

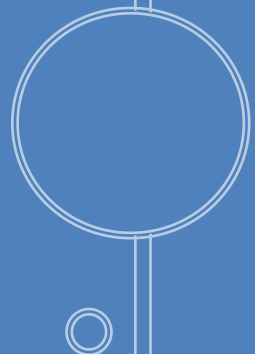
# TRAFFIC CALMING TOOLKIT

*City of San Bruno*

An Update of 2010 Traffic Calming  
Toolkit and 2020 Supplemental  
Update



May 2024



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# Traffic Calming Toolkit

## INTRODUCTION

Speeding, high traffic volumes and cut-through traffic are growing concerns within neighborhoods in the City of San Bruno. Neighborhoods strive to maintain a level of livability that all residents should be able to enjoy, but these traffic related issues are beginning to adversely affect the levels of noise and safety within these neighborhoods.

One primary purpose of this Traffic Calming Toolkit (Toolkit) is to provide an educational resource for residents and neighborhood groups to understand their role as active citizens in alleviating traffic problems. This Toolkit provides an overview of measures and devices intended to enhance pedestrian safety and encourage safe driving. It also defines the procedure in which to report traffic concerns and to request a traffic calming measure as well as the steps that will be taken to address these issues. This Toolkit builds upon and supersedes the 2010 Traffic Calming Toolkit and the 2020 Supplemental Update.

It is important to note that not all tools in this Program will be applicable or appropriate for a given street. Many of the engineering tools have specific warrants for their installation and will require evaluation by a traffic engineer to determine if they are feasible for a particular location.

This Program is to be used in conjunction with City of San Bruno Transportation Policies and Guiding Policies<sup>1</sup>, such as:

- T-A Provide for efficient, safe, and pleasant movement for all transportation modes-vehicles, bicycles, transit, and pedestrians.
- T-C Preserve and enhance the unique natural features that constitute San Bruno’s scenic roadways, as well as the visual quality of major gateways into the city.
- T-14 Use traffic calming measures to reduce speeding in residential areas, rather than limiting through-street connections.

## PURPOSE OF TRAFFIC CALMING

The Institute of Transportation Engineers (ITE) is an international educational and scientific association of transportation and traffic engineers and other professionals who are responsible for meeting mobility and safety needs. According to ITE, “traffic calming is the combination of mainly physical measures that reduce

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<sup>1</sup> City of San Bruno General Plan, 2009.

the negative effects of motor vehicles use, alter driver behavior, and improve conditions for non-motorized street users.” In another word, traffic calming is to increase the overall quality of life by creating an environment in which residents, vehicles, and other modes of transportation can co-exist. Its objective is to accommodate and promote all modes of transportation.

*“Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.” - Institute of Transportation Engineers*

The City strives to work closely with residents to develop and implement innovative and effective transportation solutions in residential streets. By encouraging drivers to be more aware of their own behaviors in vehicles, the safety of others is also promoted. Beyond the concerns of drivers and vehicles in traffic calming issues, there are also other transportation modes, including bicyclists, pedestrians, and transit, that must be considered and promoted as well. This ultimately creates an environment that allows other modes to also travel alongside vehicles safely.

This Program provides some of the most common measures from the 4 E’s—Education, Enforcement, Engineering, and Equity—that can be undertaken to improve the overall safety of a community. The 4 E’s provide a variety of approaches and levels of mitigation to resolve traffic related issues. Most importantly, they also recognize that measures, such as education and enforcement, are crucial steps that should be taken prior to and as a supplement to the implementation of engineering solutions. The 4 E’s are discussed in detail in the Selection of Traffic Calming Devices section.

## TRANSPORTATION NETWORK

The City of San Bruno<sup>2</sup> transportation network is comprised of arterial, collector, and local streets.

### *Arterial Streets*

Medium-speed (30-40 miles per hour) with medium-capacity (10,000-35,000 average daily trips) streets that provide through passage to and from commercial centers, community facilities, and regional highways. Access to arterial streets should be provided at collector roads and local streets. However, direct access from parcels to existing arterials is common. Arterial streets in San Bruno include El Camino Real, Sneath Lane and San Bruno Avenue.

### *Collector Streets*

Relatively low-speed (25-30 miles per hour) with low-capacity (5,000-20,000 average daily trips) streets that provide connections between neighborhood areas. Collector streets usually serve short trips and are intended

<sup>2</sup> City of San Bruno General Plan <https://www.sanbruno.ca.gov/DocumentCenter/View/1661/Chapter-4-Transportation-PDF>

for collecting vehicles from local streets and distributing them to the arterial network. Collector streets in San Bruno include streets such as Cherry Avenue and Fleetwood Drive.

#### *Local Streets*

Low-speed (15-25 miles per hour) with low-volume (1,000 average daily trips) streets that provide access to neighborhood areas and internal commercial drives. All local streets provide vehicle, pedestrian, and utility access. On-street parking is often present.

For the purposes of this Program, the recommended traffic calming measures and devices are only applicable to collector and local streets. Traffic calming is well suited for local streets within neighborhoods to reduce vehicular speed, high-traffic volumes, and cut-through traffic.

## SELECTION OF TRAFFIC CALMING DEVICES

This Program has a four-pronged approach to solving residential neighborhood traffic problems:

1. Education
2. Enforcement
3. Engineering
4. Equity

It is with these four E's that traffic calming measures and devices can be selected and implemented to create a safe and livable environment for all residents.

### EDUCATION

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Education provides residents with the resources to understand their role and responsibilities in alleviating traffic problems within their own community. These resources are made available to residents through outreach programs, such as community meetings, informational pamphlets, and school safety workshops. The variety in outreach programs provides numerous opportunities for education. Education helps the residents to differentiate good and hazardous driving behaviors. It also allows the residents to become more aware of their own driving behaviors and the potential hazards they may pose.

The ultimate goal is for residents to become more conscious about ongoing efforts to improve the livability of their communities and become more active in their City's governments in resolving traffic calming issues.

### ENFORCEMENT

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The increased presence of law enforcement officials encourages motorists to abide by the posted speed limits and other posted regulatory and warning signs. With the help of both the police department and the Transportation staff, communities are more aware of speeding issues within the City.

## ENGINEERING

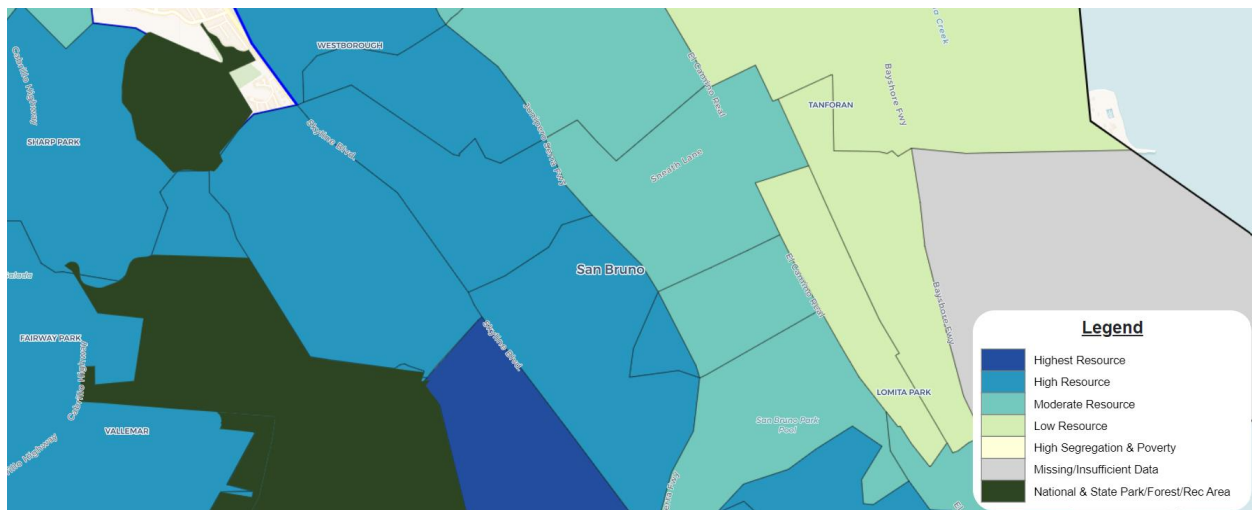
Engineering includes the study, selection, and implementation of a variety of traffic calming devices. The basis for these devices is engineering principles as well as community input. The traffic calming measures and devices are classified into three categories based on their intended effect.

- Basic traffic calming measures
- Speed and safety control devices
- Volume control devices

No matter the level of traffic calming that is taken, it is important that educational opportunities are made available to residents to understand the purpose of the implementation of traffic calming devices. Furthermore, though traffic calming measures and devices are meant to be self-enforcing, proper enforcement from law officials is also needed so that residents are aware of new traffic calming measures or devices and readily abide by these new laws.

## EQUITY

Equity ensures traffic calming measures are also available to an underserved community of San Bruno, impacting the most disadvantaged and vulnerable residents, including but not limited to, ethnic minorities, older persons, and/or children. Defined as areas considered “Low Resource” and “High Segregation and Poverty” by the California Housing and Community Development/Tax Credit Allocation Committee Opportunity Maps.



## TRAFFIC CALMING MEASURES AND DEVICES

The selection of a traffic calming measure or device is dependent on the desired effect. They are divided into the following types:

1. Basic traffic calming measures
2. Speed and safety control devices
3. Volume control devices

An applicability matrix is provided on page 17 to provide a comparison of all the traffic calming measures and devices described in this Program.

### BASIC TRAFFIC CALMING MEASURES

These elements are implemented on a daily basis and incorporate regulatory and warning signs as well as striping. They also include educational programs and enforcement of traffic calming measures.

#### Community Outreach

Community outreach is used to increase awareness of traffic related issues, such as traffic calming measures and safety concerns, within neighborhoods. It also serves as a forum for citizens to voice their concerns. These efforts include educational opportunities that encompass community meetings, distributed pamphlets, school safety workshops, and other programs.



#### *Advantages*

- Active citizen participation in traffic calming issues
- Forum for citizens to voice concerns

#### *Disadvantages*

- Limited effectiveness by itself

#### *Cost*

- Basic costs include staff time and meeting materials
- Other costs may include facility rental and consultant fees

## High Visibility Crosswalks

High visibility crosswalks are marked crosswalks that incorporate a striped pattern that make them more visible for motorists. These designated crossing locations with their increased visibility can provide more safety for pedestrians.

### Advantages

- Possible speed reduction for vehicles
- Recommended crossing locations for pedestrians

### Disadvantages

- False sense of improved safety for pedestrians
- No difference in crash rates found for pedestrians for two-lane residential streets

### Cost

- ~ \$2,000 to 5,000 per leg (materials and labor)



Example of High Visibility Crosswalk: San Mateo Avenue in San Bruno, CA

## Police Enforcement

The presence of law enforcement officials encourages motorists to abide by the posted speed limits and other regulatory and warning signs. Drivers and residents are also more aware of speeding issues in select locations.

### Advantages

- Increased driver awareness of speeds in specific areas
- Can be implemented in the near-term pending officer availability

### Disadvantages

- Temporary speed reduction
- Resource diversion from other activities
- Limited to staff availability

### Cost

- Increased overtime for traffic officer



## Roadway Striping

Through modifications in roadway striping, the width of a traffic lane can be reduced to encourage vehicles to reduce their speeds. Lane widths can be reduced to be as narrow as ten feet. Depending on the width, the remaining unused portions of the roadway may be converted to on street parking or bicycle lanes.



### Advantages

- Reduced traffic speeds
- Possible addition of on street parking or bicycle lanes

### Disadvantages

- Increased maintenance to keep parking, bicycle, and vehicle lanes properly marked

### Cost

- ~ \$6 per linear foot (materials and labor)

## Speed Display Units

Speed display units inform motorists of their actual speeds while also displaying the posted speed limits. These radar units may be permanent or temporary fixtures and can be installed on any street where speeding is potentially an issue.



### Advantages

- Increased awareness of speeding problems on specific streets

### Disadvantages

- Temporary speed reduction

### Cost

- ~ \$18,000 each (pole mounted or solar power)

## Signed Turn Restrictions

Signed turn restrictions are regulatory signs that restrict specific traffic movements, which help in reducing cut-through traffic through specific neighborhoods. These restrictions can be enforced during specific times to address time of day concerns.

### *Advantages*

- Reduced cut-through traffic by directing vehicles to collector and arterial streets
- Reduced traffic during specific times of the day

### *Disadvantages*

- Increased travel time for some motorists
- Increased traffic on nearby streets
- Requires police enforcement

### *Cost*

- ~ \$350 per sign + cost of installation



## SPEED AND SAFETY CONTROL DEVICES

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These devices alter the physical appearance of roadways to address speeding and safety issues. Through visible and physical changes that limit the amount of available space on the roadway, drivers are forced to reduce their speeds.

### **Bulbouts**

Bulbouts are an extension of the curb so that it narrows the intersection or roadway. Pedestrians are provided with a shorter crossing distance, and drivers are encouraged to slow down given the narrowed configuration

#### *Advantages*

- Shorter pedestrian walking distance
- Reduced speed because of narrow intersections and roadways
- Opportunities for implementing street beautification

#### *Disadvantages*

- May require removal of on-street parking

#### *Cost*

- ~ \$50,000 per corner (materials and labor) + 50% soft costs



Example of Bulbout: Huntington Avenue in San Bruno, CA

## Chicanes

Chicanes create a curvilinear street alignment through the installation of islands or from the road's initial design.

Vehicles are forced to slow down around the curves since the travel lane width is reduced.

### *Advantages*

- Reduced speeds because of narrowing of road
- Opportunities for implementing street beautification

### *Disadvantages*

- Requires extensive design and implementation
- May require removal of on-street parking

### *Cost*

- ~ \$20,000 each (materials and labor) + 50% soft costs + added cost for irrigation



## Chokers

Chokers are raised islands that are built in the parking lane to narrow the roadway to reduce vehicular speeds and cut-through traffic. These devices are not attached to the curb so modifications do not need to be made for drainage.

### *Advantages*

- Reduced speeds because of reduced roadway width
- Opportunities for implementing street beautification

### *Disadvantages*

- Increased maintenance of area between curbs and islands
- May require removal of on-street parking

### *Cost*

- ~ \$40,000 each (materials and labor) + 50% soft costs + added cost for maintenance



## Medians/Splitter Islands

Medians/Splitter Islands are raised islands built in the center of the roadway. These devices narrow traffic lanes, which encourages reduced speeds. They also increase the driver's sightline and help increase the safety of pedestrians crossing the intersection.

### *Advantages*

- Increased safety for pedestrian crossings.
- Reduced vehicular speeds because of deflection and narrowing of lanes.
- Opportunities for implementing street beautification.

### *Disadvantages*

- May require removal of on-street parking

### *Cost*

- ~ \$5,000 to 7,000 at each leg of the intersection for basic concrete median.



Example of Street Median

## Speed Humps and Speed Tables

Speed humps, also known as road humps or undulations, are used to reduce vehicle speeds and volumes. They generally span the width of the roadway, are 12-14 feet long, and 3-4 inches high. Gaps are provided in the middle specifically for emergency vehicles' wheel path so as to not slow their response time. Speed tables are a variation of speed humps but are longer with a flat section in the middle. Proper warning signs and pavement markings must also be implemented to warn vehicles of the presence of both of these devices.

### *Advantages*

- Reduced traffic speeds
- Self-enforcing

### *Disadvantages*

- May result in traffic diversion to other streets
- Aesthetically displeasing

### *Cost*

- Speed bumps: ~ \$7,500 each (materials and labor) + ~ \$10,000 design cost
- Speed tables: ~ \$15,000 each + ~ \$10,000 design cost



## Traffic Circles/Roundabouts

Traffic circles and roundabouts are circular islands at an intersection. Vehicles travel around the island counterclockwise. Entrance in the traffic circle is controlled by “Yield” or stop signs at the intersections. Traffic circles are used to control speed and improve side street access on local and collector roadways. Roundabouts are typically larger in size and used to control larger volume intersections on arterial roadways.

### *Advantages*

- Increased side street access
- Reduced speeds because of deflection and narrowing of traveled way
- Opportunities for implementing street beautification

### *Disadvantages*

- Bicyclists merge with traffic.
- May impede access by emergency vehicle access and large vehicles



### *Cost*

- ~\$10,000 to 25,000 for plastic/rubber materials
- ~\$35,000 to \$100,000 for concrete and/or landscaping

## VOLUME CONTROL DEVICES

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These devices alter the physical appearance of roadways to control vehicular volumes. By installing physical restrictions on streets, vehicles are forced to take an alternate route, thereby reducing volumes on selected segments of roadways.

### **Diverter**

Diverter are raised areas at an intersection that restrict and force certain vehicular movements, thereby reducing cut-through traffic by diverting traffic to nearby streets. There are three types of diverters: semi-diverters, diagonal diverters, and full diverters. They differ based on the level of restrictions that are placed on vehicular movements.



#### *Advantages*

- Reduced cut-through traffic
- Reduced vehicle access while maintaining pedestrian and bicycle access
- Opportunities for implementing street beautification
- Self-enforcing

#### *Disadvantages*

- Increased traffic on nearby streets
- Increased travel time for vehicles
- Reduced traffic circulation
- Restricted emergency vehicle access
- May require removal of on-street parking

#### *Cost*

- ~ \$50,000 each (materials and labor) + 50% soft costs

## Median Barriers

Median barriers are raised islands that prevent left turn movements. These are essentially an extension of medians from the center of roadways into the intersections. They reduce cut-through traffic by eliminating left turn movements for all vehicles and the through movements for the major street.



### *Advantages*

- Reduced cut-through traffic.
- Reduced vehicle access while maintaining pedestrian and bicycle access
- Opportunities for implementing street beautification
- Self-enforcing

### *Disadvantages*

- Increased traffic on nearby streets
- Increased travel time for vehicles
- Reduced circulation
- Restricted emergency vehicle access
- May require removal of on-street parking

### *Cost*

- ~ \$20,000 to \$50,000

## Street Closures

Street closures are physical barriers that could partially or completely restrict vehicles movements. A partial street closure blocks through traffic by preventing vehicles from entering streets but allowed vehicles to exit from the partial blocked street. A full street closure results in a street becoming a cul-de-sac, so there is no cut-through traffic. With both types of street closures, the overall cut-through traffic through neighborhoods is reduced.



### *Advantages*

- Reduced cut-through traffic
- Reduced vehicle access while maintaining pedestrian and bicycle access
- Opportunities for implementing street beautification
- Self-enforcing

### *Disadvantages*

- Increased traffic on nearby streets
- Increased travel time for vehicles
- Reduced circulation.
- Restricted emergency vehicle access
- May require removal of on-street parking

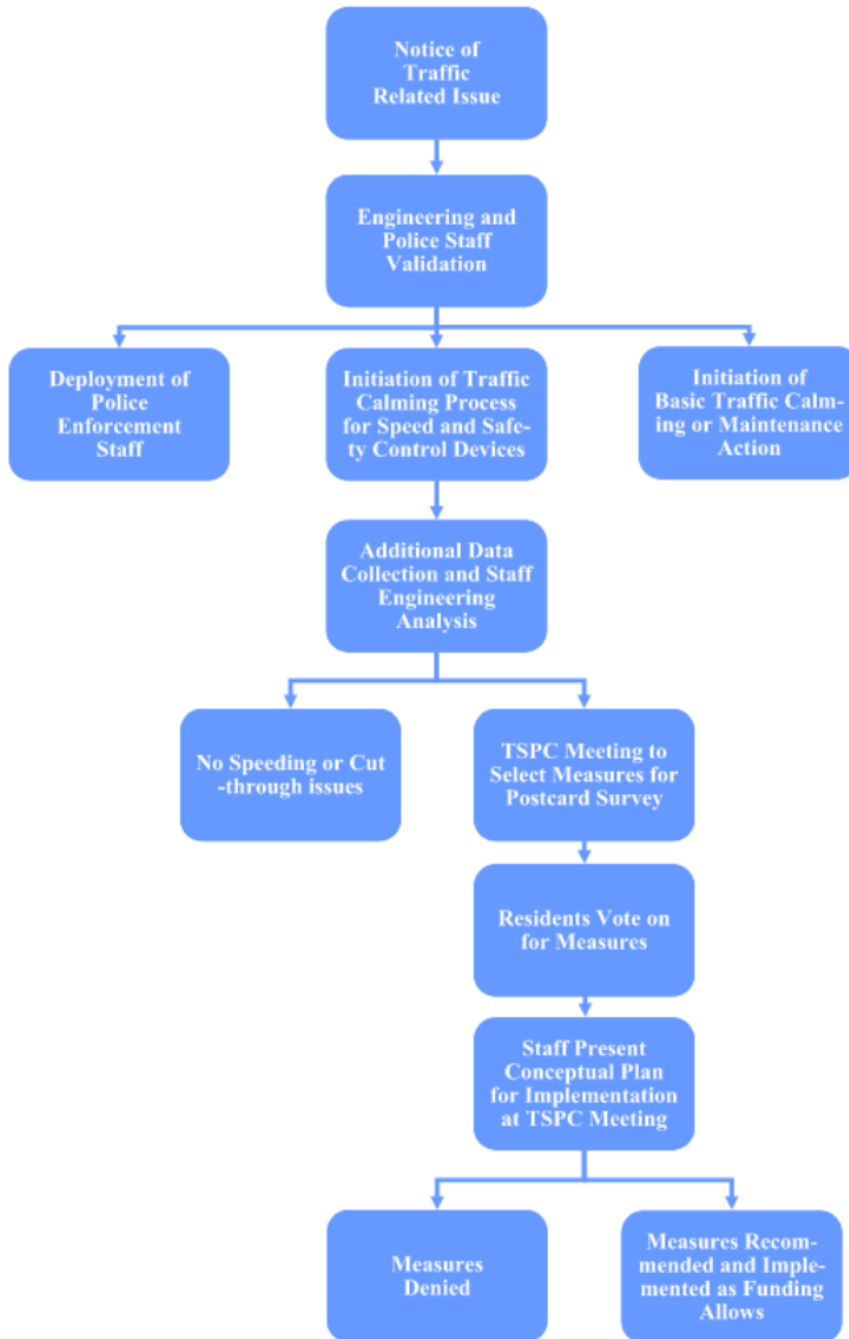
### *Cost*

- Varies. Delineators and signage costs ~ \$1,000 to \$20,000 installed



## PROCEDURES FOR REQUESTING TRAFFIC CALMING MEASURES

As outlined in the Comprehensive Traffic-Calming Program, the procedures to request traffic calming measures in the City of San Bruno are as follows:



TSPC = Traffic Safety and Parking Committee

## Receive Notice of Traffic Related Issue

Traffic related issues are submitted to the City from a number of sources and typically are received through the Public Works Department, the Police Department, or the Traffic Safety and Parking Committee. The objective is to utilize this Comprehensive Traffic Calming Program as the progressive process to request and resolve traffic related issues with the fewest steps possible.

### STEP 1: ENGINEERING AND POLICE STAFF VALIDATION OF TRAFFIC ISSUES, AND MINOR SIGNAGE AND STRIPING REQUESTS

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Any notice of traffic related issues will first be reviewed by Engineering and Police staff to validate the concern, determine potential impact to neighborhood, and identify the appropriate response. Possible responses include initiation of maintenance action, deployment of police enforcement staff, or referral to TSPC. In many cases it may be possible to resolve a traffic related issue at this step.

- A. The traffic calming process begins with an inquiry to the Traffic Engineering staff, from one or more residents or property owners. If, during the initial inquiry, the property owner/resident requests signage or striping, the Public Works Director or their designee can approve the installation of signage and/or striping. Only signage and striping that is approved in the California Manual on Uniform Traffic Control Devices (CA-MUTCD) shall be installed. No further action would be necessary.
- B. If a speed warning signage or striping is not sufficient staff will define the project limits based on one or multiple street blocks and seek to identify a volunteer resident representative for the project. The Representative will be responsible for circulating a petition form. The representative will be responsible for producing as many copies of the petition form as they need in order to collect signatures. This petition should also have a statement explaining the traffic concern. Through this petition, there is an assurance the individual's concerns also reflect the concerns of the neighborhood. The petition must be signed by a simple majority (50% + 1) of the total number of residences (one signature per address) within the area indicating they are in favor of traffic calming process to start. The completed petition must be submitted within sixty (60) calendar days after staff provides the petition form to the representative. If staff is unable to identify a representative, staff will send notices to the neighborhood and try to find a volunteer representative. The project ends if:
  - a. Staff cannot find a volunteer representative within sixty (60) days of sending notices
  - b. A completed petition is not submitted to staff by the end of the sixty (60) day period after a representative is found.
  - c. A submitted petition fails to obtain enough signatures for a simple majority (50% + 1)

Traffic calming is intended to address speeding and cut-through traffic. Stop signs, yield signs, and one-way street conversions are not used to address speeding and are not part of the traffic calming program. Staff will process such requests through a separate process.

## STEP 2: DATA VALIDATION OF ISSUE AND ENGINEERING ANALYSIS

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Where a traffic related issue is not resolved at Step 1 and a successful petition has been verified by staff, staff will conduct a speed and volume survey by a vendor for a full week including weekends to see if the street qualifies for traffic calming.

A speeding issue exists when:

- The 85<sup>th</sup> percentile speed meets or exceeds 7 miles per hour over the speed limit (for a 25 miles per hour zone, there is a speeding issue if the 85<sup>th</sup> percentile speed is 32 miles per hour or higher); or
- The 85<sup>th</sup> percentile speed meets or exceeds 5 miles per hour over the speed limit for streets within 1,000 feet of a school or park (for a 25 miles per hour zone, there is a speeding issue if the 85<sup>th</sup> percentile speed is 30 miles per hour or higher).

A cut-through issue exists when:

- The average daily volumes meet or exceed 1,500 vehicles per day.

The project ends if a speeding issue or cut-through issue is not verified and traffic calming cannot be requested on the same street segment for at least eighteen (18) months.

If the street has met the criteria for a speeding or cut-through issue. The matter then will be referred to the Traffic Safety and Parking Committee (TSPC) as a traffic calming project.

## STEP 3: INITIAL DISCUSSION AT TRAFFIC SAFETY AND PARKING COMMITTEE

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At the TSPC meeting, staff will deliver an informational presentation to educate residents about the traffic calming process and discuss the pros and cons of different traffic calming measures. Residents will then have the opportunity to express their concerns and make suggestions. Residents attending the meeting can, by show of hands, select traffic calming measure(s) to be put on a postcard survey for residents to vote on. The TSPC may also provide guidance to staff regarding potential traffic calming measures to be put on the survey for residents to vote. The goal will be that at the end of the meeting, staff will have the necessary information to send a postcard survey with choices of traffic calming measures for residents to vote on that they wish to be implemented.

## STEP 4: NEIGHBORHOOD POSTCARD SURVEY

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Based on the traffic calming tools selected on at the TSPC meeting, staff will mail postcards to all residents fronting the street segment. Any traffic calming measure that receives a simple majority (50% + 1) vote of residents' response (one vote per address and a minimum of 50% of all residents must respond) will become a project to be implemented when funding is available. If none of the proposed traffic calming measures get a simple majority vote or less than 50% respond to the postcard survey, then the project ends here and residents will be informed by a letter.

## STEP 5: TSPC RECOMMENDS FINAL MITIGATION MEASURES

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Where the postcard survey results in a traffic calming measure receiving majority support of the responding residents, the City will work with the representative to select a date for the conceptual traffic calming plan to be presented to the public at a TSPC meeting. Certain traffic calming measures may result in increased noise or removal of parking. Residents directly adjacent to the proposed traffic calming measure can express their concerns to the TSPC at the meeting. The TSPC will review the plan and may make a recommendation to the City Council to implement the plan if necessary. If the TSPC does not approve the plan they may request revisions to the plan. If revisions are requested staff will repeat Step 4 and Step 5. Steps 4 and 5 may be repeated only once. If a conceptual traffic calming plan is not approved after the second attempt the project ends.

## STEP 6: CITY COUNCIL DECISION

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Traffic calming measures do not necessarily require City Council action for implementation. Where City Council action is required, the City Council may approve, modify, deny, or refer matter back to the TSPC for further study. The City Council may also direct staff to proceed with actions to implement final mitigation measures.

## STEP 7: MONITOR AND DOCUMENT ACTIONS AND RESULTS

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Staff will continue to monitor and document actions and results to learn most effective means to address or mitigate future traffic related issues.

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### TELEPHONE NUMBERS

- **Department of Public Works**

650.616.7065

PWEngineering@sanbruno.ca.gov

- **San Bruno Police Department**

650.877.8989 Emergency

650.616.7100 Non-Emergency Business Line

650.616.7142 General Information

- **Traffic Safety and Parking Committee**

Meets on the first Wednesday of each month at 7:00 p.m. in Conference Room #115 at:

City Hall, 567 El Camino Real, San Bruno, CA 94066

## REFERENCES

- City of Palo Alto – Neighborhood Traffic Calming Program  
[http://www.cityofpaloalto.org/knowzone/city\\_projects/transportation/traffic\\_calming.asp](http://www.cityofpaloalto.org/knowzone/city_projects/transportation/traffic_calming.asp)  
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