TORONTO

Transportation Services Division

Traffic Calming Policy 2010

City of Toronto

Summary of Traffic Calming Policy

As adopted by Council in 2002
(and amended in 2010)

Transportation Services
Transportation Infrastructure Management

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1. PREAMBLE

Following the amalgamation of the former Municipalities of Toronto, North York, Etobicoke, Scarborough, York and East York to form the new City of Toronto, it became necessary to develop a new harmonized Traffic Calming Policy for new jurisdiction. Work on the policy drew from the practices of some of the former municipalities as well as those of other major cities in North America and the rest of the world. Consideration was also given to the requirements of various legislative acts in place and that governed traffic calming projects at the time, like the Environmental Assessment Act, 1990 and the City of Toronto Act, 2000. This work culminated in various reports that were adopted by City Council in its meeting of April 16 to 18, 2002 (Clause 1 of Report 4 of the Works Committee). Since then, the City of Toronto Act, 2006 amended the Environmental Assessment Act, 1990 and all associated changes are reflected in this document.

The policy aims at achieving equitable distribution of resources among the various areas in the city and provides that:

> ***The Capital Budget for traffic calming measures be fairly distributed among the Community Council areas;***

The main components of the policy are:

1. A warrant criterion based on initial resident support, prevailing traffic conditions and safety and technical considerations. This criteria is essential in identifying the areas where traffic calming should be installed;
2. An analysis and approval process that incorporates the key requirements of resident participation and agency consultation; and
3. A ranking process that is used to prioritize the most deserving streets for installation with the limited resources available in a given fiscal year

The policy is sensitive to the concerns of fire and emergency services and transit and incorporates provisions to address them. It also recognizes that many traffic calming requests had been made and were already approved at the time of its development and provides that:

> ***All approved traffic calming projects be grandparented under existing policies; for project priority setting, the point system recommended by staff be utilized in consultation with the respective Councillors;***

This document is a summary of the Traffic Calming Policy as contained in various Council reports and documents. It brings together the relevant aspects from those reports to provide a quick and portable reference to the policy. Complete copies of Council reports may be obtained by contacting the City or looking up records of Council proceedings on the internet.

2. BACKGROUND

2.1 Definition of Traffic Calming

The Institute of Transportation Engineers (ITE) has defined traffic calming as "the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users."

Traffic calming is intended to improve the quality of life for residents on traffic calmed streets, achieve slower speeds for motor vehicles, and increase the safety and the perception of safety for non-motorized users of the street. Traffic calming is also intended to promote increased pedestrian, cycle and transit usage in an effort to help reduce the negative effects of motor vehicles on the environment.

The Transportation Association of Canada (TAC) and the Canadian Institute of Transportation Engineers (CITE) published, in 1998, the Canadian Guide to Neighbourhood Traffic Calming (the Guide) in part to achieve an appropriate level of national standardization of traffic calming measures. The Guide provides guidance (as opposed to setting standards) on the design and installation of traffic calming measures.

The Guide contains four chapters of which the last two are most relevant to this policy. Chapters 3 and 4 of the Guide address the applicability, effectiveness and design guidelines for traffic calming measures. The Guide describes twenty-five different traffic calming measures and classifies them into the following four different groups:

- vertical deflections;
- horizontal deflections;
- obstructions; and
- signs.

Some of the measures addressed in the Guide (for example signs) are not considered physical traffic calming measures and are used primarily for other reasons. The Guide provides design and application guidelines for a range of measures. It also provides a description of the most common traffic calming measures with a brief outline of the key benefits and disbenefits of each of them. More detailed information regarding these traffic calming measures, their applicability, and effectiveness may be found in the Guide.

2.2 Legislative Framework

The policy was developed taking into consideration provisions of legislative acts that affected and influenced the administration of traffic calming projects. In particular, the City of Toronto Act, 2000 and the Environmental Assessment Act, 1990 (EAA) and more recently the City of Toronto Act, 2006 amending the EAA, were considered. The relevant provisions of these acts are briefly reviewed below.

City of Toronto Act (Traffic Calming), 2000

In the former City of Toronto, special Provincial legislation (enacted in 1994) authorized the City to post 30 kilometre per hour (km/h) speed limits on streets with traffic calming. At expiration of the Act in 1999 through a sunset clause, staff applied for and obtained legislation, at the request of City Council, allowing the posting of 30 km/h speed limits on any City street that has physical traffic calming. The legislation was entitled, "City of Toronto Act (Traffic Calming), 2000" and it received Royal Assent on December 21, 2000. These provisions have now been included in the Road Safety Act, 2003, which was introduced in the Ontario Legislature in April 2003 allows posting of 30km/h on all streets with traffic calming devices in all Ontario municipalities.

Environmental Assessment Act, 1990

The regulation governing environmental assessments was amended by the Minister of the Environment in October 2000 and came into effect on April 4, 2001. This EAA included in its project schedules both the installation and removal of traffic calming measures. These were identified as Schedule B activities when the cost is less than $1.5 million, and Schedule C activities if over $1.5 million. Since the cost of the vast majority of traffic calming projects in the City of Toronto are less than $1.5 million, only Schedule B requirements were relevant to this policy.

Schedule B activities required two mandatory points of contact with the public and review agencies which were expected to be conducted at specific stages in the process. The first mandatory point of contact required the notification of directly affected property owners and review agencies and notification in two separate issues of a local newspaper having general circulation in the project area. Subsequent to this first contact, staff were to have compiled a mailing list of all individuals who had expressed an interest in the project. The second point of contact for the Class EA process wss the issuance of a Notice of Completion. This notice was mailed to all individuals on the mailing list indicating the nature of the project to be undertaken and notified the public that they had a 30-day period to request a Part II Order.

Part II Order requests had to be lodged, under the provisions of a Class EA, to the Minister of Environment by a resident or an individual who had expressed interest in the project requesting that a full environmental assessment be conducted before approval of the project. Any member of the public submitting a Part II Order request had a responsibility to bring their concerns to the city early in the process to permit changes to the project or process early on, when the city had more flexibility to do so. Requests which were clearly made with the intent of delaying a project, or which did not contain a reasonable amount of information, may have been denied by the Minister.

The harmonized policy described in this summary was developed to fully comply with the Class EA requirements of the time.

City of Toronto Act, 2006 (respecting Traffic Calming)

With the enactment of the City of Toronto Act, 2006, the Environmental Assessment Act, 1990 was amended with respect to traffic calming measures. Specifically, a new Section 3.3 of the EAA entitled, "Exclusion of traffic calming measures" was amended to provide that traffic calming measures were not considered 'undertakings' and that they "cannot be included in the definition of a class" for the purposes of the Act. As a result, on January 1, 2007, Council was relieved of the statutory requirement for an extensive public consultation and review prior to the installation of traffic calming.

In practical terms, these changes did not diminish consultation and participation in traffic calming proposals by affected residents. Parties continue to be consulted through local mailings, are requested to respond to the formal pollings, and are granted opportunities to address the matter at Community Councils. This process is described in detail in Section 5 of this summary.

2.3 Areas of Application of Traffic Calming

The objective of traffic calming is to achieve uniform driving patterns at reduced travel speeds. That objective is consistent with resident expectations on local roads where lower speeds are desired to enhance safety and liveability in communities and neighbourhoods. But that objective is not tenable on roads where higher speeds are desired. Consequently, traffic calming should not be used on roads intended for higher speeds or to clear off large volumes of traffic. This is embodied in the policy which states that:

> ***Physical traffic calming be considered only on the local and collector classification of roads….***

Traffic calming devices will not be considered for higher classification roads like minor and major arterials and expressways.

3. WARRANT AND CRITERIA FOR TRAFFIC CALMING

3.1 Warrant Criteria

Because of the costs and implications associated with traffic calming proposals, requests for traffic calming should be assessed objectively. This will ensure that traffic calming is implemented in appropriate circumstances, and that streets in greater need of traffic calming receive priority for limited funding. Consequently, Council adopted the policy that:

> ***Physical traffic calming be considered only on the local and collector classification of roads and be subject to and conform with the technical criteria described in Table 1 as amended.***

Building on the traffic calming experience gained in the former City of Toronto prior to amalgamation, a number of key criteria were developed to evaluate traffic calming requests. Each traffic calming proposal will be assessed against a number of *warrant criteria*, as outlined

in Table 1. Failure to satisfy these warrants would result in traffic calming not being recommended. Such streets may still be eligible for other mitigating measures and/or police enforcement initiatives, which are discussed later in this section.

There are three traffic calming warrants that need to be satisfied for a request for traffic calming to be recommended for approval. Warrant 1, *Petition*, ensures there is a basic level of community support for traffic calming requests. Warrant 2, *Safety Requirements*, and Warrant 3, *Technical Requirements*, have multiple components, which must be individually fulfilled in order to satisfy each respective warrant.

Warrant 1 of the Traffic Calming Warrant Criteria, *Petition*, gauges the opinion of the area residents and requires their initial support of traffic calming proposal. In particular, the policy states that:

> ***Consideration of physical traffic calming on a street be initiated by the local Councillor following a public meeting, or upon receipt of a petition signed by at least 25 percent of affected households (or 10 percent in the case of multiple family rental dwellings), or by a survey conducted by the Ward Councillor;***

This would ensure that limited staff resources are expended on proposals supported by the community. It also allows commonly held views of neighbourhood traffic issues to quickly gather support while eliminating requests that are not supported by the community. Warrants 2 and 3 should not be considered until Warrant 1 is satisfied. Notwithstanding this criterion, all reported safety related issues are investigated and reported on by staff.

Upon satisfying Warrant 1, requests for traffic calming are reviewed for potential impacts to neighbouring streets. Traffic Operations staff will evaluate the proposal to determine if there may be significant traffic impacts on adjacent streets. If there is this potential, the review of the traffic calming proposal will be modified to include the proposed street as well as adjacent impacted streets. While this procedure is not a warrant, it is an important step in ensuring that traffic problems are not shifted to neighbouring streets. If the study is expanded to include adjacent streets, a petition will not be required from those additionally identified streets.

Warrant 2, *Safety Requirements*, has three components that aim to ensure key safety requirements are satisfied prior to proceeding with traffic calming. The first component, Warrant 2.1, addresses pedestrian safety. There should be continuous sidewalks on at least one side of local streets or both sides of collector streets prior to the installation of traffic calming measures. The purpose of this warrant is to ensure that the issue of pedestrian safety is given primary and public consideration. Sometimes it is not feasible to retrofit sidewalks onto streets that do not have them. Under these circumstances, Warrant 2.1 could be satisfied even though no sidewalks exist. In these cases, should the remaining traffic calming warrants be satisfied and the request recommended for approval, pedestrian safety issues would be addressed at the design stage of the traffic calming plan.

TABLE 1: TRAFFIC CALMING WARRANT CRITERIA

Warrant	Criterion	Requirement	
Warrant 1 Petition	1.1 Petition	Consideration for physical traffic calming initiated by the local Councillor following a public meeting, or upon receipt of petition signed by at least 25% of affected households (or 10% in the case of multiple family rental dwellings), or by a survey conducted by the Ward Councillor. Warrants #2 and #3 will not be considered until Warrant #1 is satisfied.	
Impacts to Adjacent Streets		Should the District Traffic Operations Manager anticipate that the proposed traffic calming will have significant traffic impacts on adjacent streets, the review of the traffic calming proposal shall be modified to include the proposed street as well as adjacent streets where traffic is expected to divert.	
Warrant 2 Safety Requirements (All three criteria must be fulfilled to satisfy this Warrant)	2.1 Sidewalks	On streets where traffic calming is proposed, there must be continuous sidewalks on at least one side of the street (both sides for collector). or On streets where there are no sidewalks, the installation of sidewalk on at least one side of the street must have first been considered.	
	2.2 Road Grade	Traffic calming measures may be considered at or near locations where the road grade is up to 5%. Traffic calming measures may be considered at or near locations where the road grade is between 5%and 8%.	
	2.3 Emergency Response	On streets where traffic calming is proposed, impacts on Emergency Services will not be significant (as determined in consultation with Emergency Services (Fire, Ambulance, and Police) staff).	
Warrant 3 Technical Requirements (All four criteria must be fulfilled to satisfy this Warrant)	3.1 Minimum Speed	On streets where traffic calming is proposed, the 85th%ile speed must be a minimum of 10 km/h (but less than 15 km/h) over the warranted[1] speed limit, and the traffic volume requirements of Warrant 3.2 must be fulfilled. or On streets where the 85th%ile speed exceeds the warranted[1] speed limit by a minimum of 15 km/h, there is no minimum volume required in Warrant 3.2.	
	3.2 Minimum and Maximum Traffic Volume	<u>Local Roads</u> For streets where traffic calming is proposed, the traffic volume must be between 1,000 vehicles per day and 8,000 vehicles per day.	<u>Collector Roads</u> For streets where traffic calming is proposed, the traffic volume must be between 2,500 vehicles per day and 8,000 vehicles per day.
	3.3 Minimum Block Length	On streets where mid-block traffic calming measures are proposed, the block length[2] must exceed 120 metres.	
	3.4 Transit Service	On streets where traffic calming is proposed, impacts on regularly scheduled Toronto Transit Commission (TTC) services will not be significant (as determined in consultation with TTC staff).	

Notes: The review should generally be conducted from one intersecting collector street (or minor or major arterial street) to another.
Road classifications are as determined in the City's Road Classification System.
[1]Warranted speed limit is the speed limit specified by the City of Toronto 40 km/h Speed Limit Warrant.
[2]Block length as measured from centre to centre of controlled intersections. A controlled intersection is one that has either traffic control signals or a stop sign controlling traffic in the direction of travel.

Warrant 2.2 deals with road grades. For safety purposes, traffic calming measures should not be installed on streets with high grades. Setting a limit serves to maintain reasonably safe-driving conditions in adverse weather for motorists negotiating the calming measures. Generally, traffic calming may be installed on streets with grades of up to 5% although streets with grades between 5 % and 8% could also be considered in accordance Council policy that:

> ***Traffic calming measures may be considered at or near locations where the road grade is between 5 percent and 8 percent;***

Warrant 2.3 requires that there not be significant impacts to emergency services as a result of the traffic calming measures being implemented. This determination will be made by consulting with Fire, Emergency Medical and Police Services staff early in the review process. In meetings held with Transportation staff, emergency services staff have indicated their support for this consultation process. Should traffic calming plans change after they have been reviewed by emergency services staff, they will be given an opportunity to review the new plan and to submit further comments.

Warrant 3, *Technical Requirements*, evaluates whether the traffic conditions on a street being considered for traffic calming meet thresholds regarding the manifestation of traffic problems. This is accomplished by undertaking a technical review of measurable traffic parameters on streets where traffic calming is requested. The data collected and evaluated includes the 85th percentile speed on the street (the speed at which 85% of the vehicles on a street are travelling at or below), the daily traffic volume and the city block length.

Warrant 3.1 requires that a street's 85th percentile speed be 10 to 15 km/h above the warranted speed limit on a street, with daily traffic volumes in excess of 1,000 for local streets and 2,500 for collector streets, before traffic calming is warranted. This limit is based on the collective experience of staff working with the public to resolve traffic issues. However, if the 85th percentile speed is 15 km/h or more above the warranted speed limit on a road, then there is no minimum volume requirement. This is because the degree of the traffic problem, and the potential safety risks, can be more severe.

Warrant 3.2 ensures the traffic volume on streets being considered for traffic calming are generally consistent with the range of values for respective classes of roads (i.e., local, and collectors) as established in the City of Toronto Road Classification System, approved by City Council in February, 2000. Usually, there should be a minimum of 1,000 vehicles per day on local roads and a minimum of 2,500 vehicles per day on collector roads for this warrant to be satisfied. A maximum volume of 8,000 vehicles per day is used for traffic calming because the overall benefits of traffic calming are outweighed by the disbenefits when dealing with these higher volumes.

Warrant 3.3 addresses the speed profiles of short blocks controlled by stop signs and traffic signals which modify motorist behaviour, in contrast to longer blocks, where speeding is more prevalent. Evidence from existing traffic data for streets in Toronto indicates that the majority of 85th percentile speeds are relatively low (typically below the speed limit) for blocks shorter than 120 metres in length. City blocks shorter than 120 metres in length, with traffic controls at each

end, have a calming effect on traffic since there is insufficient distance for a motorist to attain excessive speeds and therefore do not necessarily require physical traffic calming measures.

Warrant 3.4 requires that there be no significant impacts to transit services as a result of the traffic calming measures being proposed. Consulting with Toronto Transit Commission (TTC) staff early in the request process will make this determination. In meetings held with Transportation staff, TTC staff have indicated their support for this consultation process. Should traffic calming plans change after they have been reviewed by TTC staff, they will be given an opportunity to review the new plan and to submit further comments. Generally speaking speed humps will not be installed on streets carrying TTC transit routes.

If all the traffic calming warrant criteria are met, proposals for traffic calming can be recommended for installation, pending a poll showing support by affected residents. The full process for dealing with traffic calming proposals is described in Section 5 of this summary.

3.2 Polling and Additional Requirements

The policy on polling states that:

> ***Physical traffic calming measures will only be installed on streets where the results of a formal poll indicate that a minimum of 50 percent plus one of the affected households (with frontage or flankage) have responded, and at least 60 percent of the responding households are in favour of the proposal.***

The current policy respecting those eligible to be polled draws from the City of Toronto Municipal Code Chapter 190, "Polling and Notification" that took effect in January, 2007. Specifically, *§ 190-4. Polling list* states:.

> ***The City Clerk's Office shall compile a polling list including names and corresponding addresses of those listed on the following documents as owners, residents and tenants of property located wholly or partially within the polling area:***
>
> ***A. Current Returned Assessment Roll;***
>
> ***B. Municipal Connect, Toronto Property System (TPS) or any other related geographic information system (GIS) developed using information from Municipal Property Assessment Corporation (MPAC) and City records; and***
>
> ***C. Affidavit delivered to the City Clerk during the polling period in a form prescribed by the City Clerk and asserting that the affiant is an owner, resident or tenant of property located wholly or partially within the polling area.***

Although the original Traffic Calming Policy (2002) polling eligibility requirement of 'one-vote-per-household' was considered simple and fair, the new requirement to conform to Municipal

Code Chapter 190, harmonizies polling efforts across various City program matters providing for consistent and uniform application in this area, and thus simplifying the efforts of the City Clerks office of Election and Registry Services who now conduct the traffic calming polls. Also, this change fundamentally enhances the affected resident participation in the traffic calming polling process by increasing the number of ballots in circulation and resulting in an increase in the number of ballots returned.

4. RANKING PROCEDURE

The policy on ranking states that:

> ***In the event that the requests for traffic calming measures exceed the budget allocation, funding for approved physical traffic calming projects be distributed in accordance with the ranking system illustrated Table 2;***
>
> ***The point system includes an evaluation provision for extraordinary circumstances; and***
>
> ***All staff reports prepared in regard to traffic calming projects indicate the point value assigned via the staff evaluation;***

Projects receiving a positive response in their respective polls would be recommended for Council approval. Approved projects would be competing for limited funds each year and a ranking system is applied city-wide to ensure that those streets with the worst problems or greatest need would be funded first. The point rating system is outlined in Table 2, and elements such as demographics, safety, traffic conditions and land use would be used to assess relative priority.

TABLE 2. TRAFFIC CALMING RANKING SYSTEM

Ranking Max.100 points	**Speed** (0 to 25 points)	**Local Road** 2 points for each km/h that the 85th%ile speed is above the Minimum Speed threshold used in Warrant 3.1 of Traffic Calming Policy	**Collector Road** 1 point for each km/h that the 85th %ile speed is above the Minimum Speed threshold used in Warrant 3.1 of Traffic Calming Policy
	Volume (0 to 25 points)	**Local Road** 1 point for every 100 vehicles of daily traffic (0-2500 vehicles per day)	**Collector Road** 1 point for every 220 vehicles of daily traffic over 2500 (2500-8000 vehicles per day)
	Collisions (0 to 25 points)	5 points for 1 preventable collisions[1] recorded by police in the past 3 years; or 10 points for 2 or more preventable collisions[1] recorded in the past 3 years; or 10 points for 1 or more preventable collisions[1] recorded resulting in personal injury in the past 3 years.	
	Pedestrian and Bicycling Factors (0 to 25 points)	5 points for each pedestrian generator (e.g. Park, school, seniors centre, recreation centre, church, or other public institution, etc.) 10 points for a signed bicycle route[2]	

Notes: The review should generally be conducted from one intersecting collector street (or minor or major arterial street) to another

Road classifications are as determined in the City's Road Classification System

[1]Preventable collisions are those that are considered preventable through the use of traffic calming measures

[2]Signed bicycle route means a bicycle route identified in the City's Master Cycling Plan

5. TRAFFIC CALMING PROCESS AND ADMINISTRATION

5.1 Process

The physical traffic calming review and approval process is illustrated in Figure 1 and summarized below:

(a) Semi-formal initiation;
(b) Consideration of area-wide impacts;
(c) Basic road safety/design review;
(d) Consultation with emergency services and TTC staff;
(e) Traffic study and technical evaluation;
(f) Consideration of options;
(g) Report to Community Council.
   i. If traffic calming is technically supportable, the report will seek to:
      – authorize poll
      – authorize road alteration by-law
   ii. If traffic calming is not technically supportable, then an information report is submitted;

(h) Conduct a formal poll;
(i) Letter / report to proponent on poll results;
(j) Community Council approval of bylaw; and
(k) Ranking of approved traffic calming projects for annual construction program.

5.2 Administration

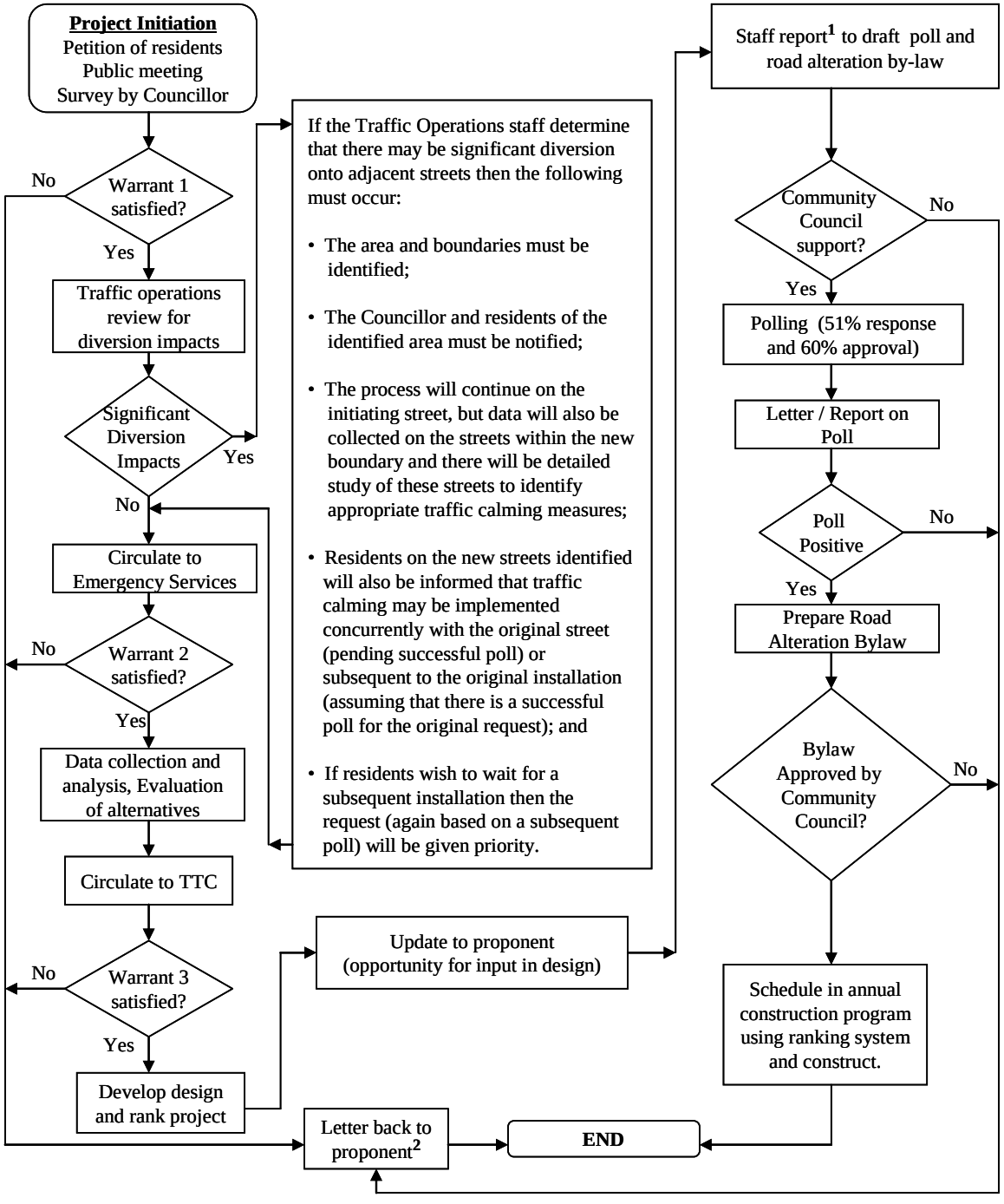
Specific policy statements were also included to facilitate the efficient administration of the traffic calming program. These include suggestions for liaison between staff and the councillor to ensure that community expectations are fully satisfied and state that:

> ***Staff liase with the respective Ward Councillors to establish the boundaries of areas which potentially will be impacted by proposed traffic calming measures;***
>
> ***to provide that surveys conducted on collector roads be undertaken in consultation with the local Councillor(s) and include a reasonable selection of streets that feed into the collector road;***

There were also recommendations on program finances concerning unused departmental budgets and considerations of traffic calming at the time of road reconstruction. These policies state that:

> ***Any unused funds within the Department's budget be reported to Council in July for possible application to approved traffic calming projects; and***
>
> ***Traffic calming be considered when a road is being upgraded and/or reconstructed.***

FIGURE 1: FLOW CHART OF TRAFFIC CALMING PROCESS (revised 2007)



1 If the proposal is of City–wide significance and does affect more than one Community Council, a report will be required to the Public Works and Infrastructure Committee and will be subject to City Council final approval.

2 If the proponent is a Councillor or a Community Council and a report is required then the letter back to proponent should be a report to Community Council. If the Community Council supports the continued study then the process is followed through in its entirety without any additional reports.

It has been long recognized that the coordination of traffic calming installations with planned road rehabilitation work is beneficial in terms of economies of scale, avoidance of throw away costs and road disruption. Capital programming priorities are driven by budget limitations and state of good repair needs whereas the timing for traffic calming installations is driven by rank, funds availability, local demands, and community expectations. Staff efforts are required to integrate these activities to the extent possible taking into consideration the factors that drive each program.

6. MEASURES

The City of Toronto has used almost all of the traffic calming measures identified in the Canadian Guide to Neighbourhood Traffic Calming. These measures include speed humps, chicanes, raised crosswalks, raised intersections, traffic islands, curb extensions and full or directional closures. In addition, the City also uses non-physical forms of traffic calming measures like edge lines, parking, and "parking islands". Detailed information on measures are available in the Guide and the Traffic Calming Handbook of the City of Toronto.

Restriction on the type of measure to be installed on a street may also apply to ensure continued provision of services on certain routes. In particular, the policy prohibits installation of speed humps on primary routes used by the Toronto Transit Commission as well by Toronto Fire Services and Emergency Medical Services vehicles.

7. IMPACTS

7.1 Impacts on Emergency Services and Transit

The concerns of emergency services with respect to traffic calming are primarily with vertical measures such as speed humps. The findings in this document indicate that in nearly all the studies conducted, the delay per speed hump is usually under 10 seconds per hump. Though in isolation this time seems fairly short, total delay increases when speed humps are installed in series along a response route.

Consultations were held with Toronto Fire Services, Emergency Medical Services and the Toronto Police Service. Of the three emergency services providers, only the police were very supportive of traffic calming and welcomed traffic calming because it is self-enforcing and allows them to utilize their resources in other areas to achieve their road safety objectives. Fire and ambulance services have concerns about the effects of traffic calming, especially speed humps, on their response times as well with the discomfort that may be suffered by patients as ambulances drive over these devices. Similar sentiments were also echoed by the Toronto Transit Commission who reaffirmed their opposition to the installation of vertical traffic calming devices on roads which have transit service because of the delays suffered by transit vehicles and passenger discomfort.

The service providers proposed wide scale area planning in the implementation of traffic calming and designation of some routes free of all such devices. Moreover, it was recognized that the public needs to know up front the factors that are at stake, traffic safety versus medical and fire response time. The decision as to how to proceed is a political one, and should be left up to the community to decide which is to prevail.

Following from these considerations, Council adopted the policy statements that:

> ***Consultation with emergency services and TTC representatives occur early in the process of considering each traffic calming proposal; and that***
>
> ***Speed humps not be installed on primary Toronto Fire Service or Toronto Emergency Medical Service routes, or Toronto Transit Commission bus routes;***

7.2 Impacts on Natural Environment

Studies from various jurisdictions have shown that installation of traffic calming measures may result in elevated emissions of carbon monoxide, carbon dioxide, hydrocarbons, and nitrogen oxides. The increase of the pollutant emissions depend on the type and extent of the traffic calming used and results from constant acceleration, deceleration and speed adjustments necessary to drive over the installed devices.

Traffic calming measures may also result in increased noise levels arising from the frequent acceleration and deceleration, tire noise and additional engine and exhaust activities. The noise level depends on the vehicle type, with heavier ones like trucks making much more noise than the passenger cars.

The potential for increases in air, noise and vibration pollution that result from the installation of traffic calming has to be weighed against the benefits to the local residents from the reduction in overall average vehicle speeds. Local area residents should decide the trade-off between these issues. As a result, the requirement that traffic calming proposals be supported by a majority of affected households is included in the traffic calming policy.

8. REFERENCES

1. City of Toronto, Municipal Code, Chapter 27, "Council Procedures", 2006.
2. City of Toronto, Municipal Code, Chapter 190, "Polling and Notification", 2006.
3. Ontario Municipal Engineers Association, Municipal Class Environmental Assessment 2000.
4. Province of Ontario, Environmental Assessment Act 1990.
5. Province of Ontario, Municipal Act 2001.
6. Province of Ontario, City of Toronto Act 2000.
7. Province of Ontario, City of Toronto Act 2006.
8. Transportation Association of Canada, The Canadian Guide to Neighbourhood Traffic Calming, 1998.