



## Appendix D

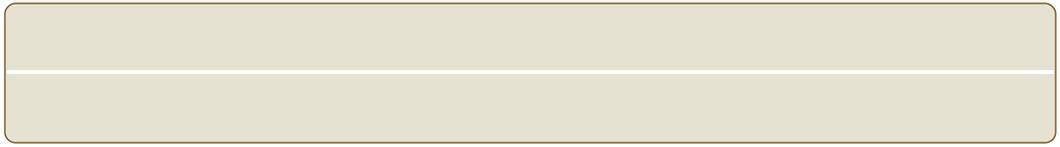
# Neighborhood Traffic Calming Policy

## Policy Overview

The Town of Wake Forest's *Neighborhood Traffic Calming Policy* directs staff and residents on the implementation of traffic calming for residential streets. Under this policy, the Town Engineering Department works with residents to identify traffic problems in their neighborhoods and seek appropriate solutions.

The policy, adopted October 21, 2009, outlines how citizens can request traffic calming devices for their neighborhood and describes how the Town will evaluate the need for the traffic calming device. Procedures also are outlined to develop and implement a plan for the selection and installation of traffic calming projects.

The *Neighborhood Traffic Calming Policy* is provided on the following pages.



# Town of Wake Forest

## Neighborhood Traffic Calming Policy



Adopted: October 21, 2009

**TABLE OF CONTENTS**

**Purpose..... 1**

**Traffic Calming Definitions ..... 1**

**Procedure for Applying for Traffic Calming Devices ..... 2**

**Qualifying Criteria for Traffic Calming Devices..... 2**

**Budget & Funding..... 7**

**Removal of Traffic Calming Devices..... 8**

**Types of Traffic Calming Devices ..... 9**

**FLOWCHART**

**Flowchart 1: Traffic Calming Recommended Process & Timeline ..... 3**

**TABLE**

**Table 1 : Scoring System ..... 5**

**Table 2 : Summary of Traffic Calming Devices..... 15**

**APPENDIX**

**Appendix A : Traffic Calming Petition Form ..... 16**



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

## **Purpose**

The Town of Wake Forest's *Neighborhood Traffic Calming Policy* has been developed to guide Town staff and inform residents about the process and procedures for implementing traffic calming on residential streets as they relate to quality of life. Under this policy, the Town Engineering Department will work with residents to identify traffic problems in their neighborhoods and seek appropriate solutions.

First, the policy outlines how citizens can request traffic calming devices for their neighborhood. Second, the policy describes in detail how the Town will evaluate the need for traffic calming device. Finally, procedures are outlined to develop and implement a plan for the selection and installation of traffic calming projects.

Successful Implementation of this policy requires a combination of several parallel strategies, "the Five E's".

- Education – Neighborhood receive the necessary information and tools to be active participants in addressing their traffic concerns.
- Engineering – Traffic calming strategies that address community – identified traffic issues, traffic calming measure(s) are developed and applied.
- Evaluation – The applied traffic calming measure is evaluated for effectiveness. The policy criteria and standards should be regularly updated to reflect the results.
- Economics- Support implementation of the least restrictive and least expensive traffic calming methods to stay within budget.
- Enforcement – Police enforcement supports the traffic calming plan developed by residents, town staff, and public officials.

## **Traffic Calming Definitions**

**Neighborhood** – The Webster's International Dictionary defines a neighborhood as "The region near where one is or resides." A neighborhood can be as small as one street or a network of homes and small businesses with shared streets, parks, and people.

**Traffic Calming** – The Institute of Transportation Engineers defines traffic calming as "the combination of mainly physical measurements that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users" (ITE Journal, January 1997).

**Affected Residents** – An affected resident is a resident that lives on the street under study within the limits of the block or blocks being considered for traffic calming.

**Affected Street** – A roadway section of 3 blocks or a minimum of 1000' in length with residential land use having more than 75% of the properties that are directly fronting the roadway section.



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

Direct Fronting – A property is considered direct fronting when its address and driveway are oriented to the roadway section.

Request Petition – Petition for traffic calming measures submitted by 75 percent of the property owners on the affected.

### **Procedure for Applying for Traffic Calming Devices**

The Flow Chart on the next page shows the recommended process and timeline for the implementation of a traffic calming device.

**Initiation** – Resident(s) of the proposed traffic calming project area may initiate the process via a letter, phone call, or email from the neighborhood contact person(s) to the Town Engineering Department. A Traffic Calming Request packet is then mailed, e-mailed, or made available for pick up to the resident(s) consisting of a copy of Town of Wake Forest Neighborhood Traffic Calming Policy and a copy of Traffic Calming Petition Form (see Appendix A for form).

The petition must have a minimum of 75 percent of the resident signatures in the affected area in favor of the traffic calming device, including 100 percent of those property owners who are located within 100 feet of proposed traffic calming device. Only one signature per household is counted to determine the 75 percent approval. The town staff will verify the signatures match the tax records. If the required signatures are not obtained, the process is stopped. If the resident signature requirement is met, a letter from the Town Engineering Division is sent to Neighborhood contact.

### **Qualifying Criteria for Traffic Calming Devices**

The town will review the request against preliminary qualifying criteria for traffic calming devices. There are many factors taken into consideration when reviewing residential traffic concerns to determine the most feasible traffic control measure. These factors include:

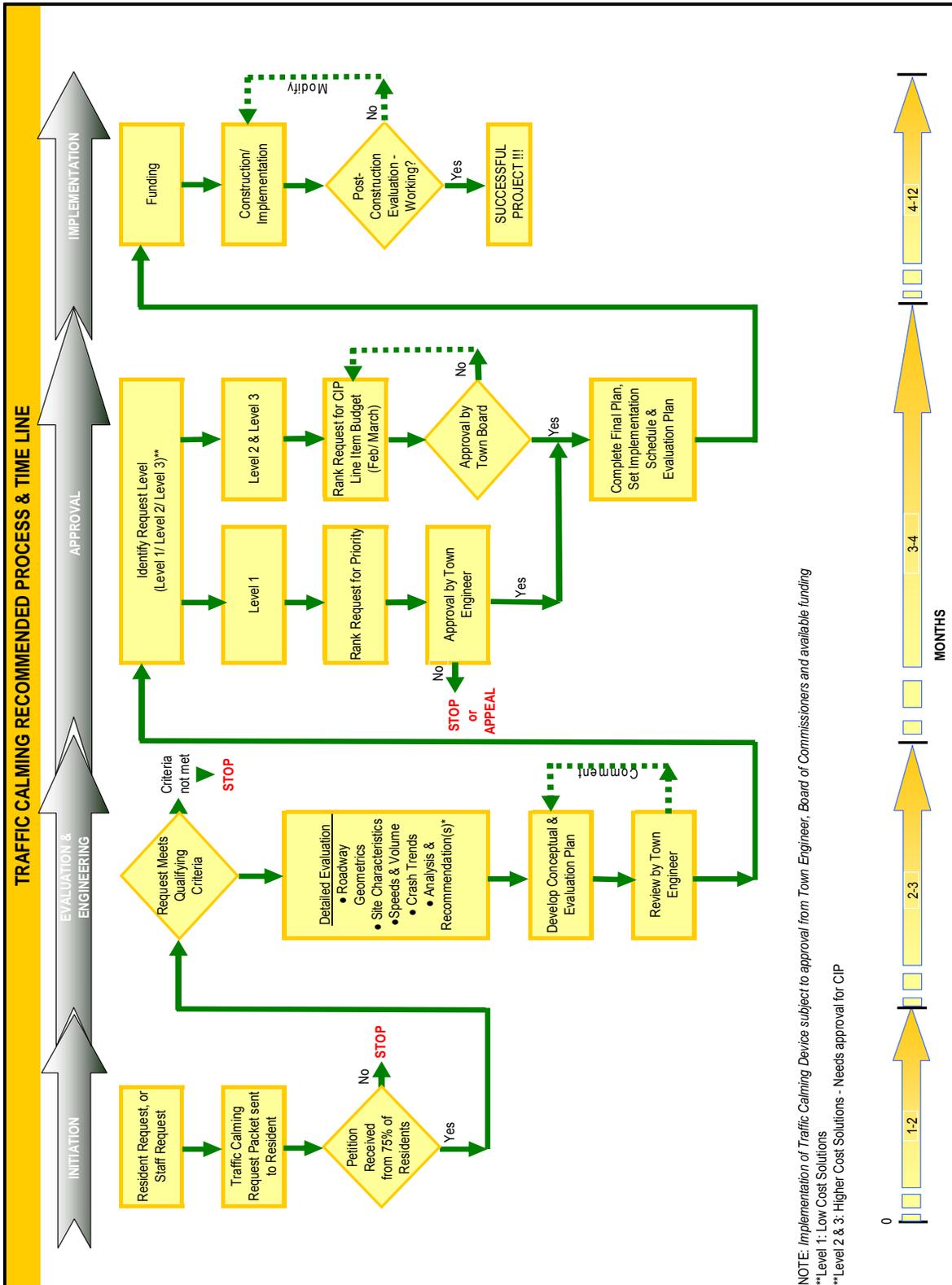
- Speeds and /or volume of traffic
- The surrounding roadway network
- Accident history
- Resident network and access
- Neighborhood response and
- Budget considerations.

In order to qualify for traffic calming devices under the Town of Wake Forest Neighborhood Traffic Calming Program, the roadway being considered for the traffic calming device(s) should meet some or all of the following:

- A town-maintained public street classified as residential local or residential collector streets. To be considered under this Policy, a collector street must be primarily residential. “Primarily residential” means that at least 75% of the properties with frontage on the street are in residential zoning or have existing land use that is residential.



Flowchart 1



NOTE: Implementation of Traffic Calming Device subject to approval from Town Engineer, Board of Commissioners and available funding

\*\*Level 1: Low Cost Solutions

\*\*\*Level 2 & 3: Higher Cost Solutions - Needs approval for CIP



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

- A posted speed limit of 35 mph or less.
- 15% of the traffic speed exceed the posted speed limit by at least 5 mph. (85<sup>th</sup> percentile speed exceeds 5 mph over posted speed limit)
- Traffic volume on the affected street less than 4000 vehicles per day (vpd) regardless of its classification.
- Roadway width of less than or equal to 41 feet (back of curb to back of curb).
- 6 accidents in last 3 years.
- Not a primary run route for emergency services such as Fire and Ambulance.
- A score of at least 30 using scoring system (see Table 1)
- Application must not have been denied or become void within last 12 months.

The town staff will perform site study and determine if the request meets the preliminary qualifying criteria for traffic calming. A letter or email is sent to the neighborhood contact person(s) notifying them of the outcome of the study. If the data does not meet the qualifying criteria, alternative measures are offered for discussion. If the data meets the criteria, the traffic calming process is taken to further evaluation.

**Evaluation & Engineering** – After the request meets qualifying criteria, a detailed study performed by a Professional Engineer will conclude and include the following:

- A detailed field review studying closely roadway geometrics such as road alignment, road grade, sight distance problems, distance to nearest intersection, driveways, curb height etc. and site characteristics such as sign inventory, pavement markings inventory, on-street parking, school, emergency services, and transit route/schedule information to identify any other conditions of concern for traffic safety.
- Collection of traffic speed and volume data as needed for more detail or to get updated data with respect to peak hour volume, traffic violations, pedestrian/bicycle volumes, cut-through traffic volume and origin-destination survey.
- A review of crash history for the prior three years to determine the total number of collisions and to identify any significant crash trends (i.e. type of collisions, locations, time of day, and days of the week).
- The data will be used to rank projects as shown on following Table 1. Projects with the most total points are ranked the highest and will be selected for further action based on budget availability and compatibility with other transportation projects.



**Table 1 : Scoring System**

CRITERIA	BASIS FOR POINT ASSIGNMENT	POINTS
Speed	0 to 50 points: 5 points assigned for every 1 mph of the 85 <sup>th</sup> percentile speed that exceeds the posted speed limit (example: 28 mph for 20 mph posted speed limit = 40 points)	
Pedestrian Activity	0 to 20 points: 5 points assigned for each school, church, bus stop, public park, community center, senior center, senior living facility or shopping center that is likely to generate a significant number of pedestrians crossing on the traffic calmed street.	
Crash History	0 to 10 points: 2 points for every reported crash occurring on the project segment during the last 3 years of a type that is deemed correctible by traffic calming measures.	
Volume	0 to 10 points: 1 point assigned for every 400 vehicles per day	
Other Factors	0 to 10 points: 5 points assigned for each road condition (such as Sight Distance problems) that can be improved with traffic calming measures.	
<b>TOTAL POINTS</b>	<b>100 Points Maximum Score</b>	

- Traffic Calming Device recommendation(s) are made based on severity of the problem – scores between 30 and 60 are identified as low priority projects and scores above 60 are high priority projects.
- Further on each priority list, the recommendation(s) are identified as Level 1/ Level 2/ Level 3. (See *Types of Traffic Calming Devices* section of this Policy for description of each level). Level 1 recommendation(s) such as pavement markings and enforcement will be approved by Town Engineering staff on ongoing basis and in accordance with the priorities for each project to the limit of the approved funding each year. Level 2 and Level 3 recommendation(s), because of their budgetary impacts, must be complete and submitted by February 15<sup>th</sup> of each year for the request to be considered as Line Item in Capital Improvement Program.
- All designs for a proposed traffic calming device shall follow ITE or other national recommended guidelines, if available.
- The town staff prepares a conceptual plan consisting of traffic calming device(s) selection, implementation schedule and a cost-estimate. A cost estimate of recommended traffic calming device(s) will be presented in form of cost/benefit matrix. **Approval of a petition does not guarantee that a device(s) will be placed. The implementation is dependent on approval from the Town Engineer, Town Planning Board, Board of Commissioners and funds available for the program in a fiscal year.**
- Also, the staff will prepare a plan to evaluate the effects on the neighborhood one year from the time of implementation. The 1-year evaluation plan should note what changes



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

should be expected for the traffic calming to be considered a success. Lessons learned from evaluation should be used to update the policy.

It is critical that at least the following appropriate agencies be contacted and included in the development of conceptual plan.

- Police Department
- Fire Department
- Wake County EMS (Stat.# 10)
- Public Works (Sanitation Dept.)
- Planning and Inspections Department
- Wake County Public Schools – Transportation

**Approval** – Upon completion of a conceptual plan, Level 1 recommendation(s) such as pavement markings and enforcement will be approved by Town Engineering staff on ongoing basis and in accordance with the priorities for each project to the limit of the approved funding each year. Stop sign requests must be approved by the Town Board as an ordinance change. Multi-way stops are typically used for capacity concerns (high volume intersections) and not for traffic calming. The use of stop signs must meet MUTCD warrants. (See *Types of Traffic Calming Devices* section of this Policy for detailed discussion of Stop Signs).

The Town Engineering staff will submit Level 2 and Level 3 recommendation(s) annually as a Line Item in its budget submission for Capital Improvement Program which shall be considered in accordance with normal budget practices and procedures. Following approval of a budget for submitted traffic calming projects, the town engineering department is authorized to install such devices in accordance with the priorities of each project to the limit of the approved funding each year.

**Appeal Process:** The Town Engineering staff has authority to reject a traffic calming device(s) request based on detailed engineering evaluation and lack of problem severity. The resident(s) may appeal the Town Engineer’s decision to the Board of Commissioners. The Board of Commissioners, at its regular meeting on third Tuesday of the month may consider this request and may, in its discretion, choose to approve it. If the request plan is not approved by the Board of Commissioners, the process is completed.

**Implementation** - The proposed schedule in conceptual plan must consider the availability of funding. In the event that the traffic calming devices are very costly to install, or if the potential effectiveness of the devices is unknown, the town may elect to break up the final plan into phases to allow the most immediate needs to be addressed while lesser needs or more expensive measures wait for funding. Phasing the project should be done with caution to ensure that partial implementation does not create new problems or exacerbate the existing problems.

If in any project, residents are responsible for any portion of the cost, an agreement or agreements must be signed between town and the residents that state residents share of project cost. Any cost owed to Town will need to be paid in full by check to the Town Engineering Department prior to construction.



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

Many traffic calming measures offer significant opportunities for landscaping. Urban Forestry staff of the Planning & Inspections Department will be invited to participate in the implementation process in order to help address landscaping issues per town ordinances. The town will bear the initial cost of installing landscaping by a contractor hired and funded by the town. Responsibility of ongoing maintenance and plant replacement can be done by neighborhood residents or by a licensed contractor hired by the Town, but funded by neighborhood residents.

One year after the traffic calming device is installed; the Town Engineering Department will complete an evaluation of the effects on the traffic calming device. Comments will be solicited from residents in the affected area by the use of a formal survey or through press releases. If implementation of plan is phased, a post implementation evaluation should be performed prior to starting work on each subsequent phase to determine if the measures already installed have had the desired effectiveness and to ensure that there is still a need for the subsequent phases and/or to determine if subsequent phases should be modified. The lessons learned from traffic calming projects should be used to revise the standards and criterias set in the policy.

### **Budget & Funding**

On a yearly basis, depending on revenues and expenses, the Town will include a line item in the Capital Improvement Program (CIP) budget for Level 2 and Level 3 projects to be completed within that fiscal year (July 1 – June 30). Level 1 project(s) are proposed to be funded with a different source. All traffic calming projects will also include budgetary responsibility from the residents who reside on the affected street(s). The residents will pay for 25% of the installation cost for each traffic calming measure. A payment must be made in full by the residents prior to the commencement of the installation. Yearly maintenance costs will be incurred by the Town. Landscaping to be installed as part of any traffic calming project will be maintained by the residents. If the landscaping is within the public right-of-way, a landscape easement will be created and the residents (or representative Homeowners' Association) will sign a maintenance agreement with the Town to perform maintenance services within the right-of-way.

The number of projects per year will be limited by the line item budget. The Town's Engineering Department will review the line item budget on a yearly basis to determine the exact amount for new projects and maintenance.

Due to limited resources, some areas may not be identified and funded for a project for significant periods of time. In addition, developing a traffic calming project can take months, adding to the delay experience by residents. Therefore, interim strategies may be used to provide citizens with some improvement of their traffic problems.

A sample budget is shown to give perspective of what a budget can accomplish in a year.



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

For a Fiscal Year Budget Opinion:

Example budget: \$75,000 (NOTE: 2009 Costs)

Type of Request	No. of Requests	Cost
Multi-way stop sign	3	\$1,200
Speed Humps	10	\$25,000
Traffic Circle	1	\$10,000
Pavement Markings (3-D images)	4	\$1,000
Median/ Center Island Narrowing	1	\$15,000
Pedestrian Crosswalk & Bulb-out	1	\$20,000
<b>TOTAL COST</b>		<b>\$72,200</b>

Residents or a home owners association may elect to pay for 100% of the construction and maintenance cost to implement an interim strategy or recommended traffic calming device(s). Even if the petition meets the required level of area-wide support for a traffic calming device(s) and the residents are willing to bear the full costs of construction and implementation, the traffic calming device(s) must be approved by the Town Engineer by going through the traffic calming process in this policy. The traffic calming device(s) implementation must have no significant adverse impacts associated with implementation.

**Removal of Traffic Calming Devices**

A petition for the removal of traffic calming device must meet the following conditions:

- The request for a removal petition must be signed by at least five separate property owners in the neighborhood of the original petition area.
- The new petition must include the same affected area as the original petition.
- The removal petition must be approved by 75 percent of the property owners in the original affected area and follow the same procedures outlined above for the installation of a device.
- The traffic calming device to be removed must be in place for a minimum of one year period.
- The cost of removal of traffic calming device must be incurred in same ratio as installation cost distribution.

If a removal petition fails to meet majority in 90 day signature period, the location shall not be reconsidered for a period of 1 year from the date the signature period expires unless significant changes warrant it otherwise.



### **Types of Traffic Calming Devices**

The list of traffic calming devices mentioned in this policy is not meant to exclude other measures that may be available to solve the problem. For purpose of this policy, traffic calming measures are separated into three levels. Level 1 is the least restrictive meaning ease of implementation and low cost options while Level 3 is the most restrictive requiring prior planning and high cost.

- **Level 1:**

- Police Enforcement – The speed and volume data can be used to identify locations with speeding problems. The data can be utilized by Police Officers to focus their efforts on the most serious offenders. This measure may be implemented immediately with little planning.
- Neighborhood Awareness/ Education – This effort is important for successful implementation of any traffic calming. Education is intended to remind neighbors to pay attention to their driving habits and their mutual responsibilities to the residents – particularly the children – living in the community.

- Radar Trailer – The speed data available on various streets can be used by town to place these signs more effectively. Many drivers speed in neighborhoods without realizing how fast they are traveling. Reminding these drivers that they are exceeding the speed limit on a street can encourage them to drive more slowly.



Photo 1: Radar Trailer

- Signage: Placing appropriate warning and information signs and additional regulatory signs remind motorists of the various roadway conditions and hazards of the area. Restrictions such as “No Trucks” can also help reduce cut-through traffic.



Photo 2: “No Trucks” Prohibition Sign

- Pavement Markings – On flat terrain, removing a centerline can encourage drivers to drive more slowly. Centerlines should be maintained around curves, over hills, and on approaches to railroad crossings, bridges and intersection approaches. Or



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

pavement markings also can be used to visually narrow travel lanes in a given area. The three dimensional marking of speed hump can be used as cheaper alternative to actual speed hump. The cost of 3-D speed hump can be \$60-\$80 a piece versus \$2000 of actual speed hump. These are successfully implemented in Philadelphia.



Photo 3: 3D image of speed humps



Photo 4: Pavement Markings to visually narrow travel lanes



Photo 5: Special Pavement Markings on crosswalks

- On-Street Parking – Removing on-street parking restrictions can reduce speeds. Altering parking from side to side along the length of the street to break up the visual continuity of long, straight streets. On streets with volumes over 1500 vehicles per day, a queuing analysis that considers traffic volume and the density of on-street parking may be necessary before allowing parking that would narrow the street down to one lane.



Photo 6: Alternate on-street parking

- Stop Signs: Stop signs may be used to calm traffic; however, their use is not encouraged strictly as a traffic calming device. Research shows that :
  - Unwarranted stop signs installations require regular police enforcement
  - When stop signs are overused and/or unwarranted, compliance may decrease
  - When stop signs are unwarranted, vehicle speeds at mid-block locations may increase as motorists try to make up for lost time.



Photo 7: Multi-way Stop Sign



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

- Safety of pedestrians is decreased at unwarranted multi-way stops, especially small children.

For the above mentioned reasons, this measure can be considered provided it meets the MUTCD warrants.

- One-way Street Conversion: In some situations, turning two-way streets to one-way can improve traffic problems in neighborhoods. Such conversions must be analyzed for capacity.



Photo 8: One-way Street Sign

- **Level 2:**

- Speed Humps: Most commonly used traffic calming device for speed control. Street should not be primary emergency service route.



Photo 9: Speed Hump

- High Visibility Crosswalks: A wirelessly activated solar-powered in-roadway warning light, like the one shown here, can provide energy-efficient, in-pavement lighting for crosswalks. They are great option for pedestrian safety at uncontrolled crosswalks. They activate when a pedestrian is crossing, enabling drivers to learn to associate them with a need to yield or slow down for pedestrians in crosswalks. Also in-pavement flashers delineate the crosswalk and draw the driver's attention to the roadway.



Photo 10: High Visibility Crosswalks



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

- Bulbouts/Neckdowns/Chokers: These designs can be modified to accommodate the bicyclist/pedestrian as shown below.



Photo 11: Bike/Ped accommodated Choker



Photo 12: Bulb-outs at the intersection

- Chicanes: One lane chicanes can significantly reduce cut-through traffic. But it may lead to increase in head-on collisions.



Photo 13: Chicanes

- Median/ Center Island Narrowing: This measure can be easily modified to include bicyclist & pedestrians.



Photo 14: Center Island Narrowing



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

- **Level 3:**

- Traffic Circles: May significantly reduce speeds on the “thru” street. It may impede large vehicles.



Photo 15: Traffic Circles

- Roundabouts: They are used on higher volume streets (collector type) to allocate rights-of-way among competing movements. They are often used to substitute traffic signals or all-way stop signs. Roundabouts are often safer and more efficient than signals or all-way stops when traffic volumes are moderate to heavy and flows are balanced at the cross streets. Prior to implementing roundabout as traffic calming, a detailed operation analysis is highly recommended.



Photo 16: Roundabouts with Bike Lane

- Street Closures: Fire or emergency vehicles may oppose to this traffic calming device as it can lengthen response routes. To accommodate such emergency vehicles, motorized gates can be installed at street closures. While closed to private vehicles, these gates can be activated by emergency vehicles via radio control.



Photo 17A & 17B: Street Closure with Motorized Gate (Coral Gables, FL)

Whenever implementing a traffic calming device, emergency vehicle access and response time must be carefully considered. Emergency vehicles, particularly ambulances and fire vehicles have more difficulty with “vertical” measures such as 14-foot long speed humps than with “horizontal” measures such as “neck-downs”. Longer fire vehicles and equipment such as ladder trucks may have trouble negotiating some “horizontal” measures.



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

Likewise, bicyclists, pedestrians and other expected street users must be kept in mind when developing a traffic calming strategy, as some measures can obstruct their movement. Many measures can be modified to allow bicyclists and pedestrians to bypass them. For instance, a choker can be fitted with a bicycle / pedestrian path to allow for those users' particular access needs as shown in picture in Level 2.

The following table (Table 2) summarizes where the devices included in this section may be used and their effectiveness at resolving typical traffic calming issues.



Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009

**Table 2 : Summary of Traffic Calming Devices**  
(Note: costs shown in table are 2009 costs)

	TRAFFIC CALMING DEVICE	DEFINITIONS	PHOTOS	DESIGN WARRANTS/ CONSIDERATIONS	TRAFFIC/ VOLUME REDUCTION	SPEED REDUCTION	CHANGE IN % TRUCKS	IMPACT ON ADJACENT STREETS	USE ON BUS ROUTE	USE WITH DRIVEWAYS ON STREET	USE WITH CURBS & GUTTER	IMPACT PARKING	SAFETY			IMPACT ON POLLUTION (NOISE/AIR)	EMERGENCY VEHICLE ACCESS/DELAY	DEPENDENT ON POLICE ENFORCEMENT	LEVEL OF VIOLATIONS	MAINTENANCE PROBLEMS/ COST	AESTHETICS/ LANDSCAPING POTENTIALS	COST	USEFUL FOR SPOT OR AREA-WIDE PROBLEMS
													VEHICLE	PEDESTRIAN	BICYCLE								
LEVEL 1	Enforcement (visible & active police presence)	Extensive traffic enforcement, "emphasis patrols"		• May be implemented with little planning	Not Likely	Temporary	Not Likely	Yes	Yes	Yes	-	-	-	Improved	Improved	Possible Reduction/No change	-	High	Low	High cost for extended	-	\$100/hour	Both
	Neighborhood Awareness/ Education	Distribute Safety Information		-	No	Not Likely	Not Likely	-	-	-	-	No	-	Possible Improvement	Possible Improvement	No change	-	-	-	-	-	Varies	Both
	Radar Trailer	Providing the posted speed limit on the device reminds drivers to slow down if they are travelling to fast		• May be implemented immediately with little planning • In the long term, less expensive than police enforcement	Not Likely	Temporary	Not Likely	Yes	Yes	Yes	-	-	-	-	-	No change	-	Self enforcing				\$3000-\$4500	Site
	Signage	Place appropriate warning signs, information signs & regulatory signs		• Must meet MUTCD warrants	No	Temporary	Possible	No	Yes	Yes	-	-	Possible Improvement	Possible Improvement	Possible Improvement	No change	No effect	-	Varies	High	No	\$100-\$200 per sign	Spot
	Pavement Treatments Class I (Marking, Striping & Color)	Special pavement markings at entries, hazard locations or crosswalks to alert drivers of special conditions		• May be implemented with little planning	No	Possible	Not Likely	No	Yes	Yes	-	No	-	Possible Improvement	-	No change	-	-	-	Low Problem/High Cost	Yes	\$0.15ft - \$1.00/ft (paint) \$1.00-\$5.00 /ft (plastic)	Both
	Pavement Treatments Class II Texture/Composition, Patterns, Color)	Special pavement compositions and markings to alert drivers of special conditions		• May be implemented with little planning	Not Likely	Possible	Possible	No	Yes	Yes	-	No	-	Possible Improvement	Varies	Possible Reduction/No change	No Constraint	-	-	-	Yes		Both
	Parking Variants Class I (Zones, Signs, Striping, Timed, Resident Restricted)	Parking Areas create narrower roadways & increased activity leading to increased attention by drivers			Possible	Likely	Likely	Yes	Yes	Yes	-	High	Possible Improvement	Possible Improvement	-	Possible reduction/no change	No effect	Low	Varies	Low	-		Spot
	Parking Variants Class II (Shifting Traveled Way)	Altering parking from side to side along the length of the street to break up the visual continuity of long, straight streets			Possible	Likely	Not Likely	No	No	Yes	Yes	High	Increased Conflicts	Possible Improvement	Varies	Possible reduction/no change	No effect	-	-	Low	Yes		Spot
	Stop Signs	Stop signs, 2-way or 4-way, used to assign right-of-way at intersections		• Must meet MUTCD warrants	Seldom	Varies	Not Likely	No	Yes	Yes	-	No	Varies	Varies	Varies	Increase	No Constraint	Low	Varies	High	No	\$50-\$200 per sign	Spot
LEVEL 2	Speed Humps	Raised sections of pavement across the travelled way with curved transitions		• Appropriate for local streets • Posted Speed limit ≤ 25-30 mph • Traffic Volume 300- 4000 vpd • Max. grade < 8% • Most effective if used in series; spaced 300' - 500' apart	Possible	Yes	Possible	Yes	Yes	Yes	Yes	No	-	Improved	Plan with care	Possible Increase/No change	Minor Constraint	Self enforcing	-	Low - Moderate	Yes	\$1500 - \$2500	Both
	High Visibility Crosswalks	Place at uncontrolled crosswalks to provide pedestrian safety & increase crosswalk visibility to drivers			No	Likely	No	No	Yes	Yes	Yes	-	-	Improved	Improved	No change	No effect	Self enforcing	-	10% of initial install cost	No	\$10K-\$15K	Spot
	Bulbouts/Neckdowns/Chokers	Curb extensions at intersections and mid-block points that reduce curb-to-curb roadway travel lane widths		• Design can be modified to include Bicyclists and Pedestrians	Possible	Yes	Possible	Yes	No	No	Yes	Yes - Gain	Varies	Improved	Plan with care	No change	Severe effect	Self enforcing	-	High	Yes	\$7K-\$10K	Both
	Chicanes	Curb extensions that alternate from one side of the roadway to the other, forming s-shaped curves			Possible	Yes	Likely	Yes	No	No	Yes	High Loss	Increased Conflicts	Varies	Varies	No change	Severe effect	Self enforcing	-	High	Yes	\$5K-\$10K	Both
	Median/Center Island Narrowing	Raised islands located along the centerline of a roadway that narrow the width at that location		• Design can be modified to include Bicyclists and Pedestrians	Possible	Yes	Possible	Yes	No	No	Yes	Low	-	Improved	Plan with care	No change	Minor Constraint	Self enforcing	-	High	Yes	Varies on length & material used	Both
LEVEL 3	Traffic Circles	These geometric design features force traffic at intersections into circular maneuvers			Possible	Near Circle	Yes	Yes	Plan with care	Yes	Yes	High	Improved	Varies	Varies	No change	Minor Constraint	Self enforcing	-	Moderate	Yes	\$5K-\$15K	Both
	Roundabouts	Barriers placed in the middle of an intersection, directing all traffic in the same direction		• Are used on higher volume streets (collector type) to allocate rights-of -way among competing movements.	Not Likely	Near Circle	Possible	Yes	Plan with care	No	Yes	High	Improved	Increased Conflict	Increased Conflict	No change	Minor Constraint	Self enforcing	-	High	Yes	\$20K - \$120K	Spot
	Street Closures	Barriers placed across roadways to completely close through vehicle traffic			Possible	Yes	Possible	Yes	No	Yes	Yes	Low	Varies	Improved	Improved	No change	Severe effect	Self enforcing	-	Moderate	Yes	\$10K-\$20K	Spot



*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

**Appendix A**

**Citizen Traffic Calming Petition**

We, the undersigned residents, do respectfully petition the Town of Wake Forest for traffic calming devices in the neighborhood/intersection of \_\_\_\_\_

\_\_\_\_\_.

The reasons for the petition are:

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*Please note any additions, corrections, or vacancies to the attached map\*\*\*\*\*

**Neighborhood Contact Person:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_ **Email Address:** \_\_\_\_\_

**NOTE:** Persons residing on affected street of approved traffic calming device will participate in financing of the implementation.

Signature	Name Printed	Address	Apt. No.





*Town of Wake Forest, NC  
Neighborhood Traffic Calming Policy  
Adopted: October 21, 2009*

Any questions related to the Town of Wake Forest Neighborhood Traffic Calming Policy may be directed to:

**TOWN ENGINEER**

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**TRAFFIC CALMING POLICY CONSULTANT**

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