

Traffic Calming Policy Update – Technical Warrant Criteria – Follow-up

ISSUE

Council Policy C07-029, Traffic Calming Policy, establishes the criteria for the application of traffic calming measures for local and collector streets. This report provides information on the implications of changing the traffic calming warrant speed threshold from the current threshold (a measured speed at least 5 km/h over posted speed) to a threshold of any measured speed higher than the posted speed limit.

BACKGROUND

At its Regular Business Meeting held on May 28, 2018, City Council received an information report in response to a [Motion from Former Councillor A. Iwanchuk](#) about the effectiveness of traffic calming measures used in Neighbourhood Traffic Reviews. Several factors are used in evaluating the effectiveness of the recommendations including follow-up speed studies and other considerations such as improved visibility, reduced crossing distance at pedestrian crossing locations, and/or community support. Generally, from a speed perspective, a device is considered effective if the 85th percentile operating speeds have been reduced to the regulatory speed limit or have dropped by two km/h or more.

At its meeting held on June 7, 2021, the Standing Policy Committee on Transportation received an information report on the [Residential Speed Limit Review – Background Information and Feedback Summary](#). The report outlined the risk of death or serious injury for collisions at different vehicle speeds.

At its meeting held on November 1, 2021, the Standing Policy Committee on Transportation received an information report on the [Cost of Repairing or Replacing Curb Extensions Damaged During Winter 2020-21 Snow Removal](#). Temporary traffic calming measures can get damaged or displaced during the winter months as part of snow clearing and snow removal activities. Damaged and displaced devices are repaired the following spring. Installation and maintenance of current temporary traffic calming measures is funded through Capital Project P.01512 – Neighbourhood Traffic Management.

At its meeting held on June 6, 2022, the Standing Policy Committee on Transportation considered the Traffic Calming Policy – Technical Warrant Criteria report, and resolved, in part:

- “2. That Administration report on a change to the threshold of posted speed limits to use any value over the posted speed limit (85th percentile).”

CURRENT STATUS

Traffic calming presents an opportunity to reduce negative impacts of motor vehicles,

such as speeding, by using a combination of physical measures that alter driver behavior and improve safety for all road users (including non-motorized street users).

Council Policy C07-029, Traffic Calming Policy was implemented in 2019. The 85th percentile operating speed is the speed at which 85 percent of vehicles are travelling at or below, is considered the operating speed of the roadway and is used to determine the speed warrant requirements according to the Traffic Calming Policy.

Currently, for a street to meet the speed warrant criterion, the measured 85th percentile speeds must be 5 km/h or greater above the posted speed limit. For a 50 km/h posted speed, the threshold speed is 55 km/h or greater. For a 30 km/h posted speed limit, the threshold speed is 35 km/h or greater.

If a traffic calming device is warranted, it is typically installed in a temporary fashion and monitored for effectiveness. Temporary measures are currently installed with the use of temporary rubber curbing. The curbs are sometimes damaged throughout the winter due to snow coverage, graders, etc.

The current inventory of temporary traffic calming measures is approximately 90 locations, with total construction costs estimated at \$2.7 million. At 2023 funding levels, it will take until 2031 for permanent structures to be built for the current inventory.

DISCUSSION/ANALYSIS

The following implications of changing the traffic calming warrant speed threshold from the current threshold (a measured speed at least 5 km/h over posted speed) to a threshold of any measured speed higher than the posted speed limit have been identified.

1. Increased Number of Temporary Installations

Since the onset of the Traffic Calming Program (2019), requests for traffic calming reviews have been received for 47 locations as shown in Appendix 1. As summarized in the table below, the number of locations that met the operating speed component threshold according to the existing policy is approximately two locations per year (11% warrant rate). If the policy threshold were to be changed to any value above the posted speed, approximately five locations would meet the threshold each year (26% warrant rate), based on the requests since 2019.

	Number of Locations with Traffic Calming Requests	Number of Locations where Speed Component Threshold of Warrant Criteria is Met	
		Existing Threshold (≥ 5 km above speed limit)	Comparison Threshold ($>$ speed limit)
Since program inception	47	5	12
Annual Estimate	19	2	5

2. Increased Duration of Temporary Installations

The anticipated timeline for installing all temporary traffic calming measures as permanent including the ongoing installations that meet the traffic calming policy is shown below.

Scenario	Anticipated Year of Completion
Current Inventory	2031
Current Inventory plus Additional Locations using Existing Threshold (≥ 5 km above speed limit)	2035
Current Inventory plus Additional Locations using Comparison Threshold ($>$ speed limit)	2045

The timelines estimate shown above, and the cost estimates shown in the next section below, were based on an average permanent installation cost of \$36,000 per location, annual funding of \$300,000, and that traffic calming applications and measured speeds (above thresholds) would continue at a similar rate as the past three years. A change in the speed threshold to greater than the speed limit is anticipated to result in three additional warranted installations per year, on average, for an estimated cost of \$108,000. At current funding levels, this would translate to an additional 10 years to complete the current inventory plus additional locations using the speed threshold of greater than the speed limit.

The Neighbourhood Traffic Review programmed aimed to install traffic calming measures, if proven effective, within three to five years of the installation of the temporary devices. With the current inventory, many installations are extending beyond this timeline and may be in place for ten years until the anticipated completion of the permanent installations in 2031, based on current funding levels.

3. Increased Cost

The expected costs for installing temporary traffic calming measures as permanent including the ongoing installations that meet the traffic calming policy are shown below.

Scenario	Total Cost of Permanent Installations
Current Inventory	\$2.7M
Current Inventory plus Additional Locations using Existing Threshold (≥ 5 km above speed limit)	\$3.7M plus ongoing \$72K per year after 2035*
Current Inventory plus Additional Locations using Comparison Threshold ($>$ speed limit)	\$6.9M plus ongoing \$180K per year after 2045*

*if traffic calming applications and measured speeds (above thresholds) continue at a similar rate as the past three years

4. Safety

It is unclear whether changing the warrant threshold to any value above the posted speed limit will result in improved safety; however, there is a direct correlation between speeds and collision severity.

All other factors being equal, increased speeds increase collision severity. The figure in Appendix 2 illustrates the probability of death or serious injury based on road user and operating speeds. For pedestrians, at operating speeds above 50 km/h, the graph begins to level off so the benefits are less noticeable than those at lower speeds. For example, the probability of death or serious injury increases from approximately 85% at 50 km/h to approximately 90% at 55 km/h.

5. Design of Temporary Traffic Calming Installations

Although the rubber curbs currently used for the temporary installations are generally cost effective, these devices are sometimes damaged and require ongoing maintenance. The City currently plans for an annual cost of \$50,000 for repair and replacement of the rubber curbs for temporary installations.

With a longer duration of temporary installations before the measures are installed permanently, alternative solutions may need to be considered to address the ongoing maintenance costs (e.g., additional funding for ongoing maintenance of rubber curbs, additional funding to accelerate permanent installations, or alternative temporary traffic calming devices).

Calgary, Regina, and others have used a more durable traffic calming device made of concrete, referred to as the Traffic Calming Curb (TCC), illustrated in Appendix 3 and Appendix 4. A comparison of the cost between the rubber curbs and TCCs is shown below.

Cost Type	Rubber Curbs	TCCs
Installation Costs per Location* (curbs, material, labour, and equipment)	\$500	\$4,000
Annual Repair and Replacement Costs	\$50,000	expected to be negligible ¹

*assumes 6 rubber curbs or 3 TCCs at each location

¹Damage to TCCs is uncommon in other jurisdictions

The following table presents a few scenarios that could be considered for the use of TCCs.

	Scenario 1: Continue with Rubber Curbs	Scenario 2: Replace All Rubber Curbs with TCCs	Scenario 3: Maintain Existing Rubber Curbs + Install TCCs for New Installations (i.e., 2023 and beyond)
Current Inventory	\$0	\$360,000	\$0
Annual Maintenance Costs	\$50,000	\$0	\$50,000
Annual Costs for New Installations using Existing Criteria	\$1,000	\$8,000	\$8,000

Traffic Calming Policy Update – Technical Warrant Criteria – Follow-up

Annual Costs for New Installations using Comparison Threshold (>speed limit)	\$2,500	\$20,000	\$20,000
Total Costs After 10 Years using Existing Criteria	\$510,000	\$440,000	\$580,000
Total Costs After 10 Years using Comparison Threshold (>speed limit)	\$525,000	\$560,000	\$700,000

Roadways, Fleet and Support Services was consulted about the maintenance implications of TCCs. In general, the observation was that TCC curbing will reduce the maintenance burden and should reduce the risk of curbing being displaced or damaging snow removal equipment. The TCCs were also seen as an operational improvement by reducing the risks of equipment strikes from the increased visibility of the object. Another benefit of TCCs is that the temporary measure is more likely to be in place at all times versus the rubber curbing which occasionally is displaced through snow management.

Note, there are some types of traffic calming measures (vertical deflections) that are installed directly as permanent (e.g. speed humps, speed cushions, raised crosswalks, etc.) without an interim temporary placement, or follow-up measurement of effectiveness.

FINANCIAL IMPLICATIONS

Temporary traffic calming measures are funded from Capital Project P.01512 – Neighbourhood Traffic Management. The annual funding of \$100,000 is adequate to administer traffic calming requests at the current rate, maintain existing temporary traffic calming measures, and to install temporary traffic calming with rubber curbs at locations that are eligible for traffic calming.

Permanent traffic calming measures are funded from Capital Project P.01504 – Neighbourhood Traffic Review Permanent Installations. Capital Project P.01504 received annual funding of \$100,000 in 2022 and \$300,000 in 2023.

OTHER IMPLICATIONS

Council Policy C07-029 – Traffic Calming Policy does not require any changes if the posted speed threshold is adopted. Should City Council wish to change the posted speed threshold, the Traffic Calming Guide will require an update to Table 3-2 and Table 3-3 to incorporate the proposed posted speed threshold, as shown in Appendix 5.

NEXT STEPS

Should City Council wish to adopt the posted speed threshold the Administration will submit a revised budget and funding plan for consideration in the next multi-year budget to accommodate the expected increase in the number of traffic calming installations and the expected increase in delay to convert those future installations to permanent.

APPENDICES

1. Traffic Calming Program Locations
2. Probability of Death or Serious Injury Figure

Traffic Calming Policy Update – Technical Warrant Criteria – Follow-up

3. Traffic Calming Curbs (TCCs)
4. Traffic Calming Curbs
5. Traffic Calming Guide Revisions

Report Approval

Written by: Justine Marcoux, Transportation Engineer
Nathalie Baudais, Senior Transportation Engineer

Reviewed by: David LeBoutillier, Engineering Manager, Transportation
Jay Magus, Director of Transportation

Approved by: Terry Schmidt, General Manager, Transportation and Construction

Admin Report - Traffic Calming Policy Update – Technical Warrant Criteria – Follow-up.docx