1. **POLICY**

1.1 This policy addresses traffic calming on local roads and collector roads in residential areas.

2. **PURPOSE**

2.1 The purpose of this policy is to provide City Administration and the general public with a simple and transparent framework to assess, design, and implement appropriate traffic calming measures on City streets.

3. **SCOPE**

3.1 This policy covers requests for traffic calming (including requests related to speed, traffic volumes, or cut-through traffic).

3.2 This policy covers on-street traffic calming requirements for new residential developments.

4. **RESPONSIBILITY**

4.1 Council has ultimate authority to approve implementation and funding for traffic calming plans that are developed under this policy, and is responsible for approving amendments to this policy.

4.2 Staff are responsible for carrying out this policy as follows:

4.2.1 The City Engineer is the corporate lead for all Transportation and associated Public Safety programs.

4.2.2 The Executive Director of Operations provides strategic oversight and approval authority for the traffic calming program.

4.2.3 The Manager of Transportation Planning is responsible for:

4.2.3.1 Overseeing implementation of this policy,
4.2.3.2 Bringing forward traffic calming plans before Council for approval,
4.2.3.3 Recommending operating and capital budget expenditures related to traffic calming, and
4.2.3.4 Recommending revisions to this policy to Council.

4.2.4 The Manager of the 311 Call Centre has overall responsibility for receiving public approval poll responses, and for reporting these responses to the Manager of Transportation Planning.

5. GOVERNING RULES AND REGULATIONS

5.1 The policy shall be carried out as described in Attachment 1.

6. RECORDS, FORMS AND ATTACHMENTS

6.1 Records for this policy shall be prepared and retained in accordance with Records Retention By-Law 21-2013, as amended.

6.2 Attachments:

\[6.2.1\] Attachment 1: City of Windsor Traffic Calming Policy – 2015, Opus International Consultants
City of Windsor Traffic Calming Policy - 2015

1 Introduction

1.1 Purpose of this Policy

The purpose of the City of Windsor Traffic Calming Policy is to provide City Administration and the general public with a simple and transparent framework to assess, design, and implement appropriate traffic calming measures on City streets where warranted.

Key objectives of the policy include:

- Defining when an area or street meets the requirements for traffic calming;
- Identifying an appropriate consultation plan and neighbourhood support level; and
- Providing clear guidance for assessing and prioritizing these locations.

1.2 What is Traffic Calming?

Traffic calming is the implementation of mainly physical measures to (i) reduce the negative effects of motor vehicle use, (ii) alter driver behavior, and (iii) improve conditions for non-motorized street users.

1.3 Traffic Calming Objectives

Through the effective implementation of traffic calming, the City of Windsor is aiming to:

- Improve the neighbourhood environment;
- Minimize user conflicts;
- Encourage an appropriate speed for motorized traffic in residential neighbourhoods;
- Discourage cut through or “short-cutting” traffic that has neither an origin nor destination within a residential neighbourhood;
- Reduce the number and severity of collisions; and
- Enhance safety and convenience for all road users.

1.4 Policy Development

This policy is intended to replace the previous version, which was originally adopted back by Council in 2005. While the new document has retained many elements from the 2005 version, it has been further enhanced by incorporating current best practice findings from other agencies across North America.

The policy itself has been structured in two discrete parts:

- Section 2 details the traffic calming policy for existing roads,
• Section 3 describes the traffic calming policy for new neighbourhoods.
2 Traffic Calming Policy – Existing Roadways

This section describes the City of Windsor’s framework for assessing and implementing potential traffic calming projects on existing city streets. The respective roles and responsibilities of both the City and the individual or group making the request are also described.

2.1 Process Overview

The assessment process for a potential traffic calming project is initiated when an individual or group raises a concern specifically related to vehicle speeds and/or volumes. From there, the process will commence through a series of structured stages until such time as a) a traffic calming solution is implemented, or b) traffic calming is deemed inappropriate for implementation. The four stages of a traffic calming project are presented in Figure 2-1 below. Each stage involves a series of associated steps, which are described in further detail in Figure 2-2 and the following pages.

Figure 2-1: Project Process Stages

| Stage 1: Project Initiation | • Confirming that traffic calming is an appropriate solution at the location identified based on objective data analysis and public support. |
| Stage 2: Project Development | • Developing a Traffic Calming Plan that identifies the issues and opportunities, including details of the proposed treatment measures and their locations. |
| Stage 3: Project Approval | • Confirming that the affected parties and Council approve of the proposed Traffic Calming Plan and obtaining construction funding. |
| Stage 4: Project Implementation | • Detailed design and construction • Outcome Assessment |

The process set out in Figure 2-2 identifies two hold points - one prior to commencing development of a Traffic Calming Plan, and another prior to constructing the proposed improvements. These hold points have a two-fold purpose:

- They allow City staff to ensure that the cost of the proposed projects moving through the process aligns with available funding resources; and
- By immediately following prioritization steps, they allow projects to proceed in order of neighbourhood need rather than the order that they are received.

Given that funding resources are often constrained, a prioritization step will be used to decide the recommended sequence for projects progressing past these hold points. While a project may be deemed appropriate for traffic calming, it may take several years before funds are available for implementation. Affected stakeholders will be advised of where their project sits on the prioritized list.
As a project progresses through the various stages it will encounter key decision points where it may be determined that traffic calming is not an appropriate solution for the specific concern that has been raised. Recognizing this, Section 2.2 identifies alternative outcomes for projects that are deemed not eligible for traffic calming.
Figure 2-2: Project Process Stages

1. Project Initiation

- Refer to section 2.2 in policy regarding projects not suitable for traffic calming

2. Project Development

- Only limited number of projects enter this phase each year based on availability of City resources.
- The prioritization process from the end of the initiation phase identifies the order in which projects progress to this stage.
- Prioritization order can be reviewed each year.

- Number of design iterations limited to 2. If Traffic calming Plan is opposed twice then process will STOP.

- May include some data collection
Figure 2-2: Project Process Stages (Cont.)

3. Project Approval

- Based on available funding only limited numbers of projects will be able to be constructed each year.
- This prioritization process identifies the order in which projects will progress to the implementation stage.
- Prioritization order will be reviewed each year.

4. Project Implementation and Performance Monitoring

- Implement Traffic Calming
  - 6-12 months later
- Outcome Study
- Report to Council
- Study
2.1.1 Stage 1: Project Initiation

Resident Concern

A resident, business or group submits a concern to the City’s Public Works-Transportation Planning Division. The concern may be a direct request for traffic calming, or it may be a request for some other matter (e.g. all-way stop, general traffic operations review, etc.) that gets referred to the traffic calming policy if it is determined that a speed or volume concern is at the root of the request.

Note: A traffic calming study is NOT an in-service safety review. If the City is made aware of a possible road safety issue or concern, it will automatically be reviewed outside of this policy.

Traffic calming projects are to be conducted only on residential streets where concerns about traffic speeds and/or volumes which may require a more pedestrian friendly environment exist. This could be accomplished by implementing traffic calming measures that are designed to reduce speeding, “short-cutting” traffic, and/or promoting other forms of non-motorized transportation.

Initial Street Eligibility Check

- After a traffic calming related concern is submitted to the city, the street will be evaluated for eligibility. In order for a street to be eligible for traffic calming it must meet all of the following criteria:
  - Residential local or collector road
  - 50 km/h speed limit or lower
  - Street length longer than 150 m
  - Street has not been evaluated for traffic calming in the last 5 years.

If the street is not eligible, the project assessment process is discontinued. Requests that do not meet the eligibility criteria but suggest other concerns (e.g. road safety issues, truck route non-compliance) will be referred to other city policies, programs or departments as appropriate. Refer to Section 2.2 for projects that are deemed not suitable for traffic calming.

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Speed and Volume Study
Provided the eligibility criteria are met, the city will then undertake a speed and volume study.

Speed and volume data will be collected at location(s) identified by Administration in order to capture the concern. Either of the following criteria must be met for the process to continue to the next step:

- A minimum volume of 1,000 vpd for local roadways and 3,000 vpd for collector roadways. A minimum 85th percentile speed of 10 km/h over the posted speed limit.

If both the speed and volume criteria are not met, the project assessment process is discontinued.

However, the results of the speed survey are routinely shared with the Windsor Police Service to help identify potential locations for targeted speed enforcement (assuming speeding was observed to be an issue). Also, refer to Section 2.2 for projects that are deemed not suitable for traffic calming.

Resident Petition
If the speed and volume thresholds are met, the individual who had raised the concern is required to circulate a petition to solicit local support. Once a resident has confirmed willingness to circulate a petition for signatures, the City will prepare the petition for the resident. The petition will clearly ask the property owners to confirm that they would be prepared to have a traffic calming measure installed in front of their property.

Support will be determined on a per-property basis. Multi-unit dwellings will provide a single response, from the property owner. If the property owner does not respond then the unit occupiers can be petitioned and their collective position will be registered as the response providing at least 60% of the property’s units support traffic calming. Business owners will form part of the petition area along with residential property owners. The petition area is to be defined as follows:

- All residents and businesses on the street for which the concern has been raised
- City-owned or vacant properties are not counted towards the petition requirement (based on Transportation Planning petition process best practices).
- Generally, the petition area should include properties within the block around the location of concern. If the street is longer than 300m, then the extent may be limited to 150m either side of the specific area of concern.
- If the specific area of concern is at an intersection, then the petition should extend to the next cross street in each direction.
All of the following criteria must be met for the petition to be accepted:

- A minimum of 60% of properties in the petition area must respond in favour of Traffic Calming within eight months of the issuance of the petition.
- Property owners must indicate a willingness to have a traffic calming measure installed in front of their property. These may not be the preferred locations for a device but at least show willingness to be involved in creating a solution. For example, the petition form could include the option to select, “By signing this petition, I acknowledge that if a traffic calming device is installed in my neighbourhood, it may be located in front of my property”.

Upon submission of the completed petition, Transportation Planning will confirm that the required support threshold has been reached. If the petition demonstrates sufficient support for traffic calming, the process will continue to the warrant/prioritization review. In the event the petition is not returned by the deadline or is returned with insufficient supportive response the process is ended. In the event the speed data collected for the original petition is still current, a new petitioner may start from the petition stage. Otherwise, refer to Section 2.2 for alternative approaches.
**Warrant/Prioritization**

If the petition meets the required criteria with respect to demonstrated support, a warrant review will be conducted to assist in project prioritization. The area for evaluating the criteria should be the local or collector road, bounded by a higher functioning road, as illustrated in Figure 2-4.

**Figure 2-4: Example of Warrant/Prioritization Area**

Table 2-1 identifies the criteria to be reviewed, details on calculating the points, and the maximum number of points allowed for each criteria.
### Table 2-1: Criteria and Points for the Prioritization Step

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
<th>Maximum Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Speeds</td>
<td>1 point for every km/h (85th percentile) between 5-15km/h over posted speed limit, plus 2 points for every km/h from 15-25km/h over posted speed limit using the average along the street. E.x. 85th percentile speed: 58km/h, Posted limit: 50km/h = 3 points</td>
<td>30</td>
</tr>
<tr>
<td>Vehicle Volumes</td>
<td>1 point for every 150 AADT starting from 0. E.x. 1,500 AADT = 10 points</td>
<td>25</td>
</tr>
<tr>
<td>Presence of Schools</td>
<td>7.5 points for each school along the street and 5 points for school walk routes in the area for schools near but not on the street itself.</td>
<td>15</td>
</tr>
<tr>
<td>Other Pedestrian Generators</td>
<td>5 points for each generator (park, senior's center, community centre, place of worship, retail, or public institution excluding schools) with a direct connection to the street (frontage, trail, sidewalk, or other access point).</td>
<td>10</td>
</tr>
<tr>
<td>Collisions&lt;sup&gt;NOTE&lt;/sup&gt;</td>
<td>1 point for each reducible collision per kilometer in the past five years plus 5 points for each reducible collision per kilometer involving a vulnerable road user within the past five years.</td>
<td>10</td>
</tr>
<tr>
<td>Presence of Sidewalks</td>
<td>5 points if the road doesn't have a continuous sidewalk on at least one side.</td>
<td>5</td>
</tr>
</tbody>
</table>

**NOTE:** The collision data used for the criteria should be limited to those collision types which may have been prevented by traffic calming treatments in general. Excluding the collisions which may not have been prevented ensures that the project does not receive a higher priority for an outlying safety issue beyond the scope of traffic calming. High collision rate areas should be given broader consideration, and reviewed outside of the proposed policy. In addition to collisions with vulnerable road users, engineering judgement must be used to identify crashes which may be reduced based on the proposed traffic calming treatment. Both mid-block and intersection collision can be considered, if they meet the above criteria. In order to ensure that longer streets don’t receive a higher priority versus a shorter street because of the higher likely number of collisions due to length, a collision rate is being recommended as the criteria. The collision rate is expressed as the number of collision per kilometre of street.

The City is to implement a cut-off score for projects at this stage of the process. Based on an initial review of a sample of 16 project locations, a starting threshold of 30 points is recommended. This means that only projects scoring greater than 30 raw points in the evaluation and prioritization process would be eligible to proceed. Exceptions may be made by the City based on other project schedules, available funding sources, and other considerations.

After the warrant review is completed, the project will be accepted if it meets the cut-off score. Whether the project is accepted or not accepted based on the cut-off score, users (e.g. residents, transit, and emergency personnel) should be advised of the outcome of the warrant review and prioritization placement. For projects that do not meet the cut-off score, the process ends here.
### Process Hold Point

This hold point is used to align the number of projects progressing with the resources the City has available in priority sequence. Only a limited number of Traffic Calming Plans can be developed each year. For projects that meet the cut-off score, a prioritization process takes place. This prioritization process will decide which projects progress past this point. Additionally, reprioritization will occur once each year to assess all project currently on hold to provide an updated prioritization. Each year the highest ranking projects will progress to the Project Development stage (Stage 2). Although a project may be appropriate for traffic calming it may take several years before it proceeds beyond this point. Affected community members will be advised of where their project sits on the prioritized list.

#### 2.1.2 Stage 2: Project Development

### Define the Study Area

City staff will define the study area. Staff are to take into account site specific features. Additional guidelines to consider when defining a study area include:

- For traffic calming on a local road, the study area is likely to include all local roads in the area up to the boundary with collector or major roads.
- On a collector road the study area is likely to consider the area adjacent to the collector bounded by major roads.
- If cut-through traffic is confirmed as an issue, then the study area should consider potential alternative routes cut-through traffic would take if measures were implemented on one street in the neighbourhood. The presence of cut-through traffic may be confirmed by estimating the number of trips made by residential and other types of units along the road. If the measured traffic volume is greater than the estimated volume then cut-through traffic may be assumed.
Figure 2-5: Examples of Study and Treatment/Polling Areas

A decision tree to assist in defining a study area is provided in Appendix A. The study area is to be considered through the design session to confirm appropriate location(s) for treatment measures to be installed. Following the design session the treatment/polling area can be confirmed. The treatment/polling area is defined as all streets on which measures will be placed and extend from the last measure to the next nearest intersection.

**Notification to the Study Area**

Once the study area has been established, notifications will be sent out to the residents and business owners within the study area indicating the City’s intent to proceed with developing a Traffic Calming Plan, and inviting them to a public meeting and interactive design session.
Public Meeting & Interactive Design
A minimum of one public meeting will take place. Notices will be placed in the local newspaper and City web site (notice of study commencement and notice of public information session).

The public meeting will be held as an interactive design session. Each affected street will be clearly identified displaying potential traffic calming options. The traffic calming measures utilised by the city will follow guidelines set out in Appendix B. The community is then given the opportunity to provide feedback on the design, along with any suggested changes or improvements. Once this feedback is received, there may be another meeting held, where the changes are presented. For simple schemes it may be possible to reach agreement on the preferred traffic calming design through one public meeting.

During this stage of the process it may be necessary to collect additional speed and volume data within the study area. This may be due to a change in study area boundaries based on feedback received from the public and community members or other concerns expressed during the meeting and feedback period. Residents may be asked to participate in this data collection process. Examples of involvement could include, viewing portions of volume and speed data collection, or to participate in number plate surveys if further details are needed on cut-through traffic. The goal of this participation is to promote better understanding of community members regarding the source and validity the data used to evaluate the location.

Consultation with Other Users
Other affected City Departments will also be invited to the session to answer questions and to ensure a good administrative presence. These departments include but are not limited to: Transit Windsor, Public Works (Refuse Collection), Public Works (Winter Control), Emergency Services, and Planning. Other affected agencies, such as WAAC, and the Windsor Bicycling Committee will also be invited to provide comments and feedback.
Development of Traffic Calming Plan

The Traffic Calming Plan is to be a concise one page (double sided) handout. The first side (description side) will be the text describing all the aspects of the project, and the reverse (plan side) will be a copy of the proposed design layout with supporting photos of example treatments. The description side of the briefing document should include the following information:

- Description of the problem including results of data collection to quantify it;
- Project ranking compared to other traffic calming projects in the City;
- Description of proposed measure and cost;
- Section for feedback from community members including:
  - In favor or not of the project;
  - A comment section;
- Link to City website to check project progress.

The plan side of the briefing document should include the following information:

- Aerial photo plan showing the location of all the treatments being proposed;
- A sketch of each of the treatments;
- Signage; and
- Photos showing example treatments.

2.1.1 Stage 3: Project Approval

Share Plan and Public Approval PollThe City shall notify stakeholders in the treatment/polling area of the details of the traffic calming plan and its intention to undertake a poll to identify community acceptance of the proposal. The City will undertake the poll by using the 311 system or other means as appropriate.

Support will be determined on a per-property basis. Multi-unit dwellings will provide a single response, from the owner or property manager. If the property owner does not respond then the unit occupiers can be petitioned and their collective position will be registered as the response providing at least 60% of the polled tenants support traffic calming. Business owners will form part of the treatment/polling area along with residential property owners.
A minimum of 50% of properties in the poll area must respond and from this at least 60% must indicate their support for traffic calming.

Properties immediately adjacent (within the extent of their property boundary) to proposed mid-block traffic calming measures must provide their approval to the traffic calming plan. At an intersection this requirement will apply to all properties on the corners of the intersection.

If both of the above two criteria are met then the traffic calming plan will have deemed to have been approved by the community in the treatment/polling area.

If any of the criteria are not met then the traffic calming plan can be revisited (by returning to the Public Meeting & Interactive Design stage). A revised plan can then go through the public approval poll again. **If a traffic calming plan fails to obtain adequate support on the second occasion then it will not progress further.**

**Implementation Prioritization**

Once a traffic calming plan has been approved, it will be prioritized against other plans using the same criteria described earlier in Section 2.1.1, with the exception that the area of focus will be the treatment/polling area. The City will also have information on public approval rating and implementation cost at this stage of the process.

**Process Hold Point**

The projects will be put forward in priority sequence for approval to proceed with implementation. The number of projects put forward in any given year will depend on associated implementation costs and available budget. The length of time a project has been waiting for implementation funding will not influence whether it is constructed in the coming season. Practical considerations may affect the selection of projects, some of which include the availability of funds restricted to specific activities or areas, the potential to coordinate with other projects, and the availability of alternate funding sources. Assuming that funding levels are insufficient to implement all traffic calming plans in the upcoming year, the prioritization process will determine which projects progress past this hold point. Although a project may be appropriate for traffic calming it may take several years before it proceeds to implementation. Affected community members will be advised of where their project sits on the prioritized list.
**Council Approval**

Administration will prepare a report containing the traffic calming plan and the results of the prioritization process (including details of costs and public support) to be presented to the Environment, Transportation and Public Safety Standing Committee for consideration and recommendation to Council on whether to implement and fund the Traffic Calming Plan. Additional methods for presenting the results of the process to the Council include an annual presentation as a part of the capital budgeting process. Other methods may be developed as necessary. Council will decide on whether to approve funding for the implementation of the traffic calming measures.

1.1.4 **Stage 4: Project Implementation**

**Implement Traffic Calming**

The City will undertake the installation of permanent measures in instances where they have been used in the past, and have an established track record for Windsor. Alternatively, temporary measures can be utilized prior to permanent construction for those installations that do not have an established track record in the City.

**Outcome Study**

Outcome reviews will be undertaken 6-12 months following installation of temporary or permanent traffic calming measures to measure effectiveness. The scope of outcome reviews will be dependent on the objectives of the project but will generally include the collection of speed, volume, and collision data for comparison against pre-installation data.

For the types of roads for which traffic calming will be considered it is highly unlikely that any significant collision trends will be identified over an analysis period of 6-12 months. Additional time may be required before collision data may be used to help evaluate the results of the traffic calming treatment.
The outcome review will in most cases not include a diverted traffic analysis. These may be considered if comparable data was collected prior to installation and this was a key objective for the installation.

Success with traffic calming will be a reduction in vehicle speed, volume, and/or collisions. Depending on the outcome achieved, the City may choose to run the site through the warrant/prioritization process to see if it still has a need and how it compares to other potential sites.

If the city decides that the traffic calming measures have not been effective then they may choose to undertake further public meetings to discuss amendments to the project. Prior to the convening of public meetings, a report will be delivered to the Council reviewing the performance of said traffic calming measures.

2.2 Projects Deemed Not Suitable for Traffic Calming

Road safety concerns that are identified through the traffic calming review process will be investigated and responded to outside of this policy. A resident who has a concern that does not progress through the process and is therefore not deemed eligible for Traffic Calming may consider the following options:

- Where sidewalks are not present the installation of sidewalks could be sought through the Local Improvement Policy. In the event the absence of a sidewalk is the deciding factor in including the location on the project list, the project may be removed from consideration once the sidewalk has been constructed.

- Any occurrences of dangerous or illegal driving should be reported to the Police or the Windsor Police Service Road Watch program.

- Road safety concerns not suitable for traffic calming should be reported through the City of Windsor 311 system. If these concerns are received as traffic calming requests, they will be identified during the project initiation stage and addressed outside the Traffic Calming Policy.

If a site is deemed ineligible for traffic calming, at any stage through the process, then it will not be eligible for further consideration for a period of 5 years from when the initial concern was raised.
3 Traffic Calming Policy – New Neighbourhoods

Traffic Calming should be considered in all new neighbourhoods and should be placed in accordance with the actual road classification in the official plan for the area. The designation of those streets will dictate the type of traffic calming devices that can be implemented.

It is preferred that developers be proactive regarding the inclusion of design standards which will not require the use of traffic calming devices. However, approved traffic calming devices may be employed throughout the plan of subdivisions. Specifically, this may include the following measures:

- Roundabouts or traffic circles should be considered for intersections between two local roads.
- Curb extensions and special sidewalk treatments should be considered for intersections between local and collector roads, except where it is determined that they will have an adverse effect on transit or emergency services.
- Lane narrowing combined with pedestrian crossings at crucial locations where pedestrians may cross to utilize parks, or other pedestrian generators are required on both local and collector roads.
- Median islands should be used extensively throughout all neighbourhood designs especially on collector roads and at key locations on local roads.
- Median islands should also be used at key locations to prevent nearby traffic from utilizing local roads as short cuts. This can be achieved by placing medians at intersections with local roads where short-cutting may be a future problem.

The design and proposed location of these traffic calming measures are required to be included in the application for a plan of subdivision. Each device location shall include the following elements:

- Traffic calming devices should meet the design criteria included in the Canadian Guide to Neighbourhood Traffic Calming – Transportation Association of Canada.
- Traffic calming devices should include all required signage and markings according to the Canadian Guide to Neighbourhood Traffic Calming – Transportation Association of Canada.
- Traffic calming devices must permit and allow for the potential enhancement of safe movements by all non-motorized modes of travel.

Proposed design drawings will be circulated to other departments for comments.
Appendix A – Decision Tree for Defining the Study Area

Table A-1 provides a starting point regarding the identification of appropriate study areas depending on the source and location of the issue as well as the issue itself. The table is intended to guide City staff through the process of defining the study area for the beginning of the project development phase, using available information. Knowing the issue, the location of the issue and the source of the issue, the decision tree leads to suggested definitions of the study area. Some element of professional judgment will be required to assess some of the elements presented in the definitions. As always, sound engineering judgement is still required when finalizing the study area definition.

### Table A-1 Decision Tree for Defining the Study Area

<table>
<thead>
<tr>
<th>Source of Issue</th>
<th>Location of Issue</th>
<th>Issue</th>
<th>Study Area Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Traffic</td>
<td>Block</td>
<td>Speed</td>
<td>Identified block (including turns on/off the block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume</td>
<td>Access management study required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both</td>
<td>Identified block (including turns on/off the block) and alternate routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed</td>
<td>One block radius from intersection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume</td>
<td>Access management study required</td>
</tr>
<tr>
<td></td>
<td>Intersection</td>
<td></td>
<td>One block radius from intersection</td>
</tr>
<tr>
<td></td>
<td>Multiple Blocks</td>
<td>Speed</td>
<td>Identified blocks (including turns on/off the blocks)</td>
</tr>
<tr>
<td></td>
<td>(Linear)</td>
<td>Volume</td>
<td>Neighborhood area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both</td>
<td>Identified blocks (including turns on/off the blocks) and alternate routes</td>
</tr>
<tr>
<td>Neighbourhood Wide</td>
<td>Speed</td>
<td></td>
<td>Neighborhood area</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td></td>
<td>Neighborhood area</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
<td>Neighborhood area and alternate routes</td>
</tr>
<tr>
<td>Shortcutting (or both local and shortcutting)</td>
<td>Block</td>
<td>Speed</td>
<td>Identified block (including turns on/off the block) and alternate routes</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td></td>
<td>One block radius extending from identified intersection</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speed</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Volume</td>
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<td>Both</td>
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<td>Speed</td>
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<td>Volume</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Both</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Blocks (Linear)</td>
<td>Speed</td>
<td></td>
<td>Identified blocks (including turns on/off the blocks) and alternate routes</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
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<td>Both</td>
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<td>Speed</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighbourhood Wide</td>
<td>Speed</td>
<td></td>
<td>Neighborhood area and alternate routes</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Speed</td>
<td></td>
<td>Professional Judgement</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B – Proposed Traffic Calming Measures

While each individual location and treatment must be evaluated based on the specific conditions associated with it, there are several general recommendations that can be derived from the review of traffic calming documents. These overarching recommendations regarding the use of traffic calming measures are as follows:

a. Only use non-physical treatments, i.e. signs, pavement markings, and enforcement as supplemental treatments to more substantial measures.

b. Do not limit potential measures on the basis of a warrant score. Each location/scenario should be evaluated with the full range of measures.

c. Develop a traffic calming measure “tool box” with a list of city approved measures including their applicability in different situations and cost estimates for their installation.

d. Any traffic calming construction work shall meet the requirements on the City of Windsor Development Manual and any relevant City of Windsor Engineering Standard Drawings.

Table B-1 Windsor Traffic Calming Measures

<table>
<thead>
<tr>
<th>Category</th>
<th>Measure</th>
<th>Local</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Deflection</td>
<td>Speed Hump</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Textured Crosswalk</td>
<td>✓</td>
<td>Possibly in CBD</td>
</tr>
<tr>
<td></td>
<td>Raised Crosswalk</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Raised Intersection</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Speed Table Note 1</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Horizontal Deflection</td>
<td>Curb Radius Reduction</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>On-Street Parking</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Lane Narrowing (Physical)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Raised Median Island</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Curb Extension</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Traffic Circle or Roundabout</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Intersection Channelization</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Right-in/Right-out Island</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Volume Control</td>
<td>Sidewalk Extension</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Directional (Half) Closure</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Full Closure</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Diagonal Diverter</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Raised Median Through Intersection</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
### Traffic Calming Policy

<table>
<thead>
<tr>
<th>Non-Physical</th>
<th>Radar Speed Feedback Signs Note 1</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn Prohibition (signed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through Traffic Prohibition (signed)</td>
<td>(Only Used In Conjunction With Physical Measures)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Traffic Calmed Neighborhood (signed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paint markings</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1 – New measures not included in previous policy.
Appendix C – Windsor Traffic Calming Tool Box

Table C-1 Cost Range

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$0 - $5,000</td>
</tr>
<tr>
<td>$$</td>
<td>$5,000 - $20,000</td>
</tr>
<tr>
<td>$$$</td>
<td>$20,000 - $50,000</td>
</tr>
<tr>
<td>$$$$</td>
<td>$50,000 - $100,000</td>
</tr>
<tr>
<td>$$$$$</td>
<td>&gt; $100,000</td>
</tr>
</tbody>
</table>

Table C-2 Vertical Deflection Speed Control Traffic Calming Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Example</th>
<th>Description</th>
<th>Applicable Areas</th>
<th>Estimated Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Hump</td>
<td><img src="link" alt="Speed Hump Image" /></td>
<td>Speed humps provide a vertical, tactile alert to drivers, encouraging lower speeds.</td>
<td>Residential Local</td>
<td>$</td>
</tr>
<tr>
<td>Textured Crosswalk</td>
<td><img src="link" alt="Textured Crosswalk Image" /></td>
<td>Use of brick pavers or other materials to help distinguish the pedestrian crosswalk from the roadway. This feature may also help to remind drivers to remain alert to the presence of pedestrians and other non-motorized traffic.</td>
<td>Residential Local</td>
<td>$</td>
</tr>
<tr>
<td>Raised Crosswalk</td>
<td><img src="link" alt="Raised Crosswalk Image" /></td>
<td>Raised crosswalks serve as a visual and tactile alert to drivers to the presence of pedestrians and other non-motorized traffic.</td>
<td>Residential Local</td>
<td>$-$$$$$</td>
</tr>
</tbody>
</table>
## Traffic Calming Policy

### Raised Intersection
Raised intersections provide visual and tactile encouragement for drivers to lower their speed, particularly on their approach to the intersection where non-motorized traffic may be especially present.

**Residential Local**

**$$$$ - $$$$$

[www.fhwa.dot.gov](http://www.fhwa.dot.gov)

### Speed Table
Speed tables serve a similar function as speed humps but allow for slightly higher speeds. Generally preferred by emergency services over speed humps.

**Residential Local & Collector**

**$$

[www.surrey.ca](http://www.surrey.ca)

## Table C-3 Horizontal Deflection Speed Control Traffic Calming Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Example</th>
<th>Description</th>
<th>Applicable Areas</th>
<th>Estimated Cost Range</th>
</tr>
</thead>
</table>
| Curb Radius Reduction | ![Curb Radius Reduction](https://example.com/curb-radius-reduction.png) | Reducions in curb radii force drivers to take turns at lower speeds, encouraging lower speeds on the approaches to the intersection. | Residential Local & Collector | $\$
| On-Street Parking | ![On-Street Parking](https://example.com/on-street-parking.png) | On-street parking may help to lower speeds along streets by narrowing the travel ways and encouraging drivers to be more alert for vehicles or other drivers entering or exiting vehicles. | Residential Local & Collector | $ - $\$

[www.mto.gov.on.ca](http://www.mto.gov.on.ca)

[www.vancouver.ca](http://www.vancouver.ca)

---

Note 1

www.surrey.ca

Speed tables serve a similar function as speed humps but allow for slightly higher speeds. Generally preferred by emergency services over speed humps.

**Residential Local & Collector**

**$$

[www.surrey.ca](http://www.surrey.ca)

---

Raised intersections provide visual and tactile encouragement for drivers to lower their speed, particularly on their approach to the intersection where non-motorized traffic may be especially present.

**Residential Local**

**$$$$ - $$$$$

[www.fhwa.dot.gov](http://www.fhwa.dot.gov)
<table>
<thead>
<tr>
<th>Traffic Calming Policy</th>
<th>Attachment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Narrowing (Physical)</td>
<td>$ - $$</td>
</tr>
<tr>
<td>Narrow lanes tend to encourage lower speeds as drivers</td>
<td><a href="http://www.fhwa.dot.gov">www.fhwa.dot.gov</a></td>
</tr>
</tbody>
</table>
Table C-4 Volume Control Traffic Calming Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Example</th>
<th>Description</th>
<th>Applicable Areas</th>
<th>Estimated Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk Extension</td>
<td>[Image]</td>
<td>Sidewalk extensions serve a similar purpose as curb extensions in that they reduce the distance pedestrians and other non-motorized traffic must cross.</td>
<td>Residential Local</td>
<td>$$</td>
</tr>
<tr>
<td>Directional (Half) Closure</td>
<td>[Image]</td>
<td>Partially restricts the flow of vehicles along the street. This measure is strictly for volume control and has little impact on driver speeds.</td>
<td>Residential Local</td>
<td>$ - $$$</td>
</tr>
<tr>
<td>Full Closure</td>
<td>[Image]</td>
<td>A full closure or cul-de-sac completely blocks off one end of a road. This measure eliminates through traffic and serves as a volume control measure.</td>
<td>Residential Local</td>
<td>$$$$</td>
</tr>
</tbody>
</table>

Table sources:
- Contextsensitivesolutions.org
- www.fhwa.dot.gov
- Safety.transportation.org
- City of Stockton, CA, USA
Diagonal Diverter

Diagonal diverters allow some traffic to flow through the intersection in restricted ways. This discourages but may not eliminate through traffic.

Raised Median Through Intersection

Raised medians through intersection prohibit cross traffic on one direction. This helps to reduce or eliminate through traffic in one direction. As shown in the example picture, small gaps may be included to allow bicycle and other non-motorized traffic to pass through.

Table C-5 Non-Physical Traffic Calming Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Example</th>
<th>Description</th>
<th>Applicable Areas</th>
<th>Estimated Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radar Speed Feedback Signs</td>
<td><img src="www.townofsananselmo.org" alt="Image" /></td>
<td>Radar speed feedback installations may be permanent or temporary and provides immediate feedback alerting the driver to their speed. Ideally this will encourage drivers to obey the speed limit. Additional enforcement or physical measures are encouraged to reinforce the treatment.</td>
<td>Residential Local &amp; Collector</td>
<td>$$$</td>
</tr>
<tr>
<td>Traffic Calming Policy</td>
<td>Maximum Speed</td>
<td><a href="http://www.brampton.ca">www.brampton.ca</a></td>
<td>Appropriate speed limits should be set to encourage safer travel speeds. Additional enforcement and/or physical changes are recommended to reinforce the maximum speed limit. Only when paired with applicable physical measures</td>
<td>$</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Turn Prohibition (signed)</td>
<td><a href="http://www.fhwa.dot.gov">www.fhwa.dot.gov</a></td>
<td>Turn prohibitions should serve a similar purpose as directional closures or diagonal diverters. Only when paired with applicable physical measures</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>Through Traffic Prohibition (signed)</td>
<td><a href="http://www.fhwa.dot.gov">www.fhwa.dot.gov</a></td>
<td>Through traffic prohibitions should serve a similar purpose as full closures, diagonal diverters, or raised medians through intersections. Only when paired with applicable physical measures</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>Traffic Calmed Neighborhood (signed)</td>
<td><a href="http://www.surrey.ca">www.surrey.ca</a></td>
<td>Traffic Calmed neighborhood signs help to alert drivers of the presence of traffic calming measures. Ideally this will provide additional encouragement for drivers to lower speeds and increase alertness to the presence of non-motorized traffic. Only when paired with applicable physical measures</td>
<td>$</td>
<td></td>
</tr>
</tbody>
</table>
### Paint Markings

**www.bikede.org**

Paint markings may be used to help reinforce a number of the previously mentioned traffic calming measures. They may be used along to help narrow streets, channelize intersections, or serve other calming purposes. However, they are most effective when paired with other measures.

Only when paired with applicable physical measures  

$- $$