

CITY OF RANCHO PALOS VERDES

NEIGHBORHOOD TRAFFIC CALMING PROGRAM

A community leadership guide



**Public Works Department
December 2008**



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INTRODUCTION

The mission of a Traffic Calming Program is to provide a mechanism to improve community livability, preserve community character and enhance the local neighborhoods by working with the residents to implement solutions to concerns created by automobile traffic on neighborhood streets. Neighborhood traffic management programs are becoming standard practice for many cities around the world that are taking an active role in managing growth and making sure their roadways are safe and attractive. Citizens play an integral role in developing successful traffic management programs for their streets by working with City Staff and utilizing education, engineering, and enforcement to determine ways to attempt to manage and calm traffic.

This guide is designed to provide community leaders with a model to guide residents towards a better understanding of the available tools, the steps to seek traffic calming and improve the livability of residential neighborhoods. This guide does not address safety issues such as installing stop signs, traffic signals or other traffic control device issues. Such issues are topics for the Traffic Safety Commission (TSC) and City Staff to address utilizing their professional expertise and understanding of the City.

The Neighborhood Traffic Calming Program has been designed to ensure that each neighborhood with a demonstrated traffic problem has access to neighborhood traffic calming measures. The program requires significant citizen involvement. The program has been designed to address neighborhood concerns in a timely manner by relying on Staff to take the initial steps to address a perceived problem. City Staff will design final traffic calming measures, the Traffic Safety Commission will review plans and, if acceptable, make a recommendation to the City Council for approval.

GOALS

Goals of the Program are:

- Reduce the speed of vehicles on residential streets with demonstrated speeding problems to levels consistent with speeds on more typical Rancho Palos Verdes residential streets.
- Develop and emphasize focused neighborhood educational programs which address residential traffic problems.
- Implement selective enforcement actions in neighborhoods with demonstrated, or perceived, traffic-related problems.
- Eliminate, or discourage, non-local, cut-through traffic on residential streets.
- In implementing the Program Goals, care will be taken to:
 - Encourage citizen participation throughout the program by seeking the input of affected residents and non-resident property owners through neighborhood meetings, written communication and open forum opportunities with the Traffic

Safety Commission.

- Minimize impacts on emergency vehicle response times caused by implementation of neighborhood traffic calming measures.
- Limit the potential for shifting traffic problems from one residential neighborhood to another when implementing traffic calming measures.
- Respond to complaints in a timely manner.

TRAFFIC CALMING TOOLS – OVERVIEW

PRELIMINARY

Preliminary traffic calming measures are those traffic control devices and programs implemented to inform and educate motorists, bicyclists and pedestrians as well as enforce violations of traffic regulations. These measures are used as initial traffic calming efforts and do not require community support through the petition process. They can also be used for situations where traffic impacts have been found not to be excessive or serious, but where modifications to driver behavior and/or education have been determined to be appropriate. Some common basic elements include:

- Traffic Education Package
- Lawn Signs
- Targeted Sheriff Enforcement
- Radar Trailer Placement

Preliminary traffic calming measures may be implemented immediately upon receiving a citizen request, as well as upon completion of the Engineering Study (if performed). Detailed information on each of these measures is provided on the following pages.

LEVEL 1

Level 1 traffic calming measures may be implemented as a result of the Engineering Study. They are primarily used to reinforce existing traffic regulations and remind drivers of their surroundings. They include standard signing and pavement marking elements as found in the California Manual of Uniform Traffic Control Devices. These measures do not require a second petition in order to be installed. These mitigations include the following:

- Truck Restrictions
- Speed Limit Signs
- Speed Limit Pavement Markings
- No Outlet Signs

LEVEL 2

Level 2 traffic calming mitigations are traffic control devices and roadway design features primarily designed to slow traffic and discourage bypass traffic within residential areas. They are employed when the use of preliminary and Level 1 traffic calming elements cannot effectively address traffic concerns and have the support of a substantial number of affected residents. Level 2 traffic calming measures available in Rancho Palos Verdes include:

- Entrance Treatments
- Curb Extensions/Chokers
- Bulb-Outs
- Medians/Center Islands
- Traffic Circles
- Radar Feedback Signs
- Visual Roadway Narrowing
- Speed Humps/Tables

Level 2 traffic calming measures must be initiated through a petition process. The petition, which is shown on page 33, must have the support of 60% of the property owners on the section of street (or neighborhood) within the limits of the requested traffic calming measures as recommended in the Engineering Study. The limits generally consist of all properties between the first and last device in a series, as well as any property within 200 feet of any device.

Construction plans for the Level 2 measures are designed by City Staff in consultation with the petition's sponsors. When possible, trial installations utilizing delineators, portable curb sections, barricades or other devices will be installed to determine effectiveness and community opinion. The duration of the trial period will normally be less than three months.

During this period City Staff will evaluate the plan. The community's input will be solicited and a final plan will be developed by staff. If the trial installation is successful, the Level 2 traffic calming measure will be installed on a permanent basis pending resident funding.

Installation of Level 2 measures that affect the roadway surface may be delayed or accelerated based on the City's scheduled road rehabilitation projects. Level 2 measures that affect the roadway surface will be installed after or during a road rehabilitation project which is scheduled in the near future. This will avoid installing and paying for the Level 2 measures twice.

For a summary of traffic calming tools see page 31.

PROCESS

The process by which a perceived problem is identified, reviewed, and possibly mitigated consists of a series of education, enforcement, engineering and evaluation steps. The process is summarized in the following steps and on the flow chart on page 9.

1. Initial Complaint from a Resident or Group of Residents

The initiation of City involvement in mitigating a neighborhood or street traffic problem begins with a complaint by an individual resident or a group of residents and/or an observation by City Staff. The complaint generally involves a perception that a significant number of motorists traveling through a neighborhood are violating the law in some way, such as speeding.

2. Preliminary Traffic Calming

Upon receipt of a complaint, City Staff will discuss the issue with the requestor, log the complaint into a database for tracking purposes and take several actions as appropriate. City Staff will conduct a field review of the neighborhood or street of concern. The Sheriff may be contacted to provide additional targeted enforcement in the area. When identified, enforcement will be emphasized during specific times and days when the traffic problems are prevalent. Staff will also schedule placement of the City's radar trailers to help educate motorists regarding their speed. To further assist residents in understanding traffic calming issues, Staff will send the requestor a Traffic Education Package. This package contains several pamphlets and other materials designed to explain how and why various traffic controls are utilized. Staff will also make available to the community lawn signs for their use. The use of these devices is strongly suggested to illustrate the community's involvement in the traffic calming process.

3. Neighborhood Petition for a Traffic Calming Engineering Study

If preliminary traffic calming actions do not mitigate the perceived traffic problem to the satisfaction of the neighborhood, the residents of a street or neighborhood can request a formal Traffic Calming Engineering Study by City Staff to identify the actual traffic conditions and determine if additional traffic calming measures are needed. This request cannot be submitted prior to 90 days after the initial request (from Step 1) is received. The request for a Traffic Calming Engineering Study must be in the form of a petition as illustrated on page 32.

The petition must clearly identify the study limits, either as a street with specific limits or a neighborhood with the boundary streets shown. A map may be attached to the petition to better identify the limits of the study. The petition must be signed by at least 60% of the fronting property owners within the requested study limits.

The Study will be broken into two portions: (1) data collection and analysis, and (2) development of traffic calming measures. This is done to ensure that funds are not

spent on both portions of the study if the initial segment does not support implementation of traffic calming measures. If the results provide for development of further traffic calming measures, funds will be spent on further Study. Upon receipt of a petition, Staff will validate the signatures and determine if all requirements have been met.

4. Traffic Calming Engineering Study

City Staff will conduct the first portion of the Traffic Calming Engineering Study, which will consist of traffic volume counts, speed measurements, a review of the reported accident history, documentation of the existing traffic controls, review of roadway characteristics and any other pertinent information. Generally the study will be completed within eight weeks from validation of the petition, although the size of the study area may affect this schedule. Upon completion of this portion of the study, Staff will determine if the minimum traffic calming thresholds are satisfied.

If the minimum traffic calming thresholds are met, Staff will identify the following:

- Appropriate Level 1 traffic calming measures; and,
- 2-3 acceptable Level 2 traffic calming measures per the approved traffic calming tools.

Staff will prepare a report documenting this information, including specific design, location and cost parameters. As part of the Engineering Study process, adequate notification will be provided to the community as a whole. This notification will include:

- Information signs shall be placed within the limits of the Study, stating:



- The City will place door hangers at every residence within the limits of the Study, as well as within 500 feet of any potential traffic calming device location.

5. Traffic Safety Commission Review of Traffic Calming Engineering Study

Staff will present the Traffic Calming Engineering Study to the Traffic Safety Commission (TSC) for their review, and/or modification as appropriate. The

presentation will be scheduled as soon as possible after completion of the Study, pending availability of the TSC and previously scheduled items. To ensure a full and comprehensive consideration of each traffic calming request, only one Traffic Calming Engineering Study will be presented at any TSC meeting. The TSC meeting is the formal opportunity for residents requesting traffic calming to present their concerns to the TSC, and it is strongly encouraged that the community attends their scheduled meeting.

A Traffic Calming Engineering Study will be presented before the TSC whether or not the minimum thresholds are met. If the thresholds are not satisfied, the Study will document the findings and explain why additional traffic calming measures are not appropriate. If the minimum thresholds are satisfied, the Study will include appropriate Level 1 traffic calming measures as well as two or three traffic calming measures of Level 2 that will be available for consideration by the neighborhood. The recommendations from the TSC will then be forwarded to the City Council for consideration and further action.

6. Traffic Calming Cost

Based on the results of the Traffic Safety Commission's review of the Engineering Study, recommendations will be forwarded to the City Council for consideration. Upon City Council approval, traffic calming devices would be installed by the City at no cost to the residents.

7. Engineering Plan Preparation for Level 2 Mitigations

Upon authorization from City Council, Staff will prepare engineering plans, specifications and cost estimates for use in construction of Level 2 traffic calming measures. Generally, plan preparation will be completed within six weeks from Council authorization. Staff will notify the TSC regarding status of this step and will present the construction plans to the TSC for their review and recommendation to the City Council. Staff will then present these plans to the City Council for final approval.

8. "Before" Counts Taken

Prior to construction, comprehensive "before" traffic counts will be taken to document existing or "pre-" condition speed and volume data. This data will be used as a baseline condition from which post construction can be compared.

9. Traffic Calming Measures Implemented

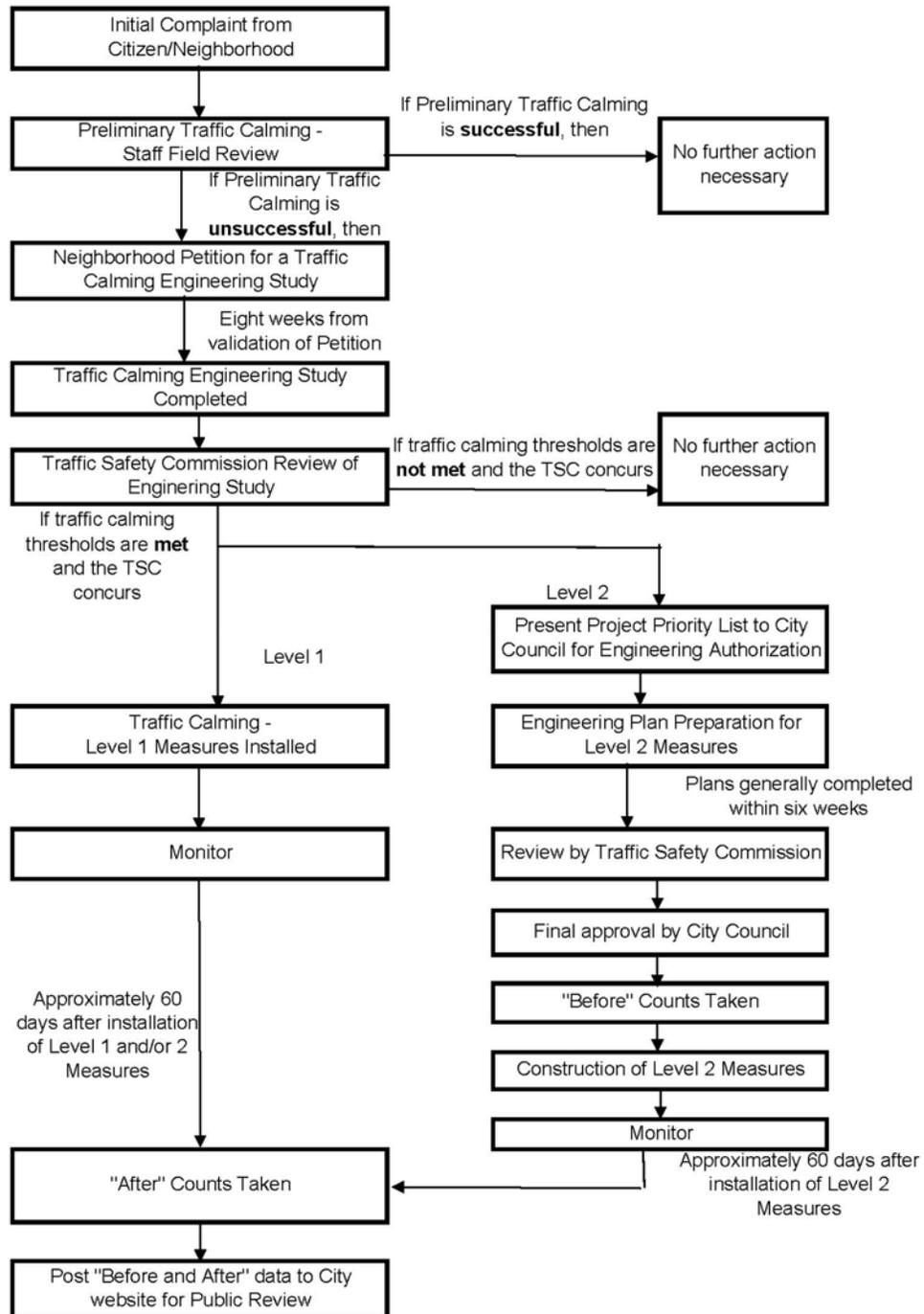
City Staff will advertise the project for construction and will proceed with award and implementation of a contract to install the approved traffic calming measures.

10. Monitor Effectiveness

The TSC will be regularly notified of the progress on Level 2 traffic calming installation. Approximately 60 days after implementation, “after” traffic counts will be taken to document speed and volume data. This information will be compared to the existing or “pre”-condition count information and made available to the public for review and comment.

NEIGHBORHOOD TRAFFIC CALMING PROGRAM FLOWCHART

City of Rancho Palos Verdes - Neighborhood Traffic Calming Program December 2008



DETERMINE ELIGIBILITY FOR TRAFFIC CALMING

1. Minimum Thresholds for Level 2 Measures

Traffic calming tools are not appropriate for all roadways. Arterial and collector roadways are vital components of the City's traffic circulation system and are intended to provide conduits that allow vehicles to move efficiently between destinations. Reducing their ability to accomplish this purpose would increase congestion throughout the City and may result in traffic diverting to local residential streets. Therefore, Level 2 traffic calming actions are reserved for streets with the following characteristics:

- Streets designated in the City's circulation element as local roadways;
- Streets located in Residence Districts as defined by Section 515 of the California Vehicle Code:

A "residence district" is that portion of a highway and the property contiguous thereto, other than a business district, (a) upon one side of which highway, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures, or (b) upon both sides of which highway, collectively, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures. A residence district may be longer than one-quarter of a mile if the above ratio of separate dwelling houses or business structures to the length of the highway exists.

- Streets with a prevailing (85th percentile) speed of 7 mph or more over the posted or designated speed limit.
- Streets with no more than one through travel lane in each direction.
- Streets with an average daily traffic of at least 1,500 vehicles per day or peak hour traffic of at least 150 vehicles per hour.

- Streets that receive a minimum total score of 51 points based on the table below, which identify values assigned to each data element identified in the Traffic Calming Engineering Study:

Data	Points	Basis for Points
Travel Speed	0 to 40	Extent that the 85th percentile* speed exceeds speed limit: 2 points assigned for every 1 mph over speed limit.
ADT Volume	0 to 30	Streets with average daily traffic over 1,500 vehicles per day or peak hour traffic over 150 vehicles per hour will be assigned 5 points with every additional 200 vehicles per day or 50 vehicles per hour.
Crashes	0 to 10	1 point for every correctable collision reported based on the past 5 years of data.
School Proximity	0 to 5	School ground on segment 5 points. Within 500 feet 3 points. Within 1,000 feet 1 point.
Sidewalks or Pathways	0 to 5	No sidewalks or pathways exist along at least one side of the street 5 points.
Pedestrian Crossings	0 to 10	Yellow crosswalk on the street 5 points. Major crosswalk located on the street 10 points.
Total Points	100	

**The 85th percentile speed is the speed at or below which 85 percent of the vehicles travel.*

When data such as speed and volume is gathered at more than one location within a neighborhood, points will be assigned for each location and then averaged to ensure equitable comparisons.

2. Prioritization of Level 2 Traffic Calming Requests

Due to limited funding for traffic calming measures, all requests for Level 2 traffic calming will be evaluated and ranked against other streets and neighborhoods based on the table presented above. City Staff will complete the Neighborhood Traffic Calming Program point worksheet (see page 34). If the minimum thresholds above are met, the City will rank the request against other requests that have already been submitted.

USE OF FUTURE TECHNOLOGIES FOR TRAFFIC CALMING

Technologies regarding traffic calming measures are continually evolving and not be excluded from the RPV traffic calming process. Where feasible, Staff will consider traffic calming pilot programs and grant opportunities to assist with traffic calming measures. Although many progressive traffic technologies are in their infant stages of acceptance, they will be added to this document as a Traffic Calming Tool as they become legal and readily available.

PRELIMINARY TRAFFIC CALMING TOOLS

EDUCATION PROGRAMS

Education programs are an important element of a comprehensive traffic calming program. This tool includes efforts to make the public more aware of their own driving behavior and their impact on others. Pedestrian and bicycle programs alert and educate pedestrians and bicyclists on roadway safety. Driver information and education on existing laws can help improve driver behavior. Traffic calming education allows residents to express views and obtain answers with regards to traffic conditions within their neighborhoods. As part of the process, solutions are discussed and appropriate actions can then be pursued. Driving behavior by residents may be improved by making them more aware of how their actions affect others in their neighborhood.

Cost

- Free to public

Positive Aspects

- Educational tool
- Good public relations for neighborhoods
- Effective for temporary speed reduction needs

Negative Aspects

- Not self-enforcing
- Duration of effectiveness is limited
- May require temporary lane closures

Further information about these programs can be obtained by contacting Public Works at 310-544-5252.

POLICE ENFORCEMENT

The Sheriff Department deploys motorcycle or automobile Deputies to perform targeted enforcement on local residential streets. Targeted enforcement is used to make drivers aware of speed limits and other traffic regulations. This is intended to reduce speeding as well as other illegal and undesirable driving behaviors through the issuance of traffic citations. The presence of Sheriff Deputies is also used as an educational device to help motorists understand how their actions affect livability within a neighborhood, which encourages better driving practices. Enforcement is a highly effective tool when present. Driver awareness is immediately increased and it can be implemented on relatively short notice. For long-term effectiveness, enforcement should be utilized on a recurring basis at varying periods. Effectiveness is also enhanced when it is used in conjunction with educational devices, such as radar trailers and feedback signs. The ability to use enforcement on a widespread basis is limited by the availability of Sheriff resources.

Cost

- Traffic enforcement is part of the City's regular activities and is budgeted accordingly.

Positive Aspects

- Effective while officer is actually present at the location
- Can be targeted to specific time periods that are deemed to be most problematic
- Can be implemented on short notice
- Targets violators without affecting normal traffic

Negative Aspects

- It is a temporary measure
- Enforcement may be limited by police availability
- Expensive tool

For police enforcement, contact the Lomita Sherriff at 310-539-1661.



RADAR TRAILER

This is a mobile trailer-mounted radar display that informs drivers of their speed. This element is applicable on roadways where speeding is a problem. Radar trailers are mobile devices that can be parked on the side of the roadway, then detect and display the speed of approaching vehicles. They are typically moved on a daily basis, and perform basically the same function as a radar feedback signs, but are placed for much shorter periods of time. Radar trailers help discourage speeding by alerting motorists of their speed. Radar trailers are an effective educational tool that clearly illustrates the speed of motorists. They are well received by the public and encourage voluntary speed compliance. Radar trailers are especially effective in reducing speeds of motorists who are generally observant of traffic laws but inadvertently exceed the speed limit. Their use in conjunction with enforcement can increase their effectiveness as well as enhance the long-term effectiveness of enforcement activities. They are less effective on higher volume roadways and are not a method of issuing traffic citations. Their effectiveness decreases after they have been relocated to other locations.

Cost

- Radar trailers are part of the City's regular activities and are budgeted accordingly.

Positive Aspects

- Educational tool
- Good public relations for neighborhoods
- Effective for temporary speed reduction needs
- Portable
- Quick implementation

Negative Aspects

- Not self-enforcing
- Duration of effectiveness is limited
- Subject to vandalism



LAWN SIGNS

Traffic calming lawn signs are placed on private property by the owners to provide a friendly reminder to motorists that they are traveling through a residential neighborhood and should utilize appropriate driving behavior. The City has designed signs with a Rancho Palos Verdes theme, and maintains a supply for use by residents. In addition, the act of placing signs on their property may encourage residents to become more involved in promoting traffic calming within their neighborhood as well as other neighborhoods. Traffic calming lawn signs may have some degree of positive influence on the behavior of drivers. They are generally well received by residents and allow a proactive approach to a neighborhood concern by residents. Lawn signs are not typically a permanent feature and should not be left up for more than 6 months or until Level 1 or 2 mitigations are installed.

There is no specific data on the long-term effectiveness of these devices.

Cost

- Lawn signs are free to the public

Positive Aspects

- Provides a reminder to motorist

Negative Aspects

- Not self-enforcing



LEVEL 1 TRAFFIC CALMING TOOLS

TRUCK RESTRICTION SIGNS

Restricting the entry of trucks into residential neighborhoods can be achieved through the posting of truck restriction signs if approved by City Council. The restrictions typically apply to all commercial vehicles over three (3) tons. This method is most applicable on residential streets to reduce cut-through traffic of commercial vehicles.

Cost

- Truck restriction signs are provided by the City if deemed appropriate.

Positive Aspects

- Redirects commercial traffic through main streets
- Reduces noise and air pollution due to trucks in residential streets

Negative Aspects

- Not self-enforcing
- Causes an inconvenience for residents in the event of truck services needed for moving, deliveries and other heavy services.



SPEED LIMIT SIGNS

This element is a basic method aimed at slowing traffic through visual reminders of the legal speed limits. It can be applied to most streets that have speeding. 25 mph speed limit signs may be installed on local residential streets that meet the legal 25 mph residential speed limit per the California Vehicle Code. However the signs are not required for enforcement. Installing speed limit signage encourages motorists to reduce their speed in residential neighborhoods by reminding them of the legal speed limit. Speed limit signs can promote appropriate driving behavior by clearly indicating the legal speed limit. They are generally well received by residents, but may add to sign clutter. Effectiveness is usually dependant upon recurring enforcement.

Cost

- Speed limit signs are provided by the City if deemed appropriate

Positive Aspects

- Provides a clear definition of legal speed limit
- Provides context for enforcement efforts

Negative Aspects

- Not self-enforcing
- Negative impact on the aesthetics of the street



SPEED LIMIT PAVEMENT MARKINGS

25 mph speed limit pavement markings may be installed on local residential streets that meet the legal 25 mph residential speed limit per the California Vehicle Code. The markings are not required for enforcement and are typically installed adjacent to 25 mph speed limit signs. They can also be used independently of signs when there is a desire to reduce sign clutter. Installing speed limit pavement markings encourages motorists to reduce their speed in residential neighborhoods by reminding them of the legal speed limit. Since they appear directly in front of vehicles on the roadway, they increase the number of locations where the information is provided to motorists, potentially increasing the ability to notify motorists of the speed limit. Speed limit pavement markings can promote appropriate driving behavior by clearly indicating the legal speed limit. They are generally well received by residents and do not add to sign clutter. Effectiveness is usually dependant upon recurring enforcement.

Cost

- Pavement markings are provided and maintained by the City if deemed appropriate.

Positive Aspects

- Provides a clear definition of legal speed limit
- Provides context for enforcement efforts

Negative Aspects

- Not self-enforcing
- Negative impact on the aesthetics of the street



LEVEL 2 TRAFFIC CALMING TOOLS

ENTRANCE TREATMENTS

Entrance treatments consist of physical and/or textural changes to streets and are located at key entryways into a neighborhood. There are numerous types of entrance treatments including textured pavement, center islands, signs, chokers and over head structures.

Entrance treatments create visual, and in some cases audible, cues that tell drivers they are entering a local residential area or that the surrounding land uses are changing. The intent is a reduction in speed.

Entrance treatments have minimal influence on a familiar drivers' routine behavior. Overall speeds and total volumes may be nominally influenced, but it is believed that drivers are made more aware of the environment in which they are driving and are more considerate of pedestrians. Unfamiliar drivers may be influenced to avoid the use of a neighborhood street with an entrance treatment when searching for a through route.



Cost

- Entrance treatments cost varies depending on the treatment. Custom signs start at \$500 each; center islands start at \$10,000 each; chokers start at \$10,000 each. There may be beautification grants available to landscape these mitigations through the City's recycle program.



Positive Aspects

- Deters unfamiliar drivers
- Creates a sense of community
- Aesthetically pleasing

Negative Aspect

- Speed and volume may not be effected
- Landscape must be maintained by the residence/HOA



RADAR FEEDBACK SIGNS

Radar feedback signs are devices mounted either permanently or semi permanently (long-term) that detect and display the speed of approaching vehicles. They are typically installed in conjunction with speed limit signs and are placed on street lights or posts. They perform basically the same function as a radar trailer, but are placed for much longer periods of time. Radar feedback signs help discourage speeding by alerting motorists of their speed. Radar feedback signs are an effective educational tool that clearly illustrates the speed of motorists. They are well received by the public and encourage voluntary speed compliance. Radar feedback signs are especially effective in reducing speeds of motorists who are generally observant of traffic laws but inadvertently exceed the speed limit. Their use in conjunction with enforcement can increase their effectiveness as well as enhance the long-term effectiveness of enforcement activities. They are less effective on higher volume roadways and are not a method of issuing traffic citations. Speed feedback signs are typically mounted on or near speed limit signs and can be mobile units

Cost:

- Radar feedback signs cost approximately \$8,000 each.

Advantages:

- Real-time speed feedback
- Does not physically slow emergency vehicles or buses
- Permanent or on a rotational installation
- Can record speed and volume data for use in education and enforcement efforts

Disadvantages:

- May require a power source
- Only effective for one direction of travel
- Long-term effectiveness uncertain



TRAFFIC CIRCLES

Traffic circles require drivers to slow to a speed that allows them to comfortably maneuver around them. Traffic circles are used when three or more roads intersect. They are created by constructing a raised island placed at the center of the intersection. They may be landscaped with ground cover and/or street trees. The primary purpose of traffic circles is to slow traffic while providing right-of-way control at intersections. An additional benefit is that they reduce the number of angle and turning-type collisions. Traffic circles are very effective at lowering speeds in their immediate vicinity. Traffic circles are most effective when constructed in a series on a local service street. However they can be difficult for large vehicles to negotiate and must be carefully designed to ensure that pedestrian and emergency vehicles mobility is not compromised.

Cost

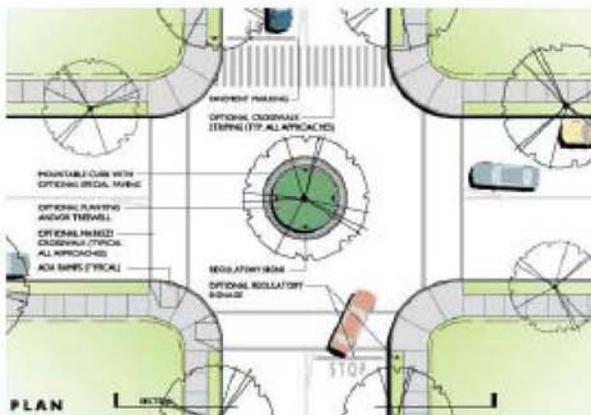
- Traffic circles cost approximately \$10,000 to \$30,000 each, depending upon size, the presence of irrigation and electrical connections. There may be beautification grants available to landscape these mitigations through the City's recycle program.

Positive Aspects

- Traffic Circles are effective in moderating speeds
- If designed well, they can have positive aesthetic value
- Placed at an intersection, they can calm two streets at once

Negative Aspects

- They may be difficult for large vehicles (such as fire trucks) to circumnavigate
- They must be designed so that the circulating lane does not encroach on the crosswalks
- They may require the elimination of some on-street parking
- Landscaping must be maintained by the residents/HOA



CURB EXTENSIONS OR CHOKERS

Curb extensions or chokers narrow the street by widening the sidewalk or the landscaped parking strip. These devices are employed to make pedestrian crossings easier, to narrow the roadway, and/or to slow traffic. Curb extensions effectively improve pedestrian access by reducing the street crossing distance and improving sight distance. They also influence driver behavior by changing the appearance of the street.

Cost

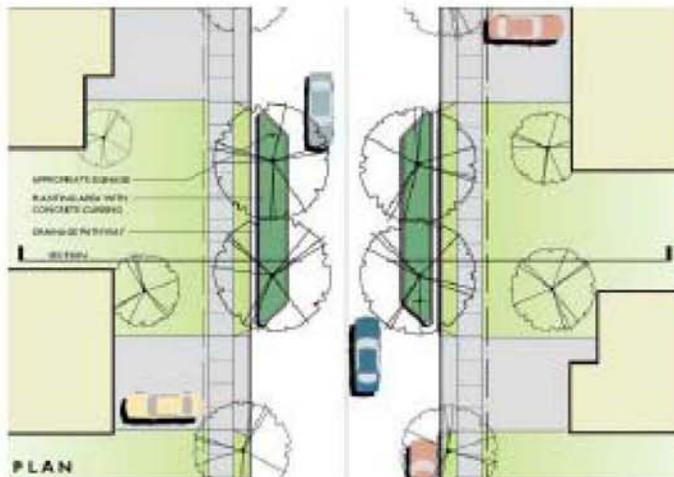
- Curb extensions costs \$15,000 to \$30,000 per location, depending upon size and irrigation. There may be beautification grants available to landscape these mitigations through the City's recycling program.

Positive Aspects

- Visually narrow street
- Can enhance the aesthetics of a street
- Narrowed roadway section may contribute to reduction of speeds

Negative Aspects

- May not be self-enforcing
- Landscape must be maintained by residents/HOA
- Removes parking



City of Rancho Palos Verdes
Neighborhood Traffic Calming Program

BULBOUTS

Bulbouts narrow the street width at intersections, creating a shorter and safer pedestrian crossing and encouraging drivers to slow down. Bulbouts may be striped or may be curbed islands containing special paving or landscaping which maintain current drainage patterns. Corner bulbouts are typically used adjacent to intersections where parking is restricted. They can also enhance the livability of a neighborhood by increasing the separation between the street and residences/sidewalk. Bulbouts effectively reduce speeds in their immediate vicinity by physically narrowing the roadway, which has the effect of reducing motorist's willingness to travel at high speeds. They can influence driver behavior by changing the appearance of the street, especially through landscaping. Bulbouts can provide physical separation between turning vehicles and parked vehicles, thus enhancing access for exiting or entering the traffic flow. They also can reduce the speed of turning vehicles. Bulbouts designed without a curb-side opening may adversely affect bicyclists by reducing their separation from vehicles.



Cost

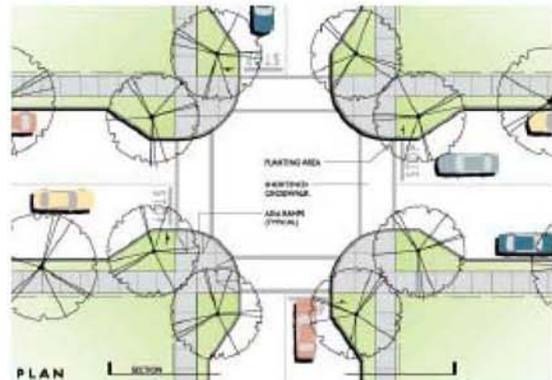
- Bulbouts start at \$5,000 per corner depending upon size. There may be beautification grants available to landscape these mitigations through the City's recycle program.

Positive Aspects

- Pedestrian crossing distance is reduced
- Narrowed roadway section may contribute to reduction of speeds
- Breaks up driver's view path

Negative Aspects

- May create a hazard for bicyclists who are less visible to turning vehicles and cross traffic
- May require partial or total removal of parking
- Landscape must be maintained by the residents/HOA



CHICANES

A curved street alignment that can be designed into new developments or retrofitted in existing right-of-ways is called a chicane. The curvilinear alignment requires additional maneuvering and shortens drivers' sight-lines, resulting in lower speeds. This device can be applied to any street where speed control is desired, provided the street is wide enough to accommodate the curvilinear design.

Cost

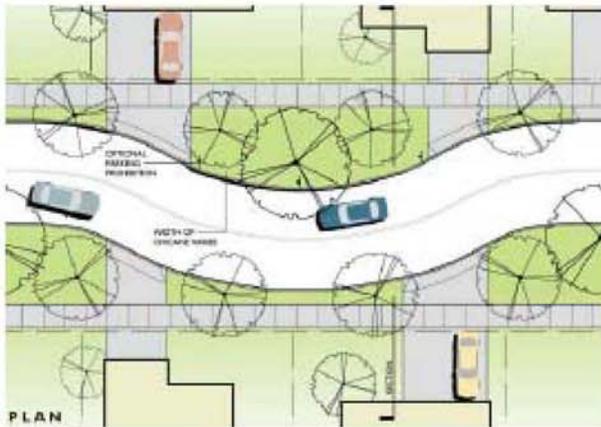
- Chicanes start at \$10,000 each. There may be beautification grants available to landscape these mitigations through the City's recycle program.

Positive Aspects

- Provides a speed reducing effect
- Changes the look of the street, making it more aesthetically pleasing
- Has minimal impact on emergency response

Negative Aspects

- Can involve extensive design and expensive implementation
- May require partial or total removal of on-street parking
- May require modification of drainage features and other utilities



MEDIANS/CENTER ISLAND

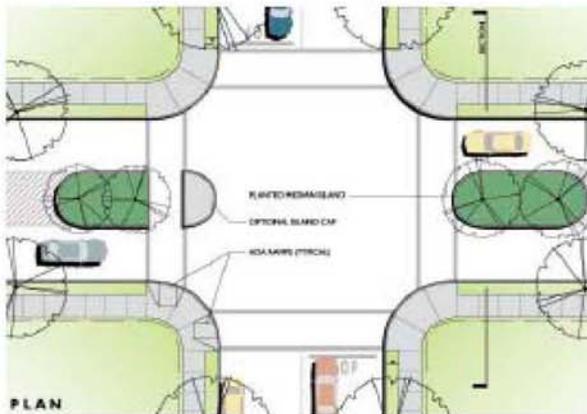
Medians, also called center islands, are raised islands in the center of the roadway that separate traffic directions. Medians are used on wide streets to narrow the travel lanes, interrupt sight distances down the center of the roadway, and ease pedestrian crossing. They are in the center of the roadway that separate opposing directions of traffic. They may be striped or may be curbed islands containing special paving or landscaping. These devices are employed to narrow the roadway, thus reducing the speed of traffic, as well as provide pedestrian refuge areas. They can also reduce speeds by eliminating long, straight, unobstructed segments of roadway that encourage motorists to exhibit poor driving behaviors. Medians and center islands effectively reduce speeds in their immediate vicinity by physically narrowing the roadway, which has the effect of reducing motorists' willingness to travel at high speeds. They also improve pedestrian mobility by providing refuge areas. They can influence driver behavior by changing the appearance of the street, especially through landscaping. These devices can enhance the aesthetics of a neighborhood through well-maintained landscaping, which can emphasize the residential nature of a street.

Cost

- Medians start at \$5,000, depending upon size and the presence of irrigation and electrical connections. There may be beautification grants available to landscape these mitigations through the City's recycle program.

Positive Aspects

- Narrowed roadway section may contribute to reduction of speeds
- Provides pedestrian refuge areas when crossing
- Opportunity for landscaping and visual enhancements to the neighborhood



Negative Aspects

- Long medians may interrupt emergency access and operations
- May interrupt driveway access and result in U-turns at the end of medians
- May require removal of parking
- Landscape must be maintained by the residents/HOA

VISUAL ROADWAY NARROWING

Visual roadway narrowing is accomplished by installing striping to separate the through travel lane from the shoulder/parking lane. It can also be used to create bike lanes where appropriate. The extra pavement can be further delineated by installing diagonal striping between the curb and the edge striping. Visually narrowing the roadway is intended to reduce speeds by creating a confined feeling for motorists, known as side friction. Because it does not include any construction activities, it is a more cost effective and less intrusive traffic calming technique than the other engineering devices contained in this Program. Visual roadway narrowing can typically be installed quickly with little impact to residents. It has speed reduction effects and can be easily modified if necessary. However some residents may oppose the striping for aesthetic reasons. Since striping can only affect motorist perception and not physically require modified driving behavior, it is not as effective as construction measures.

A second way to visually narrow a street is to plant street trees. As the trees mature the street will feel visually smaller. There is grant funding available thru the City's recycling program to pay for these trees. City permits will be required to plant within the City's right-of-way. Furthermore careful selection of trees must be chosen so as to not obstruct views.

Cost

- Striping costs vary depending upon the width of the roadway and presence of diagonal hatching. Maintenance after installation will be included in the City's regular pavement striping budget.

Positive Aspects

- Does not affect on-street parking
- Has a speed reducing effect
- Low initial cost

Negative Aspects

- Not self-enforcing
- Negative impact on the aesthetics of the street



SPEED HUMPS/TABLES

Speed humps and tables are areas of pavement raised 2-3 inches in height over a length of 12-22 feet. The combination of different heights, lengths and spacing will affect the speed a vehicle can comfortably go over the hump/table as well as the speed between humps/tables. Speed humps and tables are marked with signs and pavement markings. They can be used on local streets where speed control is desired or where cut-through traffic is to be discouraged. Speed humps and tables are not used on streets designated as primary response routes for emergency vehicles, located on transit routes and on streets whose grade exceeds 8%. Speed humps and tables will be limited to streets not greater than 40 feet wide with a maximum of 3,000 vehicles per day. The speed humps/tables shall not be installed within horizontal curves of less than 300 feet centerline radius and vertical curves with less than the minimum safe stopping sight distance. They shall not be installed where the minimum safe stopping sight distance is not achieved. Speed humps/tables will not be installed on any streets where it is determined that an increase in accidents will occur with the installation. Speed humps/tables should not be installed on streets with more than 5 percent of long wheel base vehicles travel unless there is a reasonable alternative route. Special consideration should be made with regards to motorcycles, bicycles and other types of special vehicles that use the street.

Cost

- \$5,000 -\$10,000 each depending on the total number of humps or tables.

Positive Aspects

- Speed humps and tables are very effective at reducing speeds
- Used in conjunction with landscaped islands or chokers, they can enhance the aesthetics of a street

Negative Aspects

- They cause a "rough ride" for all drivers
- They force large vehicles, such as emergency vehicles and those with rigid suspensions, to travel at slower speeds
- They may increase noise and air pollution



REMOVAL OF TRAFFIC CALMING DEVICES

If residents of a neighborhood request to have their traffic calming measures removed, a new petition must be submitted with 60% support of from the original traffic calming petition limits. This petition cannot be submitted less than one year after installation of the traffic calming measures. City Staff will validate the petition and present the petition to the Traffic Safety Commission. After the Traffic Safety Commission reviews the request, its recommendation will be presented to the City Council for final action.

The City Council may require residents participation in covering the cost of the removal including:

- Inspection fees
- Changing of signing, stripping, pavement markers
- Redesign
- Disposal of asphalt, concrete etc.
- Design changes or engineering

The process to have the traffic calming devices removed is as follows:

- Residents contact City Staff
- Residents submit a petition for the removal of the traffic calming devices
- City Staff verifies the petition and presents it to the TSC for a recommendation to the City Council
- If required by the City Council, a Trust Deposit will be established for residents' financial participation
- If approved by the City Council, the devices will be removed
- A follow up report is sent to the Traffic Safety Commission and the City Council



APPENDIX

SUMMARY of NEIGHBORHOOD TRAFFIC CALMING TOOLS

Measure	Speed Reduction	Volume Reduction	Noise Increase	Loss of Parking	Emergency Impacts	Increased Maintenance
Preliminary						
Education Programs	minor	none	no	no	no	no
Police Enforcement	moderate-major	none	no	no	no	no
Radar Trailer	moderate-major	minor	no	no	no	no
Lawn Signs	minor	none	no	no	no	no
Level 1						
Truck Restriction Signs	no	minor	no	no	no	minor
Speed Limit Signs	minor	none	no	no	no	minor
Speed Limit Pavement Markings	minor	none	no	no	no	minor
No Outlet Signs	minor	none	no	no	no	minor
Level 2						
Entrance Treatments	minor	minor	no	moderate-minor	minor	moderate-minor
Radar Feedback Signs	moderate-minor	minor	no	no	no	moderate-minor
Traffic Circles	moderate-minor	moderate-minor	minor	moderate-minor	moderate	moderate-minor
Curb Extensions or Chokers	moderate-minor	minor	no	moderate-minor	minor	moderate-minor
Bulbouts	minor	minor	no	minor	minor	minor
Chicanes	moderate-minor	minor	no	moderate-minor	minor	moderate-minor
Medians/center island	moderate-minor	minor	no	moderate-minor	minor	moderate-minor
Visual Narrowing	minor	minor	no	no	no	minor
Speed Humps/Tables	moderate-minor	moderate	minor	no	moderate	moderate-minor

NEIGHBORHOOD TRAFFIC CALMING PROGRAM POINT WORKSHEET

This worksheet will be completed by City staff. It will be used to assign points to a street for prioritization of potential neighborhood traffic calming. (Note: Neighborhood Traffic Calming Area of Impact = "AOI").

Name of Neighborhood (street location): _____

Points

1. Travel Speed (40 pts. max.) _____

Extent that the 85th percentile speed exceeds speed limit; 2 points assigned for every 1 mph over speed limit.

85th Percentile Speed: _____ Date Measured: _____

2. ADT Volumes (30 pts. max.) _____

Streets with average daily traffic over 1,500 vehicles per day or peak hour traffic over 150 vehicles per hour will be assigned 5 points with every additional 200 vehicles per day or 50 vehicles per hour.

Volume: _____ (vpd or vph) Date Counted: _____

3. Crashes (10 pts. max.) _____

1 point for every correctable collision reported based on the past 5 years of data.

Number of Collisions: _____ Period: _____

4. School Proximity (5 pts. max.) _____

School grounds abut candidate street = 5 points.
AOI is located within 500 feet of school grounds = 3 points.
AOI is located within 1,000 feet of school grounds = 1 point.

5. Sidewalks or Pathways (5 pts. max.) _____

No sidewalk or pedestrian pathway exists along at least one side of the street = 5 points.
A sidewalk or pedestrian pathway exists on at least one side of the street = 0 points.

6. Pedestrian Crossings (10 pts. max.) _____

School crosswalk (yellow crosswalk) is located on a street in the AOI = 5 points.
Major crosswalk is located on a street in the AOI = 10 points.

Total Score: _____

Comments:

Evaluator: _____ Date: _____