Safer Mobility Investment and Innovations

The City of Calgary is committed to continuously improving the safety of Calgarians on our roadways. This is accomplished through targeted improvements through our Traffic Safety Capital Program, as well as other Transportation Capital investments. Moreover, we strive to support our partners in their programs in a coordinated effort among the 5 E's of transportation safety. The following sections provide details on Safer Mobility investment and outline ongoing innovative pilot projects.

Investment - Traffic Safety Capital Program

2020 involved the completion of numerous safety projects with high return on investment in terms of reducing collision costs to society. The projects and details are noted in the table below:

Project	Estimated Cost - Safety Program	Projected Benefit Cost of Project (20 Year Life Cycle)	Collision Reduction (In Terms of Cost)
114 Avenue SE & Barlow Trail SE Dual signalized right	$ 233,000	10.8	60%
Shaganappi TR and Dalhousie DR NW Added lane, right turn improvements	$ 500,000	7.9	40%
Glenmore TR and 5 AV SW Signal Improvements	$ 28,000	>100	50%
40 AV and Market Mall Access NW left turn	$ 45,500	16.2	50%
Bow TR SW (33 ST to 37 ST) Median Barrier	$ 284,500	7.1	80%
Oakmoor DR and 24 ST SW Signal	$ 300,000	9.7	50%
Falconridge BV and Falworth WY Signal	$ 300,000	5.1	50%
52 Street and 68 AV/Smed Lane SE Pro-only SBL	$ 50,000	>100	90%
Symons Valley Rd and Kincora Glen Rd NW Pro-only NBL/SBL	$ 20,000	>100	90%
Bow TR & Sarcee TR SW RRFBs	$ 80,000	13.87	50%
3 Ave & Centre St N Signal Timing Changes	$ 0	>100	50%*
68 ST SE Bridge/Guardrail Design	$ 62,000	n/a	n/a
TC Curb purchase	$ 115,000	n/a	n/a
School Safety Research Project	$ 180,000	n/a	n/a
16 Ave NE & 68 St NE merge	$ 276,500	8.2	90%
LPI Pilot - 10 locations	$ 20,000	>100	20%*
Total	**$ 2,494,500**		

*Pedestrian-vehicle collisions

Investment – Transportation Capital Projects

A City That Moves is a citizen priority with $852 million of capital investment in 2020. All our capital programs influence traffic safety outcomes. An area of improvement is to better quantify expected traffic safety benefits for all mobility related Capital programs. Below are examples of projects that are expected to make mobility safer for Calgarians while achieving other mobility objectives.

Project / Improvement	**Project Budget**
8 Ave SE corridor improvements (10% collision reduction)	$680,000
Banff Trail area improvements	$34,400,000
42 Ave SE Complete streets	$5,500,000
Crowchild Trail upgrades (15% collision reduction)	$87,000,000
Erin Woods traffic calming project – Phase 1 and 2 (10% collision reduction)	$1,500,000
Glenmore Trail and 68 St SE Intersection (20% collision reduction)	$16,000,000
Southwest Ring Road Connections – pathways, transit, downstream impacts mitigation	$133,000,000
5 St SW Underpass enhancements (between 9 and 10 Ave SW)	$7,850,000
Westbrook pedestrian bridge	$9,000,000
Metis Tr & 64 Ave NE – Triple Westbound Left Turn	$200,000
Beddington Tr & Berkshire Blvd NW	$100,000
4 Ave Realignment & 1st Street SE	$5,000
Traffic signals – 21 locations	$5,250,000
Rectangular Rapid Flashing Beacons (RRFBs) – 12 locations	$480,000
Overhead flashers – 7 locations	$560,000
9 Av SE Complete Streets	$1,100,000

Traffic Safety Innovations

Below are several new countermeasures being trialed and evaluated in Calgary.

In-Street Pedestrian Signs

The City of Calgary and the University of Calgary have partnered on a School Traffic Safety Study targeting multiple elementary schools throughout the city. The City has recently installed traffic safety measures at selected intersections near 52 elementary schools. Before-after speed data collection at these locations has recently been completed and researchers are evaluating the effectiveness of the measures and plan to complete the study in December 2020. As part of the research, two types of interventions were evaluated: in-street pedestrian signs and temporary curb extensions. A total of 26 locations were selected for in-street pedestrian sign installation in the centre of the road.

To investigate effects of the intervention on traffic speed and volume, and active transportation, a generalized linear mixed effects model will be used, stratifying by intervention. Changes between pre and post traffic speed and volume, and active transportation measures, will be analysed. Preliminary results are anticipated to be complete by the end of 2020. There may be further follow up studies in spring of 2021, if required before finalizing the study.

Pedestrian Crosswalk Signs with Fluorescent Yellow-Green Border

In 2019, the City of Calgary participated in a Canada-wide study led by Transportation Association of Canada (TAC) to investigate the use and effectiveness of pedestrian crosswalk signs with fluorescent yellow-green background in lieu of the white retro-reflective material used typically. The study focused on marked and signed pedestrian crosswalks without push button activated flashers. The findings indicated that even though there was some improvement in vehicle yielding compliance to pedestrians and many drivers found the sign visibility superior, the white sign background associated with their regulatory nature is important to communicate to motorists and should be maintained as the standard.

Considering potential benefits and increased conspicuity of the fluorescent-yellow green colour particularly during winter conditions, while adhering to the regulatory nature of the crosswalk signs, the City of Calgary expanded the pilot to further investigate the effectiveness of a fluorescent yellow-green starburst border in the local context.

The starburst retro-reflective border signs were installed at 16 locations in Summer 2020. The vehicle yielding compliance to pedestrians will be investigated in

winter condition and summer conditions to assess the effectiveness of the signs. The data collection and analysis will take place in 2021. Control sites will be used to capture any fluctuations that may not be related to the countermeasure, such as seasonality or impact of COVID-19.

Centreline Hardening at Signalized Intersections

As many North American cities strive to find effective ways to improve pedestrian safety, reducing the speed of left turning vehicles is expected to significantly improve collision outcomes and many jurisdictions are trialing a variety of measures to achieve this. Centreline hardening is a strategy to make intersections safer for pedestrians by reducing the turning radius encouraging drivers to make left turns at slower speeds through the use of physical objects such as bollards, delineators, or rubber curbs (Figure 1).

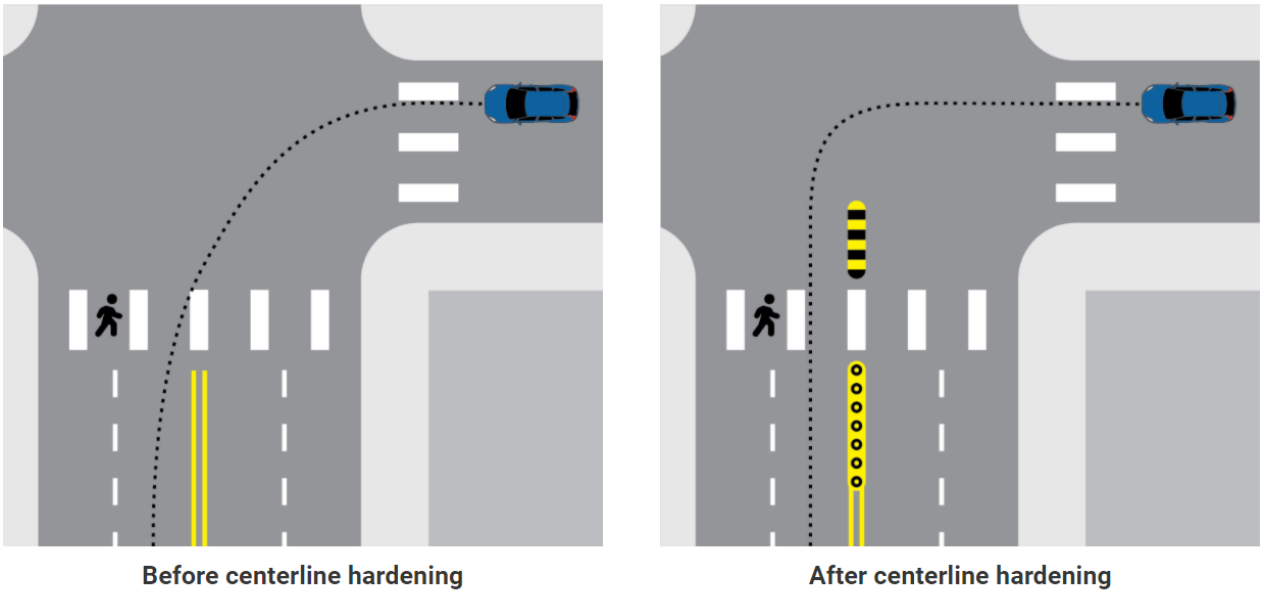

Figure 2. Centreline hardening.

Source: https://www.iihs.org/news/detail/simple-infrastructure-changes-make-left-turns-safer-for-pedestrians (Accessed: 11/23/2020)

Left Turn Traffic Calming is a city-wide program as part of New York City's overall Vision Zero initiative. Installed at more than 300 locations between 2016 and 2018, with a reported decrease in left turn speeds by 10-20% and a reduction in pedestrian injuries by 20%.

Detailed methodology is being currently being developed. 5-10 study sites will be identified with based on historical pedestrian-vehicle collision issues with preference given to locations with severe collision outcomes and higher speeds. It is anticipated that the treatment installations will take place in spring of 2021. Data collected for analysis will likely include vehicle speeds, collisions and/or pedestrian-vehicle conflicts, and frequency of vehicles crossing the yellow centreline.

Partnerships and Collaborations

Thorough all of the 5 E's, there are many organizations passionate about improving the safety of Calgarians on our roads. Progress towards our Vision Zero targets would not be possible without the work and dedication of our partners and the safety programs that support safety, including:

- **Calgary Police Service (CPS)** community speed awareness and enforcement, red light camera/ speed on green, collision data and major collision investigation.
- **Alberta Motor Association (AMA)** school patrol, education and outreach including annual School Patrol Day at Heritage Park, AMA Insider magazine and other traffic safety messaging to members
- **Calgary Parking Authority (CPA)** towing during peak hours, Park Safe: School Zone Safety Campaign and parking enforcement near schools
- **Alberta Transportation** and the Office of Traffic Safety: stewardship of Alberta Traffic Safety Act, Alberta Traffic Safety Grant program and public messaging aligned with Traffic Safety Calendar,.
- **Calgary school boards** and their commitment to improving student safety as they travel to and from school, through Student Safe Travel Advisory Group and other initiatives
- **University of Calgary** and Urban Alliance research and evaluation projects in partnership with the City of Calgary
- **Child Active-transportation Safety and the Environment (CHASE)** national research program
- **Alberta Health Services (AHS)** health data stewardship and active public safety messaging.
- Industry partners and many dedicated individuals, groups and organizations (Community Associations, Safer Calgary, Bike Calgary, Sustainable Calgary, MADD, Parachute, and many others)