

Driver Feedback Sign and Automated Enforcement Staff Costs (M. Nickel)

Recommendation

That the December 2, 2020, City Operations report CO00006, be received for information.

Previous Council/Committee Action

At the August 17, 2020, City Council meeting, Councillor M. Nickel made the following inquiry:

Can Administration provide a report summarizing the upfront and on-going costs of Driver Feedback Signs and staff Automated Enforcement for speeding violations.

Executive Summary

This report summarizes costs associated with driver feedback signs and the automated enforcement program, both of which are funded through the Traffic Safety Automated Enforcement Reserve. Through the Safe Mobility Strategy, the City of Edmonton uses a safe systems approach that includes the 5 Es of traffic safety (engineering, education, enforcement, engagement, and evaluation) to create safer and more livable streets for everyone as we work to achieve Vision Zero. Driver feedback signs and automated enforcement each play a unique role in traffic safety. For example, the presence of driver feedback signs result in a 33-45 percent reduction in crashes, and they are proven effective at reducing speeding by up to 12 km/h; these positive safety impacts increase when paired with the presence of mobile automated enforcement. Automated enforcement has contributed to a decline in midblock crashes by 33 percent since 2015, and locations with intersection safety devices have seen through-lane crashes reduce by 10 percent in the same time period.

Driver feedback signs cost \$6,500-\$12,000 (equipment per unit) and approximately \$125,000 per year in operating costs to support the complete inventory. Automated enforcement costs \$25,000-\$80,000 (equipment per unit) and approximately \$6.2 million per year in operating costs.

Report

The City of Edmonton is committed to achieving Vision Zero, the long-term goal of zero traffic-related fatalities and serious injuries by 2032. Research shows that safe speeds reduce crash frequency and severity. Both the automated enforcement program and driver feedback signs have been critical contributors to the progress made since the City of Edmonton adopted Vision Zero in 2015, as fatalities have decreased by 56 percent and serious injuries have declined by 30 percent since that time.

CO00056 Safe Mobility Strategy 2021-2025, presented at the December 1, 2020 Urban Planning Committee meeting, outlines the City of Edmonton's new approach to advancing Vision Zero through safe and livable streets. Both automated enforcement and driver feedback signs are embedded in this plan.

Safe Speeds Program

The speed that people drive is influenced by many factors, including driving culture, speed limits, infrastructure design, and enforcement. The City of Edmonton uses a safe systems approach that includes the 5 Es of traffic safety (engineering, education, enforcement, engagement, and evaluation) to create safer and more livable streets for everyone. This holistic approach recognizes that people should not be seriously injured or killed because of human error and encourages people to comply with speed limits through multiple mechanisms.

The City of Edmonton's Safe Speeds program features a spectrum of speed management tools, including:

- Static and temporary signage (i.e., speed limit and community awareness signage)
- Driver feedback signs
- Automated enforcement (intersection safety devices and mobile automated enforcement vehicles)
- In person enforcement (conducted by the Edmonton Police Service)

The Safe Mobility Strategy 2021-2025 will expand the Safe Speeds Toolkit, which will enable community-led, City-supported opportunities to educate and bring awareness to unsafe speeds in new and creative ways, including the use of portable driver feedback signs, creative signage and visual awareness options, and location specific data and information.

Driver Feedback Signs

Driver feedback signs are a tool used within the City's traffic safety program to proactively support safe speeds by reflecting the speed at which vehicles are travelling in real time. They are placed on roads throughout Edmonton where unsafe driving

behaviour has been demonstrated and high volumes of vulnerable road users are present.

The City of Edmonton has two types of driver feedback signs:

- Stationary: long term signage installed on pre-existing infrastructure (ie: streetlight pole). The City of Edmonton currently has 213 stationary driver feedback signs.
- Portable: short term signage that can be transported to various locations. The City of Edmonton has 24 portable speed trailers in its inventory, which are generally deployed in pairs.

In addition to providing point of decision information that successfully influences driver behaviour, driver feedback signs provide data about speeds and road user behaviour that is critical in understanding traffic safety on Edmonton’s streets. This is useful for supporting evidence-based scheduling of automated enforcement and in-person enforcement by the Edmonton Police Service if unsafe behaviours persist.

Driver Feedback Sign Safety Impacts

The University of Alberta has extensively researched the effectiveness of driver feedback signs in Edmonton. Results indicate that the presence of driver feedback signs result in a 33-45 percent reduction in crashes, and they are proven effective at reducing speeding by up to 12 km/h. Additionally, the positive safety impacts of driver feedback signs increase when paired with the presence of mobile automated enforcement. Research also indicates that there is a fine balance to be struck with the number and placement of signs throughout the City, and that Edmonton has an appropriate number of signs in its inventory. Signage beyond this threshold can become ineffective, as drivers become overly saturated and they lose their effectiveness.

Equipment Cost

Per unit, stationary driver feedback signs cost \$6,500 and portable driver feedback signs cost \$12,000.

Operating Cost

<i>Equipment Type</i>	<i>Cost Description</i>	<i>Cost Frequency</i>	<i>Total Cost</i>
Stationary	Installation	Per Unit Relocation	\$1,000
Stationary	Cellular Data Transfer	Annual	\$24,000
Stationary	Maintenance	Annual	\$23,500
Portable	Maintenance/Trailer Moves	Annual	\$36,000

Staffing Cost

Staffing costs to support the driver feedback sign program are approximately \$42,000 annually, accounting for 0.5 FTE.

In summary, driver feedback signs cost \$6,500-\$12,000 (equipment per unit) and approximately \$125,000 per year in operating costs.

Automated Enforcement

Automated enforcement makes Edmonton's streets safer by influencing poor driver behaviour through enforcing the rules of the road. Automated enforcement sites are created in conjunction with Edmonton Police Service approval and align with the Government of Alberta's Automated Traffic Enforcement Technology guidelines.

The City of Edmonton utilizes two types of automated enforcement equipment:

- Intersection safety devices: stationary devices set up at intersections. The City of Edmonton currently has 105 Intersection Safety Devices which cost \$80,000 per unit.
- Mobile speed enforcement equipment: mobile speed enforcement units are staffed by provincial peace officers, who are trained and certified as qualified operators. The City of Edmonton currently has 36 mobile speed enforcement units comprised of two different equipment systems:
 - Photo Radar: Radar-based equipment used in locations where parking parallel to the monitored roadway is possible. Photo radar costs \$65,000 per unit.
 - DragonCam: Laser-based equipment used in locations where parking parallel to the monitored roadway may not be possible for safety reasons. DragonCam costs \$25,000 per unit.

Automated Enforcement Safety Impacts

The City of Edmonton's evidence-driven approach to automated enforcement through addressing high crash locations, red light infractions, unsafe speeds, and their contributing causes is working. For example, midblock crashes at locations with mobile automated enforcement have declined 33 percent since 2015. Additionally, intersections with intersection safety devices have seen through-lane crashes reduce by 10 percent in the same time period. A publicly-accessible interactive map will be available through the City of Edmonton's Open Data platform by the end of 2020 that outlines the safety impacts of automated enforcement both systemically and by locations.

Operating Cost

<i>Equipment Type</i>	<i>Cost Description</i>	<i>Cost Frequency</i>	<i>Total Cost</i>
Mobile	Installation	Per Unit	\$5000
Mobile	Maintenance	Annual	\$45,000
Mobile	Enforcement Vehicles	Annual	\$250,000
Intersection Safety Device	Installation	Per Unit	\$40,000
Intersection Safety Device	Maintenance	Annual	\$360,000
Intersection Safety Device	Maintenance Vehicles	Annual	\$45,500
Intersection Safety Device	Cellular Data Transfer	Annual	\$60,000

Staffing Cost

City of Edmonton staffing costs to support the automated enforcement program are approximately \$1.1 million annually, accounting for 11 FTE. Approximately 75 FTEs of contracted staff support the program as peace officers to fulfill operational and violation review roles at an annual cost of \$4.3 million.

In summary, automated enforcement costs \$25,000-\$80,000 (equipment per unit) and approximately \$6.2 million per year in operating costs.

Traffic Safety Automated Enforcement Reserve

The Traffic Safety Automated Enforcement Reserve (TSAER) ensures traffic safety initiatives, such as driver feedback signs and automated enforcement, remain cost-neutral to the City and do not draw on tax levy. 15 percent of the total fine revenue goes to Victims Services. The remaining revenue is split between the Government of Alberta (40 percent) and the City of Edmonton (60 percent), with the City's portion becoming TSAER revenue. From TSAER, the Edmonton Police Service receives \$22 million annually, while the remainder funds the reserve for traffic safety initiatives. In 2019, the City of Edmonton's portion of automated enforcement revenue was \$56.8 million.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is a safe city			
Outcome(s)	Measure(s)	Result(s)	Target(s)
Edmonton is a safe city	Road Safety Strategy, Fatalities	14 (2019) 19 (2018) 27 (2017) 22 (2016)	Decline to Zero (2032)

	Road Safety Strategy, Serious Injuries	268 (2019) 319 (2018) 341 (2017) 325 (2016)	Decline to Zero (2032)
	Road Safety Strategy, Collision Injuries/1,000 people	3.1 (2019) 3.4 (2018) 3.9 (2017) 3.5 (2016)	3.0 (2020)
	Road Safety Strategy, Collisions at Intersections/1,000 people	13.8 (2019) 13.9 (2018) 14.6 (2017) 14.4 (2016)	13.5 (2020)

Others Reviewing this Report

- M. Persson, Deputy City Manager and Chief Financial Officer, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement