Calgary Safer Mobility Plan

Annual Report 2018

Transportation - Roads

The City of Calgary

December 6, 2018

1. Introduction

The Calgary Safer Mobility Plan (SMP) 2013-2017 was the first step towards a formal, Calgary-specific, and evidence-driven transportation safety management process. With the completion of the term of the plan, it is time to reflect on the progress, effectiveness of the strategies, and lessons learned within its duration. With strong traffic safety leadership and the guidance of the Safer Mobility Plan and its strategies, Calgary has secured its place among cities leading the way to Vision Zero.

As per the direction of the Safer Mobility Plan 2013-2017, the Annual Report 2018 provides a final review outlining alignment with targets (Section 2), and key achievements and lessons learned (Section 3). Several project evaluation sheets have been developed for projects undertaken in 2015-2016 with significant safety components and are included in Appendix A of this report.

The proposed Safer Mobility Plan 2019-2023 (Attachment 3) proposes to continue the course and build on the great work accomplished previously. The actions planned for 2019 are presented in Section 4 based on the 2019-2023 SMP Traffic Safety Strategy redefined in terms of 5 E's (Engagement, Engineering, Education, Enforcement, and Evaluation/Innovation) of transportation safety.

Vision Zero

Based on previous Council direction, through the Pedestrian Strategy, a Vision Zero mandate has been strengthened in the Safer Mobility Plan 2019-2023. Adopting a Vision Zero approach in Calgary is consistent with the previous plan and with other plans in North America which have been branded as Vision Zero. The Vision Zero approach and targets have been fortified in the new plan to focus on major injury and fatality collisions and the reduction target of 25%. This will be made possible by the One Calgary proposed budgets resulting in increased resources for implementation of specific capital improvements to address safety issues reactively and proactively.

A key step toward a true Vision Zero approach is achieving operating speeds that reduce the likelihood of fatality or serious injury for all users by reducing impact energy. The recently introduced initiative reviewing the unposted speed on lower classification roadways has the potential for significant reduction of frequency and severity of collisions depending on resulting reductions in operating speed. However, the discussion of safer speeds needs to be expanded so that Calgarians who drive understand that a reduction to 10% risk of fatality (equivalent to an impact of 30 km/h for a pedestrian or cyclists) is possible by reducing speeds to 50 km/h where there is a risk of side impact collisions and 70 km/h where there is a risk of head-on collisions.

2. Collision Statistics and Focus Area Targets

In 2017, there were 11 fatal collisions, 2,650 injury collisions and 35,448 property damage only collisions on Calgary roads. The societal cost of these collisions is estimated to be $1.12 billion, however, Calgary is continuing to perform well compared to other major Canadian cities with an overall collision rate of 213.5 casualties per 100,000 population (casualty is a term used which combines fatal and injury collisions). For comparison purposes, a selection of cities are shown in the table below, using the most recently available comparable data.

Summary of Collision Data for Other Canadian Jurisdictions

City	All casualty collision rate (Collisions/100,000 population)	Pedestrian casualty collision rate (Collisions/100,000 population)
Calgary (2017)	213.5	28.4
Edmonton (2017)	292.9	28.9
Ottawa (2017)*	296.7	36.3
Toronto (2013)	530.0	49.9

**The pedestrian casualty collision rate for Ottawa was calculated based on the number of casualties instead of casualty collisions (data for which was not available).Reporting practices vary among jurisdictions..*

In 2017, Pedestrians were involved in 2 fatal collisions, and 352 injury collisions, while cyclists were involved in 146 injury collisions with no fatal cyclist collisions. While casualty collisions were on the rise, fatalities were significantly lower than previous years. The targets were assessed based on the baseline values established in 2012 and are summarized in the table below. Even though only one of the targets was met, all focus areas experienced collision reductions ranging between 0.6% and 4.0%.

Summary of 2013-2017 Safer Mobility Plan Targets and Outcomes

Focus Area	Reduction Target	Outcome
Overall Casualty Collisions	10%	3.8% - Not met
Intersection Casualty Collisions	12%	0.6% - Not met
Non-Intersection Casualty Collisions	5%	4.0% - Not met
Vulnerable Road User Collisions	12%	1.1% - Not met
Speeding Involved Collisions	5%	9.0% - Met

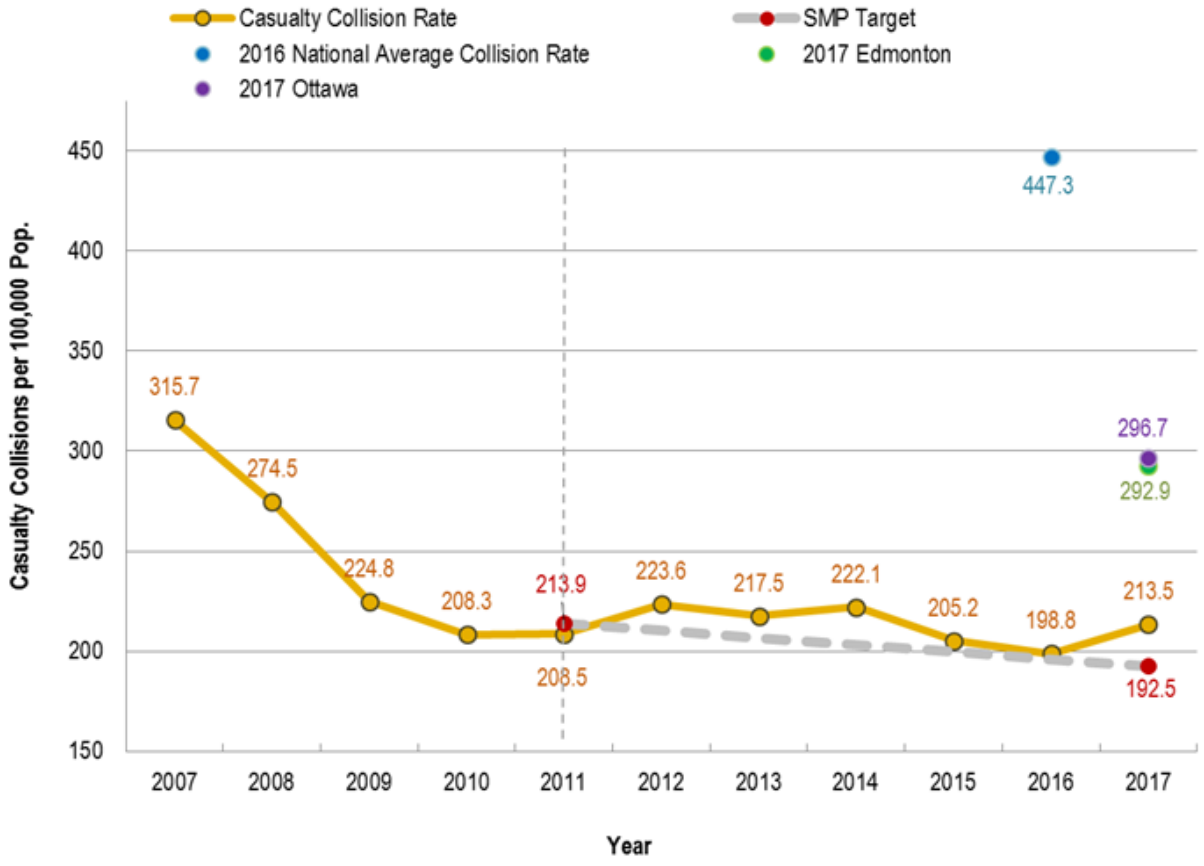
It should be noted that the trends in the most recent collision data are a result of activities completed during 2016 or earlier.

2.1 Overall Casualty Collision Target

Target: 10% reduction in casualty collision rate (fatality and injury combined) per 100,000 population, based on a 3 year rolling average (2015-2017)

Baseline: Casualty (fatality and injury combined) collision rate of 213.9 per 100,000 population, based on a 3 year rolling average (2009-2011)

Outcome: Casualty (fatality and injury combined) collision rate of 205.9 per 100,000 population, based on a 3 year rolling average (2015-2017), 3.8% collision reduction compared to baseline



Progress summary: The overall casualty collision rate for 2017 experienced an increase compared to the previous year and the projected three year rolling average targets were not met. The 2016 National Average, the most recent available, was 447.3 casualty collisions per 100,000.

Key Actions:

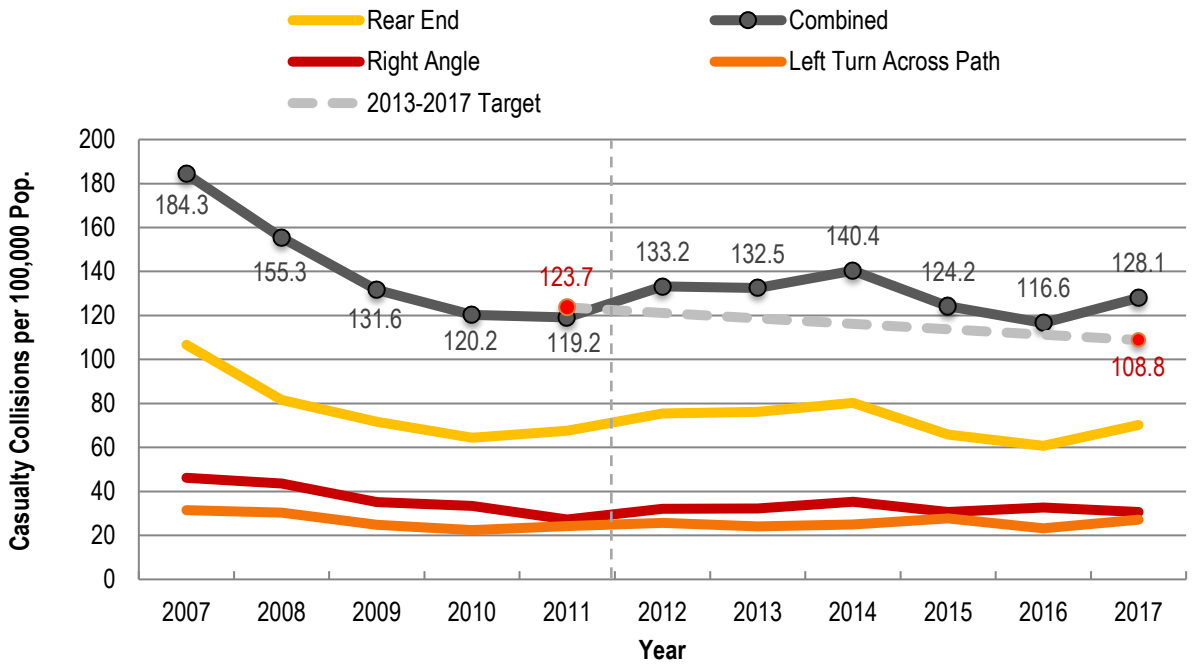
- Implement improvements identified in the In-Service Road Safety Reviews/Road Safety Audits
- Continued/expanded speed-related engagement and education and speed reductions, where appropriate
- Support of Calgary Police Service (CPS) targeted enforcement activities.

2.2 Intersection Collision Target

Target: 12% reduction in combined rear end, right angle and left turn across path casualty collision rate per 100,000 population, based on a 3-year rolling average (2015-2017)

Baseline: Combined rear end, right angle and left turn across path casualty collision rate of 123.7 per 100,000 population, based on a 3-year rolling average (2009-2011)

Outcome: Casualty (fatality and injury combined) collision rate of 123.0 per 100,000 population, based on a 3 year rolling average (2015-2017), resulting in 0.6% collision reduction compared to baseline



Progress summary: The intersection casualty collision rate for 2017 increased compared to 2016. This change is mainly driven by an increase in right angle collisions and a slight increase in left turn across path collisions. A decrease was observed in right angle collisions. Continued effort is required in this area. National averages are not available for intersection collisions.

Key Actions:

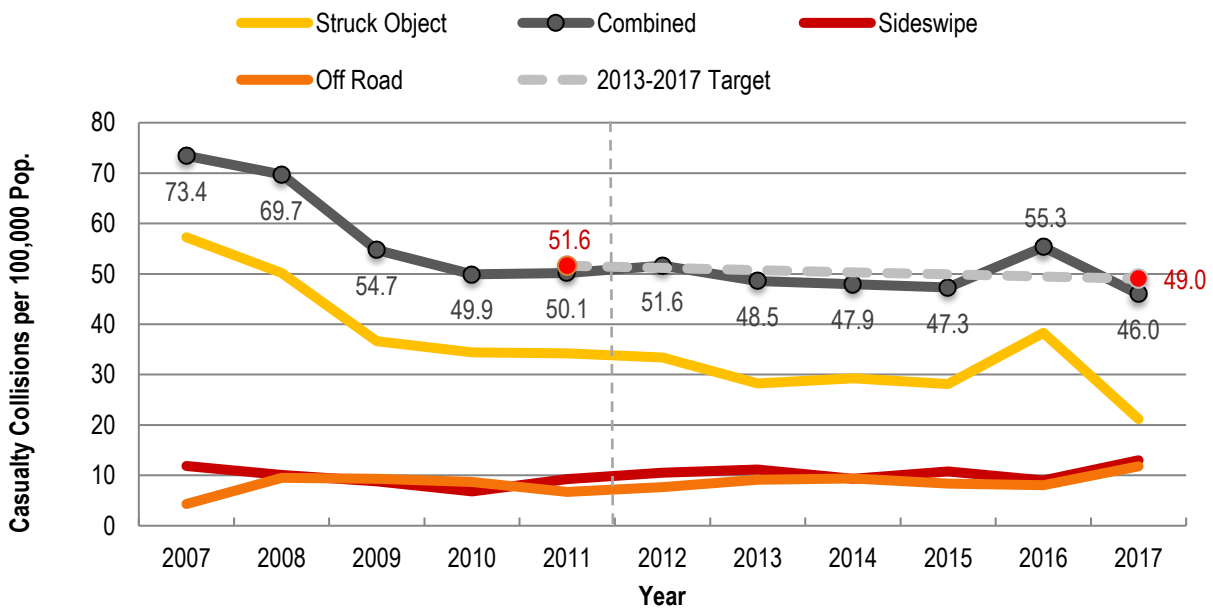
- In-Service Road Safety Reviews/Road Safety Audits focused on intersection improvements.
- Network screening and focused application of mitigation measures for rear end collisions such as Advanced Warning Flashers and high friction surface treatment.
- Continued application of Traffic Calming Curbs to address collision issues.
- Engagement and awareness activities related to speed and investigation of speed reduction at high speed intersections
- Support of CPS targeted enforcement activities.

2.3 Non-Intersection Collision Target

Target: 5% reduction in combined struck object, sideswipe and off-road casualty collision rate per 100,000 population, based on a 3-year rolling average (2015-2017)

Baseline: Combined struck object, sideswipe and off-road casualty collision rate of 51.6 per 100,000 population, based on a 3-year rolling average (2009-2011)

Outcome: Casualty (fatality and injury combined) collision rate of 49.5 per 100,000 population, based on a 3 year rolling average (2015-2017), resulting in 4.0% collision reduction compared to baseline



Progress summary: The non-intersection casualty collision rate for 2017 experienced a dramatic decrease compared to 2016 and is below the target line. This is mainly due to a decrease in struck object collisions. Sideswipe and off-road collisions casualty rates increased slightly. National averages are not available for non-intersection collisions.

Key Actions:

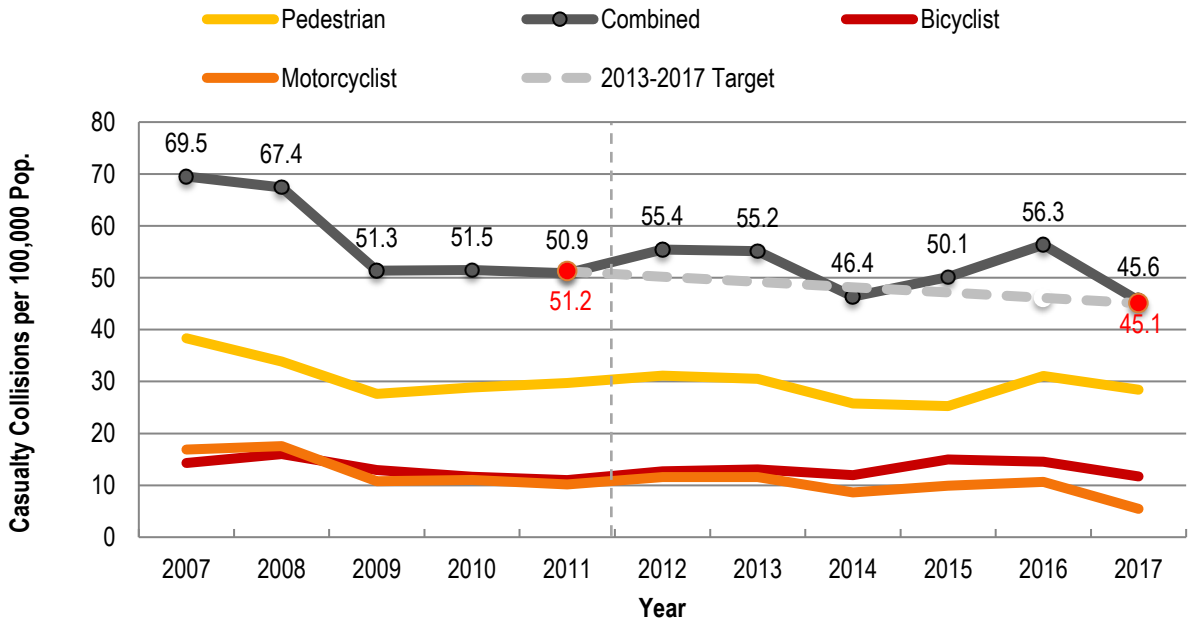
- Focused application of mitigation measures for sideswipe and off-road collisions.
- In-Service Road Safety Reviews/Road Safety Audits/focused infrastructure improvements.
- Engagement and awareness activities related to speed.
- Engagement and enforcement activities related to distracted driving (Sideswipe collisions).
- Support of CPS enforcement activities.

2.4 Vulnerable Road Users Collision Target

Target: 12% reduction in vulnerable road user casualty collision rate per 100,000 population, based on a 3-year rolling average (2015-2017)

Baseline: Vulnerable road user casualty collision rate of 51.2 per 100,000 population, based on a 3 year rolling average (2009-2011)

Outcome: Casualty (fatality and injury combined) collision rate of 50.7 per 100,000 population, based on a 3 year rolling average (2015-2017), resulting in 1.1% collision reduction compared to baseline



Progress summary: The vulnerable road user casualty collision rate for 2017 increased compared to 2016. All vulnerable road user groups, including pedestrian, cyclist, motorcyclist collision rates showed a decrease. National averages are not available for vulnerable road user collisions.

Key Actions:

- Continued application of enhancements for pedestrian crossings including RRFBs, pedestrian corridor improvements, Traffic Calming Curb application.
- Application of mitigation measures for pedestrian collisions including targeted lighting improvements.
- Implementation of improvements at identified pedestrian collision clusters.
- Continued implementation of measures identified in the Pedestrian Strategy and various infrastructure improvement projects to incorporate safety improvements.
- Engagement and awareness activities related to vulnerable road user safety.
- Support of CPS enforcement activities related to vulnerable road users.

2.5 Impaired and Distracted Driving (Mobility) Support Target

Targets: Share data analysis and mapping related to impaired driving with CPS to aid with targeted enforcement efforts.

Form/maintain partnerships with CPS and other stakeholders and provide support in educating and engaging the public.

Progress summary: The impaired and distracted driving targets are currently qualitative. Discussions are underway to establish quantitative baseline values and targets despite the lack of direct control. Continued effort is required to maintain achievement for this target.

Key Actions:

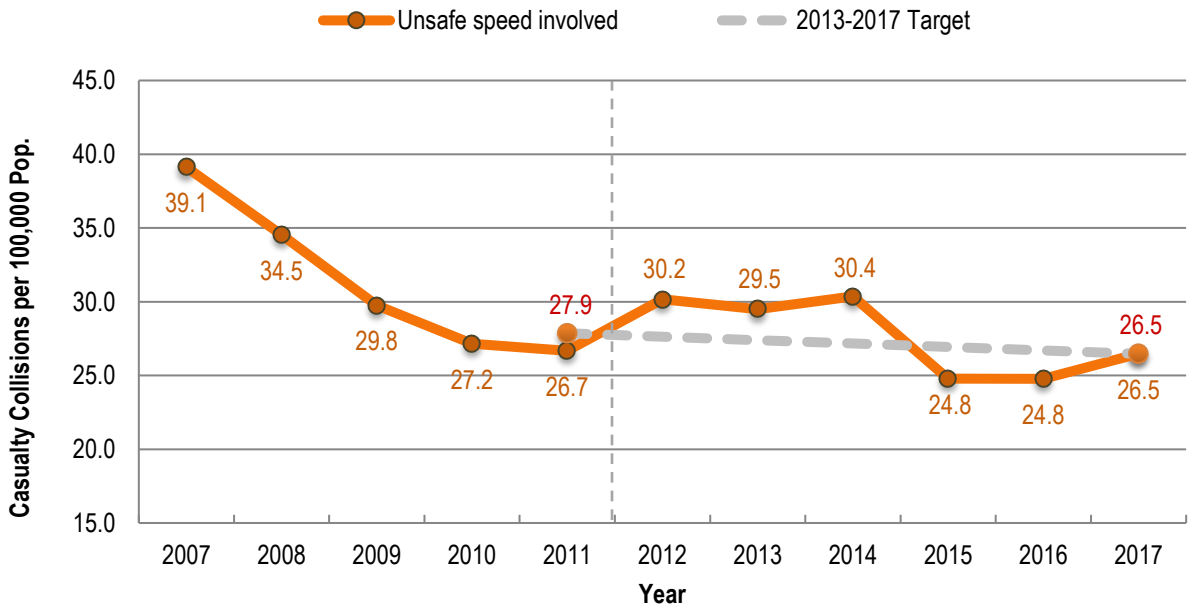
- Engagement and awareness activities related to distracted and impaired mobility.
- Establishment of quantified baseline and target values in collaboration with CPS.
- Support of CPS enforcement activities related to impaired and distracted mobility.
- Support CPS in the year ahead with messaging regarding drug impaired mobility.

2.6 Speeding Involved Collision Target

Target: 5% reduction in speeding involved casualty collision rate (fatality and injury combined) per 100,000 population, based on a 3-year rolling average (2015-2017)

Baseline: Speeding involved casualty collision rate of 27.9 per 100,000 population, based on a 3-year rolling average (2009-2011)

Outcome: Casualty (fatality and injury combined) collision rate of 25.3 per 100,000 population, based on a 3 year rolling average (2015-2017), resulting in 9.0% collision reduction compared to baseline



Progress summary: The speeding involved casualty collision rate for 2017 increased slightly compared to 2016. Nevertheless, the 3 year rolling average comparison indicates a 9 percent reduction in speeding involved casualty collision rates. National averages are not available for speeding involved collisions.

Key Actions:

- Implementation of recommendation of In-Service Road Safety Reviews/Road Safety Audits/focused infrastructure improvements.
- Application of design guidelines such as Complete Streets to encourage lower speeds.
- Traffic Calming Curb pilot aimed at reducing speeds in neighborhoods.
- Network screening and application of mitigation measures for speeding involved collisions.
- Engagement and awareness activities related to speed, including SLOWS and Community Traffic Calming and Community Speed Watch.
- Support of CPS speed enforcement activities collaboration regarding SLOWS requests and Traffic Service Requests (CPS equivalent of 311 for traffic issues).

3. Safer Mobility Plan 2013-2017 – Key Achievements and Lessons Learned

This section highlights a selection of key achievements accomplished during the term of Calgary's 2013-2017 Safer Mobility Plan by various groups. A detailed description of each of the strategies is provided in the Safer Mobility Plan 2013-2017.

Strategy 1: Safer Mobility Plan Management Strategy

- Initiation of the Safer Mobility Communities Team
- Implementation of two rounds of Community Ward Traffic Safety Meetings
- Safer Mobility Plan annual reporting
- Consultation with our Safer Mobility partners in the review of 2013-2017 Safer Mobility Plan
- Preparation of the 2019-2023 Safer Mobility Plan

Strategy 2: Transportation Safety Data Management Strategy

- Implementation of the E-Collisions database, an enhanced collision database
- Deployment of the Collision Dashboard, an internal web-based collision data application
- Annual Traffic Collision Summary reporting , with key figures from summary presented in Attachment 2.

Strategy 3: Vulnerable Road User Safety Strategy

- Implementation of over 130 Rectangular Rapid Flashing Beacons (RRFBs), supplementary side-mounted flashers at pedestrian corridors, and signalized crosswalks
- Review and improvements at high pedestrian collision locations including ladder crosswalks, changes to left turn phasing, lighting improvements, and others
- Implementation of traffic safety related actions identified in the Step *FORWARD* pedestrian strategy including Leading Pedestrian Interval, and support for tactical urbanism, and traffic calming activities.
- Leading the development of the new national guide by Transportation Association of Canada (TAC) entitled Pedestrian Crossing Control Guide
- Traffic Calming Curbs – implementation at crosswalks with quantified safety concerns to reduce speeds and crossing distance, proactive safety enhancements
- Harmonization of 197 school zones found to reduce speeds, increased speed compliance, and improved safety for all road users.
- Pilot of reflective sleeves at pedestrian crosswalks with findings indicating a positive impact to yielding compliance.
- Expansion of SLOWS (speed trailer) program and initiation of Residential Sandwich Board and Community Speed Watch programs

Strategy 4: Safer Transit Strategy

- Implementation of the Bus Rapid Transit system with improved connections for people walking to stations
- Activities of the At-Grade LRT Crossing Committee, resulted in implementation of cost-effective measures to improve safety at identified locations
- Development of training programs for transit operators and safety and suicide awareness programs (operator training, education/awareness campaign for public).

Strategy 5: Transportation Network Screening Strategy

- Annual Left Turn Across Path Collision Review identifying locations requiring improvements
- Various network screening analysis of collisions including pedestrian, roundabout, right angle, rear end, right turn, and snow and ice, among others.

Strategy 6: Road Safety Audit Strategy

- Finalization of Road Safety Review Guidelines, including Road Safety Audits (RSA) for City Projects
- Completion of numerous formal RSAs including: Trans-Canada/Bowfort Road, Trans-Canada/Sarcee Trail, Shaganappi Trail/Stoney Trail and Glenmore Trail/Ogden Road interchanges, Southwest BRT, 17 Avenue SE Transitway and Stoney Trail and Sarcee Trail interchange upgrades.
- Pre-opening RSAs for Crowchild Trail/Flanders Avenue and Macleod Trail/162 Avenue interchanges.

Strategy 7: In-Service Road Safety Review Strategy

- Finalization of Road Safety Review Guidelines, including In-Service Road Safety Reviews (ISRSR) for City Projects
- Completion of In-Service Road Safety Reviews at numerous high collisions intersections and corridors, along the cycle track network, and Video Based Conflict Analysis studies.
- Coordination and implementation of cost effective measures identified through the ISRSR and Collision Review processes to improve safety under the Safety Improvements Capital Program and as part of other projects, for example:
    - Macleod Trail and Southland Drive SW
    - Country Hills Boulevard and Harvest Hills Boulevard NW
    - Macleod Trail and Shawville Boulevard SW
    - 52 Street and McKnight Boulevard NE
- Evaluated the effect of changes and developed Project Sheets summarizing the findings at select locations (Appendix A)

Strategy 8: Public Response Strategy

- Response to Service Requests through 311 with a significant reduction of outstanding Service Requests from 145 to 20
- Completion of over 150 Collision Reviews and Safety Assessments based on concerns raised by members of the public or Administration
- Ongoing support for other groups regarding traffic safety related issues
- Creation of Calgary.ca/trafficsafety webpage for dissemination of traffic safety related information to the public

Strategy 9: Public Education and Communication Strategy

- Awareness campaigns regarding pedestrian safety, back to school, Look Out for Each Other, Don't RIP etc.
- Expansion and coordination of the SLOWS Trailer (mobile) program and deployment of iSLOWS (pole mounted) signs.
- Implementation and support of community communication and education programs such as Residential Area sandwich boards

Strategy 10: Targeted Enforcement Support Strategy

- Implementation of the Community Speed Watch, a volunteer-lead speed awareness program, in partnership with Calgary Police
- Ongoing support for "Report Impaired Driving" signage.
- Participation in CPS Collision Reconstruction review meetings and sharing of data/analysis of collisions

Strategy 11: Safety Research and Innovation Strategy

- Initiation of the Safer Mobility Research Team.
- Trials of innovative countermeasures such as Leading Pedestrian Interval at signalized intersections, Traffic Calming Curbs, reflective sleeves at crosswalks, crosswalk lighting enhancements at traffic signals and pedestrian corridors, LRT crossing improvements for pedestrians, among others.
- Traffic safety knowledge exchange with the City of Edmonton and Alberta Transportation.
- Active participation on TAC committees guiding projects to develop application guidance for the Safety Impacts of Bicycle Infrastructure, Right Turn Arrows and to investigate the use of reflective material on sign posts and fluorescent-yellow green crosswalk signs.
- Application of video based conflict analysis for proactive evaluation of pedestrian related safety countermeasures measures.
- Formal evaluation of previously implemented engineering measures

Lessons Learned

While progress has been made in all strategies of the Safer Mobility Plan 2013-2017, various situations encountered resulted in the following lessons learned:

1. Coordinated public engagement is very valuable as it reduces the need for reactive interaction regarding site-specific issues and offers and opportunity for larger scale education and dialogue to improve public understanding of traffic safety concepts and build trust.

2. An evidence-based approach with a focus on evaluation and objective quantification of impacts allows us to better understand the successes and learnings. This is vital to justification of future investment, merging perceptions, and building trust.

3. External and cross-departmental partnerships and collaboration are fundamental to effective and efficient implementation of strategies, improvements, and initiatives.

4. Actions Planned for 2019

The Traffic Safety Strategy of in the Safer Mobility Plan 2019-2023 is centered on building momentum achieved in the previous version of the plan and focuses on the five E's of Engagement, Engineering, Education, Enforcement, and Evaluation (and Innovation). This section highlights actions planned for 2019 aimed at accelerated implementation of traffic safety initiatives associated with the increased funding.

Engagement

- Monitor traffic safety and share findings through SMP Annual Report 2019
- Review and action citizen feedback received at Ward Safety Meetings and develop the strategy for the next round of meetings
- Responding to public enquiries through 311 and develop information pages to enable response at the time of call
- Monitor the traffic safety related results of the Roads Annual Survey to track trends in public perception and satisfaction

Engineering

To fully understand the risk factors associated with the occurrence and location of high severity collisions and guide the investment in areas of highest potential for implement, a detailed review will be conducted to identify underlying contributing factors and evidence-based strategies to reduce the risk. All identified potential improvements will be evaluated with ones with most promise deployed at appropriate locations.

Pedestrian Safety Improvements: Countermeasures with proven pedestrian safety benefits including roadway geometry improvements and operational improvements will be implemented at high risk locations. These include but are not limited to:

- RRFBs – Up to 30 per year at high risk locations
- LRT corridor pedestrian improvements (i.e. 36 Street NE)
- Side-mounted flashers for pedestrian corridors
- Pedestrian median refuges along high collision location risk cross-sections (e.g. 3 AV & 34 ST NW)

- Conversion of high collision pedestrian corridors to signalized crosswalks
- Left turn improvements at signalized intersections
- Traffic Calming curb treatments, curb extensions, road diets, reduced speeds (where appropriate)
- Lighting improvements

The activities will also incorporate continued implementation of pedestrian safety related actions in Step *FORWARD* pedestrian strategy.

Intersection Safety Improvements: Countermeasures with proven intersection safety benefits will be implemented at locations with higher than expected risk of major injury or fatality rear end, right angle, and left turn across path collisions. Some measures that will be considered include:

- Advanced Warning Flashers
- High friction surface treatment
- More appropriate speeds
- Right turn geometric improvements
- Traffic Calming curbs
- Turn bay extensions
- Left turn and signal phasing improvements

We will prioritize the recommendations identified in previous studies (i.e. ISRSRs, Collision Reviews and Safety Assessments, Video Based Conflict Analysis, network screening studies, etc.) along with other improvements with high potential for reduction of high severity collisions. Additional ISRSRs and Road Safety Audits may be undertaken as required.

High Speed Road Environments: High speed roadway environments must be designed to minimize the severity of a collision if one occurs. Objects on the road or median side must be eliminated, designed to absorb energy when struck, or protected by the least rigid system available and feasible for application. Some tools that will be considered include:

- Network review for identified safety issues or design elements with increased risk of high severity collisions (i.e. struck object and run off road collisions and roadside improvements)
- Review of traffic collision/incident management practices and reduction of secondary collisions, renewal of 'Take It Off the Road' campaign.

Education

- Continue incorporating educational components into annual Traffic Safety Meetings, focused on the release of Safer Mobility Plan 2019-2023, Vision Zero, and results of evaluations, and communicate results of evaluations on the Calgary.ca/safety webpage
- Identify and create an educational campaign around blind spots – common errors that road users make and strategies to change the related habits
- Create online content to inform on new countermeasures (i.e. Traffic Calming Curbs) and provide answers to common questions
- Development of traffic safety factsheets, awareness of traffic safety initiatives (including Vision Zero) to the public.

Enforcement

- Ongoing support of Calgary Police Service deployment of high-visibility targeted enforcement
- Continuous coordination and cooperation in the delivery of community improvements and initiatives
- Coordinate deployment of speed trailers with speed enforcement activities

Evaluation and Innovation

- Investigate the reduction of operating speeds moving towards reduced speed limits consistent with the Safer Systems Approach
- Evaluate the safety performance of Rectangular Rapid Flashing Beacons (RRFBs) and other countermeasures
- Evaluate safety performance of various elements of the roadway environment to better understand their impact on safety
- Work with the Calgary Police Service and the Provincial Government to move toward an open data model for collision data which is currently not publicly available

Appendix A
Project Evaluation Sheets

City of Calgary
Traffic Safety Improvements

McKnight Boulevard NE and 68 Street NE

Project Details

Date:
May 2017

Changes Implemented:

- Left turn protected only signal phasing in all directions

Cost:
< $10,000

Collision Cost to Society

Before	$2,853,599
After	$1,352,362
Savings	$1,501,237

53% Reduction in collision cost to society

>500:1 Benefit Cost Ratio

Collision Stats

100% Reduction of left turn across path collisions

73% Reduction of injury collisions

City of Calgary
Traffic Safety Improvements

Erin Woods Community Project

Project Details

Date:
September 2016

Changes Implemented:
- Traffic Calming Curbs
- Bike lanes
- Re-designation of Playground Zone

Cost:
$110,000

Compliance Stats

After Study Location:
Erin Dale Crescent SE and Erin Woods Boulevard SE (East Intersection)

52%
Increase in
yielding compliance

14%
Increase in
speed compliance

Collision Stats

100%
Reduction of
vulnerable road user collisions

75%
Reduction of
casualty collisions

36%
Reduction of
total collisions

City of Calgary
Traffic Safety Improvements

Shawnessy Boulevard SW and Shawville Boulevard SE

Project Details

Date:
September 2016

Changes Implemented:

- Southbound lane revisions
- Southbound dual signalized right turns
- North/south split signal phasing

Cost:
$100,000

Collision Cost to Society

Before	$761,600
After	$53,600
Savings	$708,000

93% Reduction in collision cost to society

70:1 Benefit Cost Ratio

Southbound Approach Collision Stats

100% Reduction of injury collisions

88% Reduction of total southbound collisions

City of Calgary
Traffic Safety Improvements

Macleod Trail SE and Southland Drive SE

Project Details

Date:
July 2015 - January 2016

Changes Implemented:
- Southbound left turn protected only signal phasing
- Southbound left turn restriction during AM peak period
- High entry angle right turns

Cost:
$430,000

Collision Cost to Society

Before	$1,903,019
After	$1,089,108
Savings	$813,911

43% Reduction in collision cost to society

Collision Stats

80% Reduction of left turn across path collisions

67% Reduction of injury collisions

6% Reduction of total intersection collisions

19:1 Benefit Cost Ratio

City of Calgary
Traffic Safety Improvements

Country Hills Boulevard and Harvest Hills Boulevard N

Project Details

Date:
June 2016

Changes Implemented:
- Dual northbound left turning lanes
- Dual southbound left turning lanes

Cost:
$100,000

Collision Cost to Society

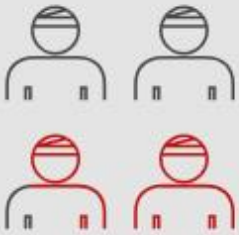
Before	$2,124,078
After	$1,239,842
Savings	$884,236

42% Reduction in collision cost to society

88:1 Benefit Cost Ratio

Collision Stats

86% Reduction of left turn across path collisions



57% Reduction of injury collisions

50% Reduction of right angle collisions

15% Reduction of total intersection collisions

City of Calgary
Traffic Safety Improvements

Blackfoot Trail SE and Southland Drive SE

Project Details

Date:
October 2016

Changes Implemented:
- Southbound dual signalized right turn
- Westbound left turn protected only signal phasing
- Eastbound dual left turn
- Pedestrian recall enabled for north crosswalk in east/west directions

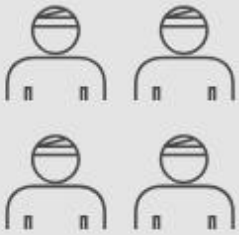
Cost:
$ 280,000

Collision Cost to Society

Before	$474,229
After	$126,585
Savings	$347,644

73% Reduction in collision cost to society

Southbound Approach Collision Stats



100% Reduction of injury collisions

55% Reduction of total intersection collisions

77% Reduction of right turn collisions

12:1 Benefit Cost Ratio