Vision Zero

ZERO FATALITIES AND MAJOR INJURIES IN EDMONTON

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Introduction

THE CITY OF EDMONTON IS THE FIRST MAJOR CANADIAN CITY TO ADOPT VISION ZERO, A GLOBAL INITIATIVE TO ELIMINATE FATALITIES AND MAJOR INJURIES FROM MOTOR VEHICLE COLLISIONS. A key component of this strategy will be the adoption of the Safe Systems Approach. Central to this approach is a shared accountability between road users and those who design maintain and operate all parts of the road transportation system. The Safe System depends on understanding and implementing guiding principles.

The City of Edmonton Road Safety Strategy for 2016-2020 provides a strategic plan to continue reducing the prevalence of fatalities, major injuries, injuries and property damage from motor-vehicle collisions. This strategy incorporates Edmonton's strategic plan -The Way Ahead, and aligns with two of its strategic goals, The Way We Live, and The Way We Move. This strategic plan builds on the previous road-safety initiatives, incorporates leading global road-safety practices, identifies targets, and supports a long-term commitment to road safety.

Transportation Services' 2016-2020 Business Plan commits to improving road safety through the new road-safety strategy. The Edmonton Road Safety Strategy 2016-2020 will utilize an evidence based approach and the 5 E's of Traffic Safety (Engineering, Enforcement, Evaluation, Education and Engagement) to guide and support the strategy and the implementation of the Safe Systems Approach. This strategy is specifically intended to improve road safety to the designated targets over the next five years towards zero fatal and major-injury collisions. Subsequent road-safety strategies will continue to support the reduction of fatal and major-injury collisions until ***Vision Zero*** is achieved.

55%

Since 2006, collision injuries have been reduced by 55%. The reduction in injuries is estimated at $1.1 Billion in societal savings.

344

On average, 344 people are injured in collisions every month in Edmonton. That's 10 full ETS buses!

Targets for 2016 - 2020

TARGET #1

Rate of collision injuries per 1,000 population:

Year	2016	2017	2018	2019	2020
Rate	3.4	3.3	3.2	3.1	3.0

In 2014, the rate of related injuries was reduced to 4.2 injuries/1000 population, well below the previous target of 6.6 injuries/1000 population by 2020. This new target reflects a progressive reduction of injuries over the next five years towards zero fatalities and major injuries

Collision Injury Reduction by Contributing Area:

ENGINEERING

Year	2016	2017	2018	2019	2020
Reduction	16	41	55	59	59

ROAD SAFETY AUDITS

Year	2016	2017	2018	2019	2020
Reduction	32	95	158	221	285

ENFORCEMENT

Year	2016	2017	2018	2019	2020
Reduction	362	383	404	424	441

EDUCATION

Year	2016	2017	2018	2019	2020
Reduction	11	11	11	11	11

A total reduction of 3,090 injuries from collisions is required to meet the target.

04 *TARGET #2*

Rate of collisions at intersections per 1,000 population:

Year	2016	2017	2018	2019	2020
Rate	14.8	14.5	14.2	13.8	13.5

This strategy will progressively reduce collisions at intersections per 1,000 population based on the previous 2020 targets in the Transportation Master Plan. In 2014, the rate of collisions at intersections per 1,000 population was 15.45 with a target of 15.50.

Intersection Collision Reduction by Contributing Area:

ENGINEERING

Year	2016	2017	2018	2019	2020
Reduction	73	190	253	272	272

ROAD SAFETY AUDITS

Year	2016	2017	2018	2019	2020
Reduction	145	434	723	1,013	1,308

ENFORCEMENT

Year	2016	2017	2018	2019	2020
Reduction	252	355	430	489	516

EDUCATION

Year	2016	2017	2018	2019	2020
Reduction	56	56	56	56	56

A total reduction of 7,055 from intersection collisions is required to meet the target. 21.8% of these collisions, (1,527) will be injury collisions and are included in the previous target.

SCHOOL ZONE SAFETY TARGET

A specific target will be established for school-zone safety once the school-zone-safety review has been completed and presented to City Council in 2016.

Principles

SAFE SYSTEMS APPROACH

The Safe Systems Approach is a holistic view that provides a framework to assess, guide and improve traffic safety. Central to this approach is a shared accountability between road users and those who design and maintain and operate all parts of the road-transportation system.

This approach does not ignore risk-taking behavior, but acknowledges human fallibility and the need for greater allowances for human error. Planning and developing a Safe System means looking beyond standards and towards systematically planning and designing a sustainable and inherently-safe road and transportation system for all road users.

Creating a safe system depends heavily on understanding and implementing these guiding principles:

- *The limits of human performance: we all make mistakes and we need to acknowledge the limits of our capabilities*
- *The physical limits of human tolerance to violent forces: we are physically vulnerable when involved in a motor vehicle collision*
- *Shared responsibility: this means all of us take an individual and shared role in road safety*
- *A forgiving road system: so that when crashes do happen, deaths can be avoided and injuries minimized*

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EVIDENCE BASED

This strategy continues to build on the previous evidence-based approach to road safety in Edmonton. Its emphasis is on identifying and using the state-of-practice in road-safety initiatives and establishing the state-of-art in road safety. Similar efforts will be utilized to optimize law-enforcement initiatives using an evidence-based approach to road safety and crime.

The integration of data, data analytics, and business analytics will continue to grow in importance in road safety and road-safety crime-related initiatives. The development, implementation, and use of predictive analytics and situational awareness will be supported through near-real-time data. Further research will focus on both causality and correlation of information through the inclusion of big-data methodologies, analytics, and near-real-time data for the prevention of traffic-related collisions.

The resulting research and knowledge transfer will improve traffic safety in Edmonton through the ongoing development of state of art practices, subject-matter expertise, peer-reviewed research papers and improving traffic-safety culture.

Reduce the prevalence of fatal, injury and property damage collisions through the 5 E's of traffic safety

75% *Right-turn engineering changes have reduced collisions by 75% in 18 Edmonton intersections (2009-2014)*

99% *Left-turn engineering changes have reduced collisions by 99% in 52 locations in Edmonton (2009-2014)*

Engineering

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ENGINEERING | EDUCATION | ENFORCEMENT
EVALUATION | ENGAGEMENT

The fundamental key in the Safe Systems Approach is the design and operation of Edmonton roads that prevent collisions from occurring or reduce the severity while minimizing the possible role of human error in precipitating crashes. The ongoing changes to the transportation system through increased mode shift to public transportation and the increasing demand for multi-modal options requires a holistic approach to designing and operating an increasingly complex transportation system. To increase road safety, greater emphasis will be placed on a proactive and strategic process in the design and operation of Edmonton roadways.

Road-safety audits and assessments will be included in new or rehabilitation transportation projects to optimize road-safety features. This process, in addition to ongoing network screening programs will continue to reduce the prevalence of collisions by improving road design and incorporating more safety countermeasures for safer roads. This holistic approach will increase the efficiency and effectiveness of road safety through the integration of strategic and operational initiatives.

Proven road-safety countermeasures like improved right-turn designs and increased use of prohibited and protected left-turn signals are significantly contributing to safer roads and goods and service movement. This strategy will optimize these countermeasures through audits and ongoing network screening in new road design and rehabilitation projects. New engineering initiatives to reduce collisions and improve travel time and goods and services movement along the inner ring road and major corridors will be increased. These include signalized right turns, increased traffic-signal placement and signal conspicuity.

Safe speeds through speed limits and speed management is critical to the Safe Systems Approach. This strategy will continue to increase the use of vehicle-mounted, temporary and permanent digital speed-feedback equipment. Safety will be further enhanced by addressing and reducing community short cutting, and through measures such as community signs, neighbourhood speed-reduction programs and other proven countermeasures. Safe speed limits will be reviewed to increase safety for vulnerable road users and reduce collision speeds associated to vehicle-to-vehicle collisions.

Education

ENGINEERING | **EDUCATION** | ENFORCEMENT
EVALUATION | ENGAGEMENT

Primary prevention of road-safety-related collisions is at the forefront of improving safety for Edmontonians. A key requirement in educating road users is to understand the underlying traffic-safety culture of the community. Through the use of a Traffic Safety Culture Survey, the behaviours and beliefs of the community will be determined for traffic safety. Based on these findings and research, new education programs will be developed; existing programs reviewed and enhanced, and an annual traffic safety communications plan prepared and executed. A biennial traffic safety culture survey will be undertaken to measure improvements and support development of a traffic-safety-culture index.

Where feasible, integrative and collaborative educational road-safety initiatives will be undertaken with road safety stakeholders to increase the exposure and frequency of primary prevention messages. Greater emphasis will be placed on the research, development, and implementation of road safety educational programs and major road-safety campaigns to encourage safer drivers. Road-safety educational initiatives will be monitored or evaluated for effectiveness and continuous improvement.

The annual Edmonton International Urban Traffic Safety Conference is a key educational venue for sharing leading and best practice in global Urban Traffic Safety research and practice. This annual event will continue to build expertise in Urban Traffic Safety with a focus on the Safe Systems Approach and will collaborate with other countries, organizations, and research institutions to improve Urban Traffic Safety expertise, knowledge, and practice. Several joint future-conference initiatives will be undertaken, which will continue to build on making Edmonton a safer community and increase road safety knowledge, expertise, and practice.

95%

When struck at 30 km/h, an adult has a 95% chance of living; at 60 km/h it is only 10%.

85%

85% of Edmontonians support reduced speed limits in school zones

SAFE SPEED

Enforcement

ENGINEERING | EDUCATION | **ENFORCEMENT**
EVALUATION | ENGAGEMENT

Driver behavior continues to be identified as a leading contributor to motor-vehicle collisions that result in fatalities, injuries and property damage collisions. Road safety utilizes law enforcement to change behaviours of road users when engineering and education do not achieve the desired results. Law enforcement efforts will continue to target speeding, driving while impaired, and failure to wear seatbelts. Several new initiatives will be expanded or developed to change behaviours associated to follow-too-closely, distracted driving, and the identification of high-risk drivers for traffic-related offences.

An integrative and collaborative effort will focus on maximizing limited enforcement resources through a law-enforcement continuum. This initiative will continue to build on the efficient and effective use of the speed-management continuum and the use and prioritization of transportation and police resources to minimize the risk of speed-related collisions. New traffic focused law enforcement resources assigned to the Edmonton Police Service and the Office of Traffic Safety will be dedicated to traffic-related initiatives. Targeted manned enforcement would increase for distracted driving, speeding, school-zone enforcement and other prioritized traffic-related enforcement.

This strategy would continue to build on the use of a Data Driven Approach to Crime and Traffic Safety (DDACTS). Through multi-disciplinary analysis, integration of traffic and crime-related hotspots would be identified and targeted for prioritized enforcement. This proven strategy will decrease the prevalence of both crime and traffic-related incidents.

The use of automated photo enforcement as part of the speed-management continuum continues to increase the safety of Edmonton roadways, supports manned enforcement efforts, and bridges education and enforcement of traffic-related legislation. This strategy will continue to build on the use of automated photo enforcement to increase safety in school zones, improve goods and services movement along the inner ring road and major transportation corridors, and augment road safety at high-risk or high-collision locations. With the ongoing development of automated photo-enforcement technology, other enforcement initiatives will be researched and implemented to educate and enforce other problematic driver behaviours that contribute to motor-vehicle collisions.

Evaluation

ENGINEERING | EDUCATION | ENFORCEMENT
EVALUATION | ENGAGEMENT

The demand for greater efficiency and effectiveness in road-safety resource use and management requires the use of an evidence-based principle and rigorous evaluation. This strategy will continue to build on the use of the Edmonton Urban Traffic Safety Research Chair established at the University of Alberta to evaluate ongoing state-of-practice transportation-related initiatives and develop state-of-art methodologies and practices. Further research will be conducted in the use of automated photo enforcement for collision reduction and optimization of automated photo-enforcement resources.

Increasing the efficient and effective use of police resources for road safety will require the creation of a Law Enforcement Research Chair. Similar to the Urban Traffic Safety Research Chair, this position will rigorously evaluate the use of limited resources, develop, implement, and evaluate road safety Law-enforcement initiatives, and identify and target crime and traffic-related enforcement opportunities which will then ensure leading and best practice. Through a systems approach, the integrative and collaborative efforts of these two research chairs will contribute to the efficient and effective use of City resources, create safer roads and safer drivers.

Road-user behavior is estimated to contribute to over 90 per cent of motor-vehicle collisions. A multi-disciplinary academic research team will undertake research into road-user behavior through a collaborative initiative involving a driving simulator. This research is vital to improving road safety in an increasing multi-modal transportation system and the growing interest in connected vehicle technology.

Weather prediction for collision avoidance, speed management and roadway operations will be a key priority. The impact of seasonal temperatures and weather events is a major contributing factor to collisions in Edmonton. The ability to predict weather trends and patterns will be utilized to enhance education, enforcement, engineering, and engagement opportunities with Edmonton road users.

Road-safety audit criteria will be created to ensure road-safety countermeasures are included in transportation-related projects. The criteria will be applied to transportation-system concept plans, neighbourhood-renewal plans, and ongoing network screening of the transportation system. Road-safety audits and assessments will continue to make Edmonton roadways safer and encourage safer driver behavior.

Advanced video-based road-safety analytics is being utilized to proactively identify collision risk. This new technology provides evaluation of collision risk without actual collisions through potential time to collision conflicts. The advanced video-based safety methodologies quantify risk and provide insight into suitable road-safety countermeasures. Deployment of engineering countermeasures can now be evaluated to quantify the risk reduction and identify potential collision reduction.

International, national, provincial, regional and local road-safety government agencies advocate for the use and support of the Safe Systems Approach. The City of Edmonton, through this strategy will work closer with the Transportation Association of Canada to increase development, implementation and evaluation of Safe Systems engineering. The increased use of the Safe Systems Approach in engineering will contribute to our long term goal of ***Vision Zero***.

Engagement/ Communications

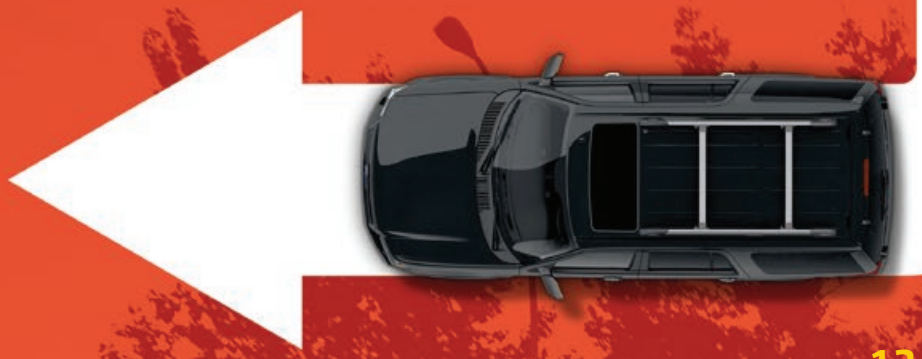
ENGINEERING | EDUCATION | ENFORCEMENT
EVALUATION | **ENGAGEMENT**

To increase two-way communications with the community and road-safety stakeholders a road-safety application (app) will be developed. The app will integrate data from multiple sources to provide access to various road safety and transportation information sources. The initial app development will provide one-way road-safety warnings and conditions and will eventually be developed into a two-way communications device for road safety and road users. Further research and use of social media tools to engage road safety stakeholders and users will be undertaken.

Public involvement initiatives will increasingly include discussions around road safety. The incorporation of road safety into public consultation on transportation-related projects will enhance community engagement. Furthermore, enhanced community engagement will increase understanding and improve Edmonton's traffic-safety culture.

heads up! LOOK OUT FOR EACH OTHER

Road Safety Stakeholder Strategy Organization



A new governance structure will be created to increase engagement of key road-safety stakeholders through the use of a Road Safety Advisory Committee and the establishment of strategic, tactical, and operational road safety committees. Road-safety committees will be enhanced or created to improve stakeholder involvement in speed management, school safety and communications. Problematic road safety concerns like follow-too-closely and distracted driving will be identified and targeted through dedicated task force groups. Through this greater integration and collaboration of road-safety stakeholders Edmontonians will see an increase in community safety.

A School Safety Committee will be established and tasked with systemically increasing safety around schools. The establishment of the 30 km/h school zone speed limits was the first step in reducing the risk to students and road users in the immediate vicinity of schools. The committee will undertake the creation of safer school pick-up and drop-off areas which will require a change in the behavior of road users. The committee will also develop criteria for the future evaluation of safety around schools which includes speed management, road-user behavior, and road safety programs.

A Road Safety Communications committee will be established and tasked with systemically increasing road safety communications. This will include collaborating and integrating road safety communications with all other international, national, provincial, regional, and local organizations and agencies involved in road safety communications initiatives. The establishment of an annualized road-safety communications plan for Edmonton which includes proactive and reactive road-safety campaigns, public-service announcements, social media and traditional road-safety initiatives. Emphasis will be placed on improving understanding of the Safe Systems Approach and moving towards Vision Zero.

Road Safety Strategy Implementation

The enhancement of the Speed Management Committee will be integral to building safer roads and safer driver behavior to increase speed-limit compliance. The Speed Management Committee will continue to build on the efficient and effective use of the Speed Management Continuum by incorporating the principles of the Safe Systems Approach and ensuring the reduction of risk through speed mitigation for all road users.

The systemic integration of road safety in Edmonton depends on external road-safety stakeholders. This strategy will continue to build on the strong relationship with regional road safety stakeholders. Further collaboration and integration with all orders of government will continue to be expanded to improve road safety in a growing and more complex transportation system.

The adoption of ***Vision Zero*** makes the City of Edmonton the first major city in Canada to take on a long term goal of zero fatalities and major injuries from motor-vehicle collisions. This strategy has identified targets that align with the City of Edmonton Strategic Plan and provide for a progressive reduction in motor-vehicle collisions. To implement this strategy, an operational budget will be developed and submitted through the budget process for approval by City Council and the Edmonton Police Commission. Capital transportation projects will be reviewed for potential road-safety collision-reduction opportunities and funded through the project or through new approved capital funds. One-time funding from the Traffic Safety Reserve Fund will be identified for road-safety initiatives and submitted to Council for approval.

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