

Traffic Calming Overview

Traffic Calming “Toolbox”

Traffic calming is divided into three categories: intervention, passive traffic calming and active traffic calming. Each of the categories contains multiple traffic calming measures, or “tools”, when taken as a whole, the group of measures is often referred to as a traffic calming “toolbox”.

Intervention

Intervention is focused on general speed awareness, education and enforcement. No physical changes are made to the roadway. All street types, including arterial and industrial streets, are eligible for intervention measures.

Intervention Measures:

- Education
- Enforcement
- Radar Trailer Placement

Passive Traffic Calming

Passive traffic calming aims to reduce speed by changing driver behavior using visual stimuli on the roadway including signs and striping. Passive measures allow the vehicle and driver to passively engage with the traffic calming as the roadway geometry is not physically altered. All street types, including arterial and industrial streets, are eligible for passive traffic calming.

Passive Measures:

- Centerline Striping
- Speed Limit Signs
- Speed Legends
- Curb Markings
- Transverse Speed Striping
- Crosswalks

Active Traffic Calming

Active traffic calming is designed to require a change in driver speed at the location of the measure which include traffic circles, speed humps and other physical changes to the roadway. These changes force drivers to actively engage in navigating the traffic calming measure. Active traffic calming is divided into two categories: vertical and horizontal. These categories are based on how the measure deflects the vehicle path.

Active traffic calming is much more expensive than other traffic calming as it requires significant design, construction, and maintenance. Only 2-lane local and neighborhood collector streets are eligible for active traffic calming and only horizontal measures will be placed on collector streets.

Active Measures (Category):

Speed Humps (*Vertical*)
Raised Intersections (*Vertical*)
Medians (*Horizontal*)
Intersection Medians (*Horizontal*)
Traffic Circles (*Horizontal*)
Bulb Outs (*Horizontal*)

Roundabouts (*Horizontal*)
Chicanes (*Horizontal*)
Mid-Block Chokers/Narrowing
(*Horizontal*)
Diverters (*Horizontal*)
Street Closures (*Horizontal*)

Street Eligibility Requirements

Before a study can be done to determine if a street meets warrants for implementation of traffic calming, eligibility for traffic calming must be determined.

Intervention: All local and collector streets are eligible for intervention and without the need for a study.

Passive: All local and collector streets that meet all of the following criteria are eligible for passive traffic calming:

- Speed limit 25 mph or 30 mph
- Two-lane roadway
- Traffic volumes:
 - >250 vpd for local street
 - >500 vpd for collector

Active: All local streets that meet all of the following criteria are eligible for all types of active traffic calming. All collector streets that meet all of the following criteria are eligible for horizontal active traffic calming only:

- Speed limit 25 mph or 30 mph
- Two-lane roadway
- Traffic volumes:
 - >500 vpd for local street
 - 1,000-5,000 vpd for collector
- Minimum corridor length of 1,000 ft

Functional Classification

Streets are categorized, by hierarchy, into four functional classifications: principal arterial, minor arterial, collector and local. Arterials are designed to move larger volumes of traffic across and through town. Collector streets move moderate volumes of traffic from local neighborhoods to the arterial streets. Local streets are designed to provide access to residential properties.

The objective of the traffic calming program is to maintain travel speeds and volumes in neighborhoods at levels that are appropriate for the street classification and promote livability

of the neighborhoods. To promote these goals, active traffic control measures are limited in their eligibility for placement to residential, 2-lane local or collector streets. Active traffic calming will not be applied on arterial roadways or industrial streets of any classification.

Implementation Warrants

If a street is determined to be eligible for traffic calming, a study can be performed to determine if the minimum necessary warrants, or criteria, are met for implementation of traffic calming. Below are descriptions of the different warrants which are broken into two categories: Primary Criteria and Neighborhood Conditions. Primary Criteria are those minimum thresholds that indicate a speeding or safety issue may exist. Neighborhood Conditions assess conditions where speeding can affect the quality of life for residents in a neighborhood.

Each of the warrants has an associated point value. This point score is used to determine if an eligible street meets the warrants for implementation of passive or active traffic calming. Further, this point score will be used to prioritize warranted projects in the event that requests exceed budget in any given year.

Primary Warrants

Critical Speed

To be eligible for traffic calming, the posted/legal speed limit must be 30 mph or less for the roadway. Points are allocated based on the actual measured critical speed on the roadway. This is defined as the 85th percentile speed or the speed 85 percent of vehicles are traveling at or below.

Collision History

It is not necessary that collisions have occurred within the study area to be eligible for traffic calming. However, points are assigned based on the number of collisions that have occurred in the three years prior to the study. For a collision to be included in the count, it must be speed related or susceptible to correction by the addition of traffic calming. Collision history excludes DUI incidents.

Neighborhood Conditions

Volume

Volumes shall be actual, measured traffic volumes or volume projected at buildout for areas affected by future development.

Pedestrian Generators

Proximity to pedestrian generators is an indication of the likelihood of pedestrians on the corridor. Pedestrian presence, especially young pedestrians, increases the need to control speeds. Higher speeds are tied to slower perception-reaction times and higher incident of significant injury in the case of vehicle vs. pedestrian collision.

Bicycles

Points are assigned to roadways that are part of an established Class III bike route (signs only, no bike lanes) and to those with Class II (striped) bike lanes. The presence of bicyclists on the roadway creates a desire to keep vehicle speeds lower to decrease the differential in the travel speeds of cyclists and motorist. Lower differential speeds increase bicyclist safety and reduce the potential for injury in the case of vehicle vs. bicycle collision.

Fronting Homes

The primary focus of traffic calming is to protect the quality of life of residential neighborhoods. As such, a higher point value is assigned to corridors with higher percentages of homes fronting the street. In the case of apartments or other high density residential uses, the front doors of the units do not have to face the street only that residents have direct, unhindered, access to the street.

Home Setback

Regardless of measured speed, perception of vehicle speed is often directly linked to how close one is to a moving vehicle. When homes are not set back from the street, a person standing in their yard often feels that vehicles are traveling much faster than they actually are. This perception relates to how comfortable people are on their property, regardless of actual travel speeds. As a result, points are assigned to corridors with homes having less than 20 foot front yard setbacks.

Sidewalk Width

The issue of speed perception is further affected by sidewalk width and the presence, or absence, of landscape strips creating separation between pedestrians and the roadway. Where wide sidewalks are separated from the road by wide landscape areas, vehicle speeds are not as impactful to pedestrians as they are with narrow, monolithic, sidewalks adjacent the travel way. To account for this impact, points are assigned to corridors with monolithic sidewalks and a higher point value is assigned for narrow, monolithic, sidewalks.

Other Unique Conditions

In some areas, unique conditions or characteristics exist that change the way speeds impact a neighborhood. These characteristics can include unexpected roadway geometry, missing sections of sidewalk, limited sight distance, abnormally high collision rate, evidence of unreported collisions, etc. Points may be allocated to account for these unique conditions.

Traffic Calming Toolbox

Intervention

Education
Enforcement
Neighborhood Speed Watch
Radar Trailer

Passive

Centerline striping (generally raised pavement markers)
Speed limit signs
Curb marking
Speed legend
Turn prohibitions
Speed striping (transverse)
Crosswalks

Active

Speed humps
Medians
Bulb outs
Intersection medians
Raised intersections
Chicanes
Mid-block Chokers/Narrowing
Diverters
Traffic circles
Roundabouts
Rumble strips
Street closures
Flashing beacons/crossing assemblies

NOTE: Stop signs are not traffic calming devices

Evaluation and Implementation Process

City Council Approved July 7, 2020

Initial Study Request

To initiate a traffic study, a resident must contact Traffic Engineering to identify the area of desired traffic calming.

Minimum Project Study Length/Area

Minimum eligible corridor length is 1,000 feet with a 500-foot minimum length for any individual segment within the corridor.

Study Cycles

Traffic calming studies will be performed twice per year. Study petitions received will be studied according to the following timelines:

Cycle 1: Receipt on or before July 1 – Study performed September - December

Cycle 2: Receipt on or before January 1 – Study performed March – June

If more requests are received than can be processed during the cycle, they will be processed on a first-come, first-served basis - the remainder will be processed in the following cycle.

Eligibility Check & Warrant Evaluation

Upon receipt of a request, City staff will determine eligibility of the street requested and if eligible, will initiate a traffic calming warrant study during the upcoming study cycle. Upon completion of the study, one of the following will occur:

1. **Warrants Not Met** – City staff will contact the petitioner with study results and discuss intervention options for the corridor.
2. **Warrants Met – Passive Traffic Calming** – proceed to next step in Evaluation & Implementation Process.
3. **Warrants Met – Active Traffic Calming** – proceed to next step in Evaluation & Implementation Process.

Project Prioritization and Notification

If, during any cycle, more streets are found to be warranted for traffic calming than can be funded, the projects will be ranked first according to the Primary Warrant score, second by the Neighborhood Conditions score. Projects will be implemented in score priority order.

Depending on available funding, separate prioritization of active and passive traffic calming may occur to allow implementation of as many projects as possible.

Residents will be notified of the corridor eligibility, whether the corridor was prioritized for funding and, if prioritized, the anticipated schedule for implementation. Residents may request that projects not prioritized for funding be re-evaluated in the following cycle.

Implementation

Corridors that are eligible for traffic calming installation and prioritized for funding will be processed through the following steps:

Step 1: Traffic Calming Plan Preparation

Passive Traffic Calming

A plan will be prepared identifying the appropriate passive traffic calming measures for the selected corridor.

Active Traffic Calming

A plan will be prepared identifying the appropriate active traffic calming measures for the selected corridor and the affected area.

The affected area is defined as any adjacent corridor anticipated to have an increase in volume of vehicles per day $\geq 10\%$ for local streets or $\geq 25\%$ for collectors as a result of the installation of traffic calming in the requested area.

Step 2: Internal Plan Review

Passive Traffic Calming

Traffic Engineering staff will coordinate with staff from Planning, Public Works, Fire and Police to evaluate the proposed traffic calming to determine if the proposal is appropriate to the corridor.

Active Traffic Calming

Traffic Engineering staff will coordinate with staff from Planning, Public Works, Fire and Police to evaluate the proposed traffic calming devices. This review will determine if the proposal is appropriate to the corridor, verify there are no significant, detrimental impacts to public safety access or response times and confirm that no considerable increase in operation or maintenance costs will result from implementation.

Step 3: Neighborhood Review and Approval

Passive Traffic Calming

The City will mail the traffic calming plan with a ballot to all residents and property owners on the corridor.

Residents will review the proposed improvements and return their ballots. The City will deem the project substantially supported if 75% of ballots are returned in favor of the proposed improvements.

Active Traffic Calming

The City will mail the proposed plan to all residents and property owners on the corridor and within the affected area for review and comment. Upon completion of the comment period, the Traffic Engineer will determine the need to hold a neighborhood meeting before preparation of the final plan.

The plan will be modified based on comments received and neighborhood meeting, if held. The final plan and a ballot will be sent to all residents and property owners on the corridor and within the affected area.

Residents will review the final plan and return their ballots. The City will deem the project substantially supported if 75% of the ballots are received from the residents on the street(s) proposed for traffic calming indicating approval and less than 25% protest is received from the residents of the affected areas where no traffic control is proposed.

Public Notice of Project

Upon neighborhood approval of the traffic calming plan, a public notice will be issued by the City to all property owners and residents within 500 feet of the installation areas. This notice will provide project details, staff contact information for concerns and, if applicable, the date, time and location of the Council meeting, where the project will be presented to Council.

Timeline for Implementation

Projects prioritized for funding in a given cycle will proceed into final design where the plans and specifications for the project will be prepared and then the project will be bid for construction. The timeline for design and construction will vary by size of project and level of design necessary. However, it is anticipated that, on average, an approved project will enter construction within 12-18 months of funding approval.

Incremental Implementation

At the discretion of the Traffic Engineer, during the planning stage and before the installation of any traffic calming measures, intervention and/or passive traffic calming measures may be implemented on the corridor and their effects evaluated. If these alternate measures do not alleviate the issue, the corridor will continue through the implementation process for active traffic calming. Depending on the project scope, prioritization score, and/or other factors, the incremental implementation may occur simultaneously with the traffic calming plan preparation process.

Post-Implementation Study

For all areas where traffic calming is installed, and areas potentially affected by the installation, a post-implementation study will be performed to determine the effectiveness of the traffic calming and ensure there are no unintended traffic pattern changes needing to be addressed.

Active traffic calming will be considered successful if a 10% improvement is achieved without substantial detrimental impacts to adjacent neighborhoods.

Re-Application and Projects Not Selected for Funding

If a study finds that traffic calming is not warranted, a new study will not be completed for at least two years from the date of the original study. After the two-year timeline, residents may re-start the petition process. Exceptions to the two-year requirement may be made for areas where changes to roads or adjacent land uses may have impacted traffic.

Projects that meet warrants for traffic calming, but are not prioritized for funding, may request to have their project re-evaluated with the following cycle of projects. These projects do not need to re-start the petition process unless the original petition is more than 2 years old.

Proposed Warrants

Eligibility Requirements:

Criteria	Active Eligible	Passive Eligible	Basis for Eligibility
Street Type & Functional Class			Active only on 2-lane, local & collector streets
Existing Posted Speed			Active only on 25 & 30 mph streets
Volume			Active: >500 vpd on local street; 1,000-5,000 on collector Passive: >250 vpd on local street; >500 on collector

Primary Warrants:

Criteria	Max. Points	Points	Basis for Point Allocation
Critical Speed	10	On 25 MPH streets, 85th percentile speed:	
		0	≤26 mph
		2	27-28 mph
		4	29-30 mph
		6	31-32 mph
		8	33-34 mph
		10	≥35 mph
		On 30 MPH streets, 85th percentile speed:	
		0	≤36 mph
		2	37-38 mph
		4	39-40 mph
		3 Year Collision History	10

Neighborhood Conditions:

Criteria	Max. Points	Points	Basis for Point Allocation
Daily Volume	8	Local Streets:	
		0	<500 vpd (Not Eligible for Active Traffic Calming)
		2	500-1,000 vpd
		4	1,001-1,500 vpd
		6	1,501-2,000 vpd
		8	>2,000 vpd
		Collector Streets:	
		0	<1,000 vpd (Not Eligible for Active Traffic Calming)
		2	1,000-2,000 vpd
		4	2,001-3,000 vpd
		6	3,001-4,000 vpd
		8	4,001-5,000 vpd
0	>5,000 vpd (Not Eligible for Active Traffic Calming)		
Pedestrian Generators (school, park, greenbelt access, or other significant pedestrian generating facility).	5	3	Per pedestrian generator on the roadway
		2	Per pedestrian generator within 500 feet
		1	Per pedestrian generator within 1,000 ft
Bicycles	5	5	Points for established/signed bike route
		2	Points for bike lanes present
Fronting Homes	5	0	25% or less
		3	26-75%
		5	76-100%
*Apartments equal 1 fronting home regardless of building orientation on the parcel.			
Home Setback	5	5	Points assigned for neighborhoods with more than 50% of homes having front yard setbacks less than 20 feet. Measurement: back of walk to face of home (not garage).
Sidewalk Width	5	5	Majority of sidewalk monolithic ≤6 ft wide
		2	Majority of sidewalk monolithic >6 ft wide
Other Unique Conditions	5	0-5	Unexpected roadway geometry, evidence of unreported collisions, etc.

Implementation/Prioritization Score:

	Active	Passive
Min. Total Points Required	20	10
Min. Primary Criteria	6	2

Traffic Calming Evaluation Worksheet

Street Name	Street Name
Date of Study	
Date of Evaluation	
Posted Speed Limit	
Road Classification	

85th Percentile Speed (MPH)	
Recorded Volume (VPD)	

Eligibility Requirements (Active/Passive)

Street Type & Functional Class	
Existing Posted Speed	
Volume	

Primary Criteria

Critical Speed	
3 Year Crash History	

Neighborhood Conditions:

Daily Volume	
Pedestrian Generators	
Bicycles	
Fronting Homes	
Home Setback	
Sidewalks	
Other Unique Characteristics	

Active Traffic Calming Eligibility

Primary Criteria (min. 6 points)	
Neighborhood Conditions	
Total Points (Min. 20)	
Eligible for Active Traffic Calming	

Passive Traffic Calming

Primary Criteria (min. 2 points)	
Neighborhood Conditions	
Total Points (Min. 10)	
Eligible for Passive Traffic Calming	