culture Survey"* was released.

- *Review and examine the Safe City Terms of Reference.*

  This has not been addressed due to a number of factors which includes the Covid Pandemic.

- *Develop the City of Spruce Grove Automated Traffic Enforcement Policy.*

  On April 23, 2019 the city approved the Automated Traffic Enforcement, Corporate Policy CP-1014-19. This policy establishes the framework to ensure that Automated Traffic Enforcement meets requirements of the provincial guidelines and principles, the City's traffic Safety priorities and the needs of the community.

- *Create and establish a Traffic Safety Committee.*

  The Community Road Safety Advisory Committee was formed on January 17th, 2020. Since its inception, it has held 13 meetings.

Engineering (2019 -2021)

Goals:

- *Conduct a review of all crossings and apply correct engineering treatments. This includes an analysis of:*
  - *Traffic volume and speed*
  - *Pedestrian volumes*
  - *Condition assessment*

Engineering Analysis - Traffic / Pedestrian Volumes and Speed - Locations by Year		
2019	**2020**	**2021**
Aspen Glen Dr / Avonlea Way	Arbour Green / Church Rd	ACI - Calahoo Rd / Grove Dr
Calahoo Rd / Weston Dr	Calahoo Rd / Church Rd	ACI - Century Rd / Grove Dr
Century Rd / Vanderbilt Common - Kings Link	Century Rd / Brookwood Dr - Grove Meadows Dr	ACI - Highway 16A / Century Rd
Century Rd / Westwind Dr	Deer Park Dr / Deer Park Blvd	ACI - Jennifer Heil Way / Grove Dr
Church Rd / Main St	Dorchester / Berkeley	Broxton Park School Crossing
Golden Spike Rd / Diamond Ave	Grove Dr / Spruce Ridge Rd - Harvest Ridge Dr	Campsite Road - south of Saskatchewan Ave
Grove Dr / Copperhaven School - Roundabout	Harvest Ridge Dr / Halladay Blvd	Greenbury Blvd / George Dr
Grove Dr / Copperhaven School - School Drop off	Henderson Link	Grove Dr / Greystone Dr - Spruce Village Way
Grove Dr / Jubilee Park	Hewitt Circle - north of Henderson Link	Grove Dr - Crosswalk west of Jubilee Park
Grove Dr / / Jennifer Heil Way	Jennifer Heil Way north / Grove Dr	Hartwick Gate / Harwtick Loop
Grove Dr / Spring Gate - Crossing	King St / First Ave	Hawthorne Gate / Heatherglen Dr

Harvest Ridge Dr / Harrison Gate	King St / Hilldowns Dr	Hawthorne Gate - TransQ
Jennifer Heil Way / Spruce Ridge Dr - Hawthorne Gate	King Street / Kings Link	Henderson Link / Hartwick Way
Jennifer Heil Way / Tri Leisure Way - Nelson Dr	Kingsbury Circle	Hilldowns Park - by King St
King St / Woodhaven Dr - Brookwood Dr	Marlboro Dr	Highway 16A / Century Crossing
King St - School Crossing	McLeod Ave / Calahoo Rd	Highway 16A / Jennifer Heil Way
Longview Dr / Linkside Blvd	McLeod Ave / King St	Highway 16A / Pioneer Rd
McLeod Ave / Brebner Place	McLeod Ave - west of Home Depot	Jennifer Heil Way / McLeod Ave
McLeod Ave / west of Brebner Place	McLeod Ave - West of Lakeland Dr	Marmot Ave / Morris St
McLeod Ave / Century Rd	Meadowview Landing	Nelson Dr / Weston Dr
McLeod Ave / Lazerte Place	Morris St / Marmot Ave	Westwind Dr / Kenton Way
Nelson Dr / Weston Dr	Nelson Dr / McLaughlin Dr	Woodhaven Dr / Walnut St
Pioneer Rd - north of Fenwyk Blvd	Nelson Dr	
Pioneer Rd - Prescott School Crossing	Queen Street / First Ave	
Westwind Dr - TransQ	Spruce Ridge Rd - by park	
	Vanderbilt Common / Kenton Way - Spruce Village Dr	
	Westland Market Mall	

Table 29: Engineering Analysis conducted for traffic and pedestrian volumes as well as speed for the years 2019 to 2021.

Table 29 details the locations of where engineering traffic studies were conducted to analyze traffic and pedestrian volumes, traffic speeds and the application of appropriate engineering measures were necessary.

- *Revise City of Spruce Grove Municipal Development Standards*

  This has not been completed to date however, it is actively in the process of being prepared and completed.

- *Installation of new Traffic Signal Lights at Jennifer Heil Way and Deer Park Drive collector route.*

  This has been completed however, the corrected name is Jennifer Heil Way at Dalton Link which provides access to Deer Park Drive.

- *Construction and utilization of roundabouts at the following locations:*
  - *Pioneer Road and Westwind Drive*
  - *Tonewood Blvd and Grove Meadows Drive*

  This has not yet been completed due to construction and development delays.

Education (2019- 2022)

Goals: (Educational initiatives were impacted as a result of Covid-19)

General / Macro Level

- *Monitor and continue to evaluate the number of speed display monitoring signs. Where appropriate relocate or acquire more speed display monitoring signs where required.*

  This has been achieved. In an effort to enhance driver awareness and modify driver behaviour Spruce Grove's Engineering Department relocates speed display monitoring signs on average every 6-9 months were needed. This mitigates driver complacency and allows for greater coverage throughout the City. The public is also able to examine data from these signs on the City's web page and interactive map.

- *Develop and implement an interactive mapping program which allows the public to view approved automated traffic enforcement locations, number of collisions, violations per site and other statistics.*

  This has been completed and may be accessed through the following link: https://www.sprucegrove.org/services/emergency-protective-services/automated-traffic-enforcement/

- *Post in the local newspaper and city social media platforms the automated enforcement locations to be enforced on a monthly basis and the rationale for the sites.*

  This is being done on a monthly basis. The public is also able to live monitor where mobile Automated Traffic Enforcement is taking place.

- *Participate in the MADD (Mothers Against Drunk Drivers) Red Ribbon Campaign*

  Spruce Grove continues to work collaboratively will all law enforcement partners and community groups to enhance traffic safety awareness. In 2020, 2021, 2022 impaired driving awareness campaigns consisted of an overturned vehicle being placed on the side of the road to create awareness of the hazards of impaired driving. Further, in the summer of 2021 signage was placed at locations where impaired drivers were stopped and apprehended.

- *Circulate traffic safety tips, and awareness messages in the CityPulse Magazine on an annual basis.*

  CityPulse is a City of Spruce Grove circulation where updates to residents and the general public is provided on news, projects and events. It was originally a printed publication that was distributed to residents three times a year. In 2021 it transitioned into a bi-weekly newsletter which is complemented by an annual printed version that began in 2022.

- *Utilize the local radio station to circulate Public Service Announcements on various road safety topics, such as Halloween, or Holiday Road Safety.*

  This has been limited as a result of the Covid Pandemic and to minimize social gatherings. The City of Spruce Grove uses a variety of tools to share traffic safety information such as through social media and other communications tactics, such as digital sign boards.

  2019 - 6 x Halloween Safety presentation were conducted at elementary schools.

  2022 - A media release, digital sign boards, portable Vermac road signs were used to create awareness amongst motorist to watch for cyclists and pedestrians.

Micro / Audience Specific Level

- *Conduct Bike Rodeos – Bicycle and Road Safety Courses with primary school children.*
- *Conduct patrols and distribute bicycle safety bells for young cyclists.*
- *Conduct Pause, Point, Proceed sessions with Pre-school and Kindergarten Children.*
- *Conduct patrols and distribute high visibility reflective tags and / or zipper pulls to be attached to clothing.*

  2019 - 3 x Bicycle and pedestrian road safety presentation were conducted at elementary schools.
  - 2 x presentations were conducted with summer in the city staff and participants.

  2022 - 4 x Helmet, bicycle and pedestrian safety presentations were conducted in elementary schools.
  - 2 x Crosswalk Safety education sessions were held in elementary schools.

Bicycle bells were distributed during the bicycle safety sessions. Reflective zipper pulls were distributed during the pedestrian safety sessions as well as on Canada Day events.

- *Conduct Candy Cane joint force Checkstops on a yearly basis to address impaired driving over the winter holidays.*

  2019 - 8 x Candy Cane joint force operation checkstops were conducted.

- 4 x High visibility traffic operations were conducted for seatbelt, equipment and documentation checks during the winter holiday season.

2021 - High visibility traffic operations were conducted for seatbelt, equipment and documentation checks during the winter holiday season.

- *Meet with the general public on a quarterly basis ("Coffee with a COP") to discuss traffic safety issues.*

2019 - 1 x Coffee with a COP
- 5 x Scoops with COPS

2020 - 2 x Coffee with a COP

2021 - 3 x Scoops with COPS

2022 - 1 x Scoops with COPS

- *Conduct Option 4 operations - education in lieu of fines on specific traffic safety issues.*

2019 - 1 x Option 4 session was conducted for seat belt safety.

Knowledge Transfer / Professionals

- *City Council to create and establish a Traffic Safety Committee, which includes members of the public, educate and inform them of the Safe Systems Approach to traffic safety.*

This was achieved and reported on in the Engagement section. The Community Traffic Safety Advisory Committee received the following training / information sessions.

- A history of Automated Traffic Enforcement
- Regulations and standards concerning School and Playground zones and areas, including authorities under the Traffic Safety Act and Municipal Bylaws. This also included exposure to the Manual of Uniform Traffic Control Devices for Canada (MUTCDC) which sets uniform guidelines for signage and markings in these zones and areas.
- Crosswalk standards and practices
- Municipal / Urban Speed Limit Reduction.
- The Protective Services Automated Traffic Enforcement 2020 Annual Report.
- The Protective Services Automated Traffic Enforcement 2021 Annual Report
- The role of Community Peace Officers and Bylaw Officers
- The Spruce Grove City Centre Redevelopment Plan
- Review of the 2019-2022 City of Spruce Grove Traffic Safety Plan
- High Load Corridors

- City of Spruce Grove Community Peace Officer Traffic Unit Pilot Program
- Traffic Light Signal Change for Protected Left Turn Lanes
- RCMP Role in Traffic Safety
- Century Road, Westwind Drive Access

- *Attend Urban Traffic Safety Conferences.*

  There were no Urban Traffic Safety Conferences held due to Covid-19 restrictions.

- *Identify City of Spruce Grove department personnel to attend the Crime Prevention Through Urban Design – Level II training (includes traffic calming initiatives).*

  In May 2019 six Spruce Grove employees from various City departments including Engineering, Planning and Development, Fire Prevention, Enforcement Services and Recreation received Crime Prevention Through Environmental (Urban design) – Level II training.

- *Through CRISP, conduct a Traffic Safety Culture Survey on a biennial basis and circulate results.*

  The 2018 Traffic Safety Culture Survey was completed and released in March 2019.

Traffic Safety Plan Strategic Initiatives

2023-2025

The City of Spruce Grove is committed to ensuring it has one of the safest road systems in the province for all road users. Emphasis on the Safe Systems approach and its focus towards Vision Zero has yielded positive results in enhancing road safety.

Traffic Safety contributes towards the overall perception of safety for citizens in the community. Over the years, Spruce Grove's approach to traffic safety has demonstrated success in reducing speeds, decreasing the total number of injury collisions and total collisions, despite an increase in population. There are however areas where improvements can be made as the community strives to achieve vision zero goals. A testament to its efforts is the period of time the City of Spruce Grove has not registered a collision fatality.

The City of Spruce Grove's 2023 – 2025 Traffic Safety Plan is aligned with current prominent traffic safety principles and traffic safety approaches identified internationally, nationally and provincially. It should be noted that the current provincial Traffic Safety Plan is dated 2015. Alberta's Traffic Safety Plan 2020 is still under development. The City's Traffic Safety Plan utilizes the Safe Systems approach, where responsibility for road safety is shared between road

users, designers and regulators. It is also rooted in the Vision Zero perspective utilizing the 5 E's approach of Evaluation, Enforcement, Engagement, Engineering and Education.

In December 2021 the Alberta Government released the new Automated Traffic Enforcement Technology Guidelines. It requires municipalities who utilize Automated Traffic Enforcement technologies as a tool of their traffic safety plan to report on the following: Enforcement; Education; Research and Evaluation; Communication and Awareness; Engineering and Technology; and Related Stakeholders. The Automated Traffic Enforcement Technology Guideline defines the reporting requirements as:

Enforcement:

To specify why Automated Traffic Enforcement is used rather than conventional, and that Automated Traffic Enforcement be used in conjunction with existing conventional enforcement.

Education:

To specify how the City intends to educate the public on Automated Traffic Enforcement.

Research and Evaluation:

Specify the Automated Transportation Safety Outcomes and supporting performance indicators which include:

- Change in speeding contraventions
- Change in red light contraventions
- Change in stop sign contraventions
- Change in casualty collisions
- Change in total collisions
- Change in fatalities
- Performance targets for the local program

Communications and Awareness:

Specify how much Automated Traffic Enforcement Fine Revenue each program generates and how the municipality utilizes Automated Traffic Enforcement fine revenue, and whether any is reinvested in improving transportation safety outcomes.

Engineering and Technology:

Specify why Automated Traffic Enforcement was used rather than an engineering or technology change, or how it supports an engineering or technology change.

Related Stakeholders:

List all related stakeholders, including their roles and responsibilities.

This traffic safety plan has already detailed many aspects of the provincial reporting requirements. The City of Spruce Grove further publishes its annual *Protective Services Automated Traffic Enforcement Annual Report.* These documents may be found on the City of Spruce Grove's website: https://www.sprucegrove.org/services/emergency-protective-services/automated-traffic-enforcement/ .

The reports prepared by the City of Spruce Grove goes above and beyond what the provincial government requires for reporting purposes. The City of Spruce Grove believes that everyone has a role to play in traffic safety and its traffic safety outcomes. Transparency and communication is a key element for the public to assess whether these efforts are achieving its desired outcomes and results.

2023-2025 Transportation Safety Outcomes

Effective and identifiable traffic safety strategies and their measurable outputs contribute towards measurable transportation safety outcomes. Spruce Grove utilizes the principles of the 5 E's (Enforcement, Education, Evaluation, Engagement, and Engineering) approach to identify its traffic safety strategies for its Transportation Safety Outcomes.

The Transportation Safety Outcomes for 2023-2025 is to continue to work towards Vision Zero and reduce the number of fatal, serious injury and total collisions. The Transportation Safety Outcomes for the 2023-2025 Traffic Safety Plan are:

1. ***Maintain the total number of fatal collisions at zero***
2. ***Decrease the total number of collisions by 3%***
3. ***Decrease the total number of injury collisions by 3%***
4. ***Decrease the total number of collisions along the Jennifer Heil transportation corridor by 3%***
5. ***Decrease the total number of collisions along the Highway 16A transportation corridor by 5%***

2023-2025 Transportation Safety Strategies

Enforcement

Enforcement is a corrective action applied after an offence has been committed. This is typically done by imposing a penalty against the violator. Direct penalties commonly are fines, judicial court proceedings, or demerit points. Indirect penalties would include increased insurance costs, being involved in a collision or sustaining a physical or psychological injury. Conversely, greater compliance would decrease these penalties.

The primary goal of traffic enforcement whether by way of traditional staffed enforcement or by remote automated enforcement, is simply to keep the roadways safe for all users. This is frequently gauged by the number of fatal, injury or property damage collisions. There are many contributing factors that lead to collisions, such as: speed; driver distractions; driver impairment; vehicle equipment and maintenance; use of safety equipment and behaviour to mention a few.

As previously cited by the World Health Organization, an effective method to ensure driver compliance with traffic laws is to create the perception of unpredictability where enforcement operations can take place anywhere and at any time. Automated Traffic Enforcement can be present 24 hours per day at fixed camera intersection locations, or temporarily by mobile means. The offences captured by ATE technology is primarily speeding, red-light and stop sign infractions. It is unable to assess the road worthiness of a vehicle, its equipment, whether a driver is impaired or distracted, whether the driver and passenger's safety equipment is being utilized or other driver behaviours. This must be conducted by traditional staffed enforcement.

Predictable enforcement either traditional staffed enforcement or automated enforcement fosters a time or distance halo effect.

"Distance Halo Effect" – refers to an area around the point of enforcement; inside the area the effects of the enforcement are still noticeable, outside the area they disappear[6].

"*Time Halo Effect"* – refers to the maximum length of time after (or before) the enforcement in which the effect is still noticeable[7].

An illustration of the above concept is that when a person is aware that a traffic enforcement action is taking place or automated device is ahead, the driver will slow down for a period of time and distance. Once the driver has passed that enforcement location, they will return to their previous driving practices. Another example is when a traffic enforcement "blitz" or enforcement intensification action occurs targeting a particular area, or infraction. For a period of time there will be heightened awareness, and compliance, after which the effectiveness of that enforcement action wanes. Drivers either forget or return to their past practices.

Research indicates that there is a relationship between increased levels of enforcement and collision rate reduction. Enforcement intensity decreases collision rates. A study in New Zealand further examined the relationship between traditional staffed enforcement versus automated enforcement. The study suggested that traditional staffed enforcement provides specific deterrence targeted at high-risk drivers, while automated enforcement provides a general deterrence effect on a broad spectrum of the driving population.

Spruce Grove utilizes a mix of traditional staffed enforcement along with automated traffic enforcement technology in efforts to maximize its Traffic Safety Outcomes in-line with current traffic safety research.

[6] Government of New Zealand – Speed Limit Enforcement, Evidence Brief - October 2017 P.4.
[7] Government of New Zealand – Speed Limit Enforcement, Evidence Brief - October 2017 P.4

Automated Traffic Enforcement is utilized as a tool to augment traditional staffed enforcement operations. Automated Traffic Enforcement is effective in capturing, speed, red-light and stop sign violations. Traditional staffed enforcement is able to capture those offences as well. However, it is further able to address high risk driving behaviours, distracted drivers, vehicle equipment violations, the use of driver and passenger safety equipment and other safety concerns.

It is of note that commencing December 2022, the use of covert or cached (hidden) mobile automated traffic enforcement is prohibited by the provincial government. Previously Spruce Grove used a mix of overt (visible) and covert mobile automated traffic enforcement as research indicated that it enhanced the unpredictability of enforcement.

The City of Spruce Grove has identified the below noted goals as a means of continuing to enhance road safety.

Goals:

- *Conduct a minimum of 25 high visibility joint force operations per year along arterial roads.*
- *Conduct a minimum of 180 high visibility school zone and area patrols.*
- *Align other traffic enforcement initiatives with the Alberta Traffic Safety Calendar.*
- *Conduct a minimum of 12 targeted distracted driving enforcement "blitzes" per year.*
- *Continue to participate annually in project "TENSOR" with regional law enforcement partners addressing vehicle equipment violations.*

Education

The City of Spruce Grove is committed to ensuring traffic safety awareness is communicated to the public. Awareness and road safety education programs raise awareness and influence a change in driver behaviour.

Educational campaigns are required to be broad based to reach all road users. Thus, approaches are required to address the vulnerable street users who range from the young, to senior citizens who may be on foot, to those who are active who may use alternate forms of transportation, and those who drive motor vehicles upon the City's roadways. Therefore, a variety of communication approaches are required.

Goals:

General / Macro Level

- *Identify a communications specialist to work specifically with Spruce Grove Protective Services to develop broad based traffic safety messages to be disseminated on a variety of social media platforms on a regular basis.*

- *Continue to update the City's Virtual Map to release to the public the current Traffic Safety Plan, Annual Reports, Collision data and other information.*
- *Purchase High Collision Location signage to be placed at high collision intersections.*
- *Post on the City's Website the daily locations where mobile Automated Traffic Enforcement will be conducted.*
- *Develop traffic safety messages aligned with the Alberta Traffic Safety Calendar and disseminate the messaging on multiple social media platforms. These messages are to coincide with enforcement blitzes specific to the educational subject matter.*
- *Participate in MADD (Mothers Against Drunk Drivers) Red Ribbon and other campaigns.*
- *Utilize Vermac Signs to identify specific road safety concerns at specific road segments within the community.*

Micro / Audience Specific Level

- *Conduct Bike Rodeos – Bicycle and Road Safety Courses with primary school children.*
- *Conduct patrols and distribute bicycle safety bells for young cyclists.*
- *Conduct Pause, Point, Proceed sessions with Pre-school and Kindergarten Children.*
- *Conduct Candy Cane joint force Checkstops on a yearly basis to address impaired driving over the winter holidays.*
- *Conduct Distracted Driving Educational Session to Junior High and High School Students.*

Knowledge Transfer / Professionals

- *Attend Urban Traffic Safety Conferences.*
- *Through CRISP, conduct a Traffic Safety Culture Survey on a biennial basis and circulate results.*

Evaluation

In December 2021 the current Automated Traffic Enforcement Technologies Guidelines were released. Consequently, in 2022 all Automated Traffic Enforcement locations were required to be re-evaluated in accordance with the new criteria identified by the province. The criteria areas where the public has expressed a concern, or areas where conventional traffic enforcement would be unsafe, are no longer permitted criteria.

The City currently utilizes Speed Display monitoring signs, Houston Radar boxes and other traffic volume monitoring devices to monitor speed, traffic volumes and peak periods of violations. Corrective action is then applied at those locations where issues have been identified. An example of this was the use of Automated Traffic Enforcement Fixed Intersection Safety Device Cameras which were able to record how accidents occurred at intersections where that technology was employed. It led to the recommendations of protected left hand turn lanes at specific intersections. Over the years refinements in data collection, technologies and monitoring have improved. These improvements are reflected in the traffic safety plans and annual reports released by the City.

The evaluation goals for 2023-2025 are as follows:

Goals:

- *Monitor all collisions and intersections and identify the top 10 collision intersections. Those that show consistent increases, consider the use of Automated Traffic Enforcement Technologies should another corrective measure be deemed to have been unsuccessful.*
- *Rotate Speed Display monitoring signs and Houston Radar boxes more broadly throughout the city to obtain speed data and traffic volumes.*
- *Continue to enhance data collection, explore new data collection technologies for enhanced analysis and review.*

Engagement

Engagement refers to the communication and collaboration with partners who are directly or indirectly involved in transportation safety and / or the public in the development of appropriate transportation strategies. No one department, community, organization, region or province has the solutions to all road safety issues. There may also be unique circumstances that need be considered. It is important to learn from what others are doing. This includes learning about local, regional and provincial best practices as well as what research and results are being achieved at the national and international level. In order to facilitate meaningful change, it is important to engage the public, other organizations and departments to leverage resources.

In the development of the 2022-2025 Traffic Safety plan the City has reviewed industry best practices, and transportation initiatives that are occurring not only at the international, national, and provincial level but also in the greater provincial capital region and surrounding communities. Spruce Grove's approach to traffic safety is consistent with the Alberta Traffic Safety Plan 2015 and Canada's Road Safety Strategy 2025.

Spruce Grove is a partner of the Capital Region Integrated Safety Partnership which includes representatives of the following communities and agencies: Alberta Health Services, Alberta Transportation, the City of Edmonton, Edmonton Police Services, Fort Saskatchewan, Leduc, Morinville, Spruce Grove, St. Albert, Strathcona County, Stony Plain and RCMP representatives from the various communities. Through this partnership the City remains current on developing traffic safety initiatives, best practices and emerging research at all levels.

At a more local level the City of Spruce Grove engages stakeholders through various interagency stakeholder consortiums such as Safe City, and the Community Police Advisory Committee. In 2020 the City of Spruce Grove Community Road Safety Advisory Committee was formed. It is comprised of community members and members from City council. In the drafting of this traffic safety plan, these stakeholder groups were consulted along with the following City departments: Community Sustainable Development; Corporate Communications; Engineering; Family and Community Support Services; Planning and Development; Public Works and

Spruce Grove Protective Services, which is comprised of Enforcements Services, Emergency Medical Services, Fire Services and Fire Prevention.

The RCMP has the primary responsibility for traffic safety and ATE. The City's Automated Traffic Enforcement services is contracted out to a third-party provider Conduent Business Services Canada Inc. There is continuous communication with the service provider to ensure it follows the City's traffic safety priorities, policies and provincial Automated Traffic Safety Technologies guidelines. Engagement, input and support from all these stakeholders is critical in order to ensure an effective Traffic Safety Plan.

The Engagement goals for 2022-2025 are:

Goals:

- *Continue participation in CRISP.*
- *Continue to participate and engage with the Community Road Safety Advisory Committee, Safe City and Police Community Advisory Committee.*
- Attend regional and local road safety conferences.

Engineering

Engineering is a significant component in developing an effective Traffic Safety Plan. It encompasses such thing as physical changes to roadways, the development of design guidelines and technologies to conduct the safe and efficient movement of vehicular and pedestrian traffic. Geometric designs and traffic controls such as signs, signals and pavement markings contribute to favourable transportation corridor and intersection safety performance.

The Safe Systems approach to traffic safety aims to limit the interactions of complimentary measures which contribute to the cause of collisions, the energy transference during collisions and other factors which provide a cumulative benefit towards a reduction in collisions injury mitigation. Optimization occurs if consideration is given on how each component impacts the other, or how its interrelation is considered cumulatively throughout the system. An example would be the reduction of the impact speed during a collision along with the use occupant restraint devices; or the design of an intersection's geometry by constructing traffic circles to reduce right angle collisions and the energy transfer of such a collision upon impact. There is a synergistic relationship between two or multiple factors.

Data collection, analysis and systems modernization along with updated standards are key components that contribute towards traffic safety.

As such the 2022-2025 Engineering goals are:

Goals:

- *Update the City of Spruce Grove Municipal Development Standards.*
- *Conduct a Community Survey to develop a long-range vision for the future growth and development of the City.*

- *Replace and update traffic signals, to include pre-emptive equipment and autoscope detection equipment on intersections along Grove Drive, Calahoo Road and King Street.*
- *Integrate the traffic control connections of the CN Rail controller with the Traffic Control signals along Highway 16A and the road crossings at Campsite Road, Golden Spike Road and Century Road.*
- *Install protective left hand turn signals at the intersections of Highway 16A and Campsite Road / Jennifer Heil Way and Grove Drive at Jennifer Heil Way.*
- *Rotate Speed Display Monitoring signs throughout the city and conduct traffic volume counts on a yearly basis.*
- *Reassess crosswalks every two years and list deficiencies.*

References

"2018 Edmonton and Area Traffic Safety Culture Survey", March 2019 https://drivetolive.ca/wp-content/uploads/2020/07/2018_TrafficSafetyCultureReport-web.pdf

"Alberta Traffic Collision Statistics", Alberta Transportation, Government of Alberta https://open.alberta.ca/publications/0844-7985

ARASON, N.; "The Safe Systems Approach for Road Safety", Transportation Talk, Winter 2018/19; Canadian Institute of Transportation Engineers https://www.cite7.org/wpdm-package/40-4-winter-2018-19/

"Canada's Road Safety Strategy 2025, Towards Zero: The Safest Roads in the World"; Canadian Council of Motor Transportation – January 2016 https://roadsafetystrategy.ca/files/RSS-2025-Report-January-2016-with%20cover.pdf

"Canadian Motor Vehicle Collision Statistics" Transport Canada, Transport and Infrastructure, Government of Canada http://www.tc.gc.ca/eng/motorvehiclesafety/resources-researchstats-menu-847.htm

CCMT (2015) "Canada's Road Safety Strategy 2015", Canadian Council of Motor Transport Administrators http://crss-2015.ccmta.ca/strategy.php

Census Profile, 2021 Census of Population, Statistics Canada https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Spruce%20Grove&DGUIDlist=2021A00054811049&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0

"City of Spruce Grove – Demographic Report 2016"; Population Research Laboratory University of Alberta https://www.sprucegrove.org/media/1459/2016-census-demographic-report.pdf

"City of Spruce Grove – Demographic Report 2017", https://www.sprucegrove.org/media/1458/2017-census-demographic-report.pdf

"City of Spruce Grove – Demographic Report 2018", July 2018; ISL Engineering and Land Services https://www.sprucegrove.org/media/2949/2018-census-demographic-report.pdf

De Leur, Paul.; "Collision Cost Study Update – Final Report", April 2018 https://drivetolive.ca/research/collision-cost-study/

"Global Status Report on Road Safety 2018", Geneva: World Health Organization; 2018 Licence: CC BY-NC-SA 3.0 IGO

ITF (2008), "Towards Zero: Ambitious Safety Targets and the Safe System Approach", OECD Publishing https://s3-ap-southeast-2.amazonaws.com/cdn-nrspp/wp-content/uploads/sites/4/2017/07/20105906/Towards-Zero-Ambitious-Road-Safety-Targets-And-The-Safe-System-Approach.pdf

"Licensed Drivers, Select Municipalities as of March 31"; 2018; Government of Alberta https://open.alberta.ca/dataset/67db8a70-e2db-48c8-b567-c82a8a5b7362/resource/fbe6d4ed-f035-4a6f-810f-75bae3afcecf/download/drivers2018.pdf

"Speed Costs Us All"; Capital Region Intersection Safety Partnership (CRISP), World Health Organization (WHO) Report to Road Safety 2014 http://drivetolive.ca/wp-content/uploads/2014/02/CRISP_AET_Insert_Feb25_2014_PRINT.pdf

"Speed Management, A Road Safety Manual for Decision Makers and Practitioners, Geneva, Global Safety Partnership 2008" - https://apps.who.int/iris/bitstream/handle/10665/43915/9782940395040_eng.pdf;jsessionid=B0604EB87F1BF69177C88AEB2D1906C1?sequence=1

THUE, L., et al "Edmonton and Area Traffic Safety Culture Survey Summary of Key Findings; Traffic Safety,", 2016 https://www.edmonton.ca/transportation/RoadsTraffic/TrafficSafetyCultureSurveyReport2016.pdf

"Traffic Safety Plan 2015 – Safer Drivers, Safer Vehicles, Safer Roads", Government of Alberta https://open.alberta.ca/dataset/cb0799a8-1f25-4a8f-b3ed-0d4a5980eed3/resource/6566a796-87d4-4a3d-8a37-4e96c5d8e90a/download/3809538-2015-alberta-traffic-safety-plan-2015.pdf

Turner, B., Job, S. and Mitra, S. (2021). Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work. Washington, D.C., USA: World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/35176/Guide-for-Road-Safety-Interventions-Evidence-of-What-Works-and-What-Does-Not-Work.pdf?sequence=7