



**CITY OF SALEM**

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# **NEIGHBORHOOD TRAFFIC MANAGEMENT PLAN**

**NEIGHBORHOOD TRAFFIC CALMING PLAN  
NEIGHBORHOOD STOP SIGN PLAN**

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## ACKNOWLEDGMENTS



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CONTENTS

INTRODUCTION

1  
NEIGHBORHOOD  
TRAFFIC CALMING PLAN

2  
NEIGHBORHOOD  
STOP SIGN PLAN

A  
APPENDIX

|                                   |   |                                   |    |                  |    |   |    |
|-----------------------------------|---|-----------------------------------|----|------------------|----|---|----|
| NEIGHBORHOOD TRAFFIC CALMING PLAN | 2 | BACKGROUND                        | 3  | BACKGROUND       | 13 | APPENDIX A. NEIGHBORHOOD TRAFFIC CALMING PLAN MEASURES LIST | 17 |
| NEIGHBORHOOD STOP SIGN PLAN       | 2 | PLAN DEVELOPMENT                  | 3  | PLAN DEVELOPMENT | 13 |   |    |
|                                   |   | OVERVIEW                          | 4  | PROCESS          | 14 | APPENDIX B. NEIGHBORHOOD STOP SIGN PLAN FLOW CHART          | 19 |
|                                   |   | MINIMUM NTCP ELIGIBILITY CRITERIA | 5  |                  |    |   |    |
|                                   |   | PROCESS                           | 5  |                  |    |   |    |
|                                   |   | PRIORITIZATION CRITERIA           | 7  |                  |    |   |    |
|                                   |   | TRAFFIC CALMING MEASURES          | 9  |                  |    |   |    |
|                                   |   | SETTING SPEED LIMITS IN SALEM     | 11 |                  |    |   |    |
|                                   |   | ENFORCING SPEEDS IN SALEM         | 12 |                  |    |   |    |

# LIST OF FIGURES & TABLES

## FIGURES

---

|  |    |
|--|----|
| FIGURE 1. NEIGHBORHOOD TRAFFIC CALMING PLAN PROCESS FLOW CHART                 | 4  |
| FIGURE 2. LEVEL 2 MEASURES SUITABLE FOR EACH ROADWAY FUNCTIONAL CLASSIFICATION | 10 |

## TABLES

---

|   |    |
|---|----|
| TABLE 1. NTCP PRIORITIZATION CRITERIA FOR PROJECT LOCATIONS | 8  |
| TABLE 2. STATUTORY SPEED LIMITS                             | 11 |

# ACRONYMS

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|              |   |
|--------------|---|
| <b>CATC</b>  | CITIZENS ADVISORY TRAFFIC COMMISSION      |
| <b>CRF</b>   | CRASH REDUCTION FACTOR                    |
| <b>FHWA</b>  | FEDERAL HIGHWAY ADMINISTRATION            |
| <b>ITE</b>   | INSTITUTE OF TRANSPORTATION ENGINEERS     |
| <b>MUTCD</b> | MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES |
| <b>NA</b>    | NEIGHBORHOOD ASSOCIATION                  |
| <b>NSSP</b>  | NEIGHBORHOOD STOP SIGN PLAN               |
| <b>NTC</b>   | NEIGHBORHOOD TRAFFIC CALMING              |
| <b>NTCP</b>  | NEIGHBORHOOD TRAFFIC CALMING PLAN         |
| <b>NTMP</b>  | NEIGHBORHOOD TRAFFIC MANAGEMENT PLANS     |
| <b>OAR</b>   | OREGON ADMINISTRATIVE RULES               |
| <b>ODOT</b>  | OREGON DEPARTMENT OF TRANSPORTATION       |
| <b>ORS</b>   | OREGON REVISED STATUTES                   |
| <b>PW</b>    | PUBLIC WORKS                              |

## INTRODUCTION TO PLANS

Maintaining safe and livable communities is a top priority for the City of Salem and its residents. The two plans in this document, the **Neighborhood Traffic Calming Plan (NTCP)** and the **Neighborhood Stop Sign Plan (NSSP)**, are designed to assist City staff and citizens in addressing common traffic concerns in neighborhoods, such as

speeding, high traffic volumes, uncontrolled intersections, and safety. While both plans hold neighborhood livability as the focal point, each plan utilizes a different process to address applicable traffic concerns.

These two plans were adopted by City Council on June 26, 2023.

## NEIGHBORHOOD TRAFFIC CALMING PLAN

The first chapter of this document contains the City of Salem Neighborhood Traffic Calming Plan (NTCP).

### THE PURPOSES OF THE NTCP ARE AS FOLLOWS:



Provide a comprehensive toolbox of proven neighborhood traffic calming strategies.



Assist with the identification of appropriate neighborhood traffic calming measures.



Establish a fair, equitable, and consistent process for receiving and addressing neighborhood traffic concerns.

There is no single solution to controlling vehicle speeds and traffic volumes on residential streets. Appropriate solutions must be in alignment with the collected traffic data, roadway characteristics, and neighborhood context. The NTCP serves as a guide that must be combined with sound engineering judgment to ensure the correct strategies are implemented and that the selected improvements are prioritized in a fair and equitable manner.

## NEIGHBORHOOD STOP SIGN PLAN

The second chapter of this document contains the City of Salem Neighborhood Stop Sign Plan (NSSP).

### THE PURPOSES OF THE NSSP ARE AS FOLLOWS:



Provide a consistent process for the installation of neighborhood stop signs when they are not warranted by MUTCD criteria or if multiple intersections within an area are requested.



Provide a list of criteria and guidelines for creating and designing a Neighborhood Stop Sign Plan.

It is very common for residents to request stop signs as a tool for managing vehicle speeds in their neighborhood. However, research and national best practices state that stop signs should not be used to control travel speeds and are not an effective traffic calming measure. The Neighborhood Stop Sign Plan provides a process for neighborhoods to work with City staff to install stop signs to improve driver expectations and intersection safety in their neighborhoods.

# 1

## NEIGHBORHOOD TRAFFIC CALMING PLAN

### BACKGROUND

The City originally adopted the Neighborhood Traffic Management Plan in 1999 (now called the Neighborhood Traffic Calming Plan). The NTCP implements policies from the Salem Transportation System Plan. It provides the residents of the City of Salem with a process for addressing their concerns with respect to speeding and high traffic volume issues. The plan also provides the City's Public Works Department staff with a mechanism for evaluating the need for installing a traffic calming device in a neighborhood.

The NTCP employs a two-phased approach to improving the neighborhood transportation system. The first phase requires residents to collect data and clearly define the problem. If the problem meets the NTCP eligibility criteria, the concern is elevated to City staff for further evaluation. The project is then prioritized based on a set of objective criteria. Implementation will be subject to neighborhood support and funding availability.

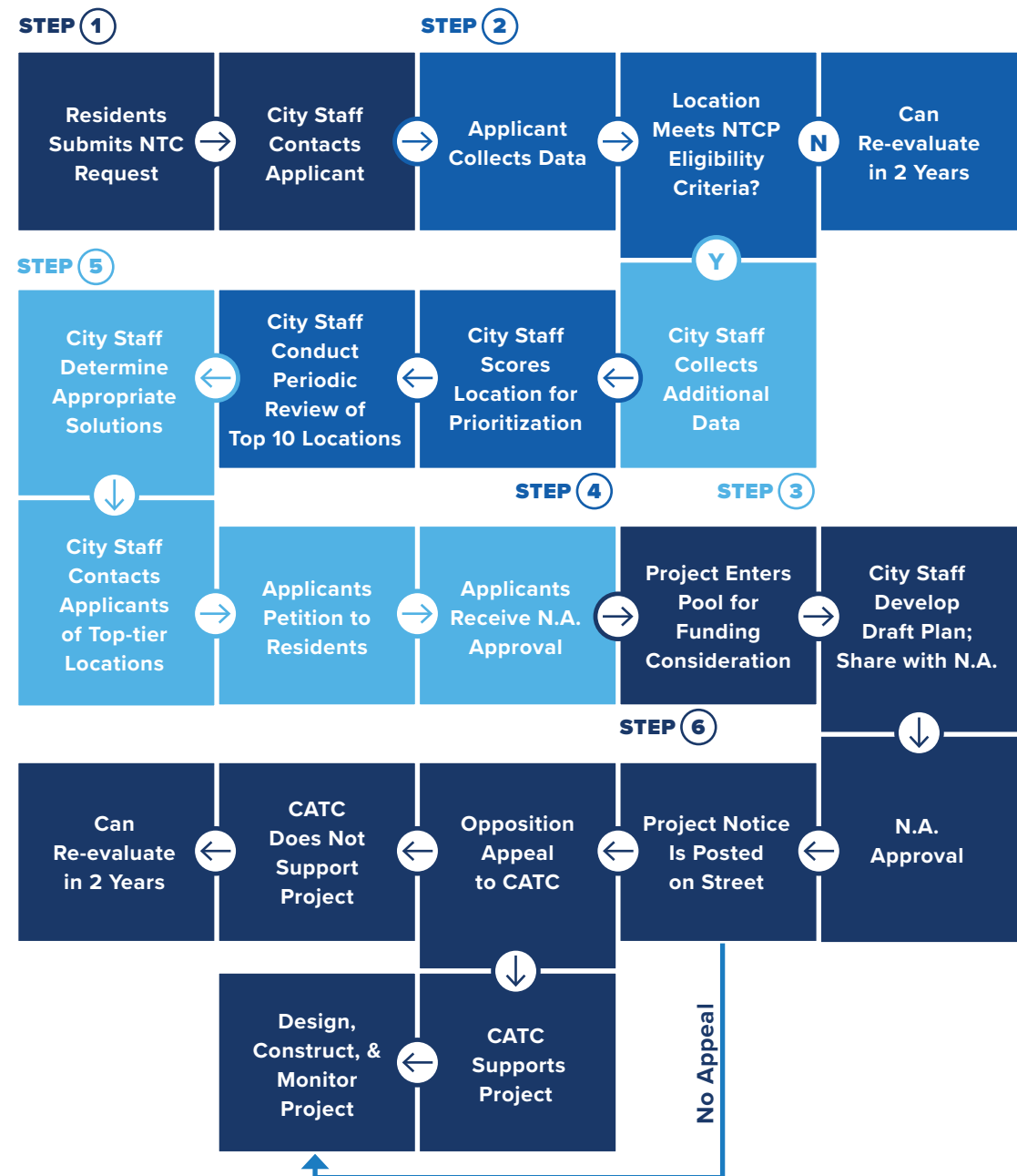
### PLAN DEVELOPMENT

The NTCP incorporates the most current local, regional, and national research and best practices related to neighborhood traffic calming. This Plan was developed in coordination between City staff, the Citizens Advisory Traffic Commission (CATC), Neighborhood Associations, and outside consultants.



## OVERVIEW

The six-step process outlined in the NTCP is depicted in the figure to the right. Steps 1 and 2 involve contacting the City either online or by other means and collecting preliminary data. These steps are primarily led by residents. Steps 3, 4, 5, and 6 are primarily led by City staff to confirm project eligibility, identify appropriate solutions, and prioritize projects for funding. Top-tier locations will be entered into a pool for funding, and approval from the neighbors and neighborhood association will be required for a project to be constructed. Each step of the NTC process is described in the NTC Process section.



**FIGURE 1. NEIGHBORHOOD TRAFFIC CALMING PLAN PROCESS FLOW CHART**

## MINIMUM NTCP ELIGIBILITY CRITERIA

In order to be eligible to participate in the NTCP process, a potential project must be screened to determine whether the identified issue can be remedied with traffic calming measures. The minimum eligibility criteria are listed below. Both of the criteria must be met for the project to be eligible.

**1** The area of concern must be located on a Local street, Residential Collector, or Residential Arterial. The definition of a Residential Collector and Residential Arterial can be found in the Traffic Calming Measures section (**PAGE 9**).

**2** At least 25 percent of the vehicles must be traveling over the posted speed.

## PROCESS

Refer to the flow chart in Figure 1 for an understanding of how these steps relate to one another.

### STEP 1 TRAFFIC CONCERN SUBMISSION

To begin the NTC process, residents with a traffic concern on their residential street should submit a request to the City (on-line preferred). Once the request has been submitted, City staff will review it and contact the applicant with details on how they can collect speed and volume data at the location of concern. Proceed to Step 2.

### STEP 2 DATA COLLECTION AND ELIGIBILITY CRITERIA

The applicant should next collect speed and volume data at the area of concern. Forms and resources to be used for data collection will be provided by City staff and made available on the City's

website. It is the resident's responsibility to collect the preliminary data.

Based upon the preliminary data collected, the applicant must confirm that the project meets the minimum NTCP eligibility criteria shown to the left.

If neither of the eligibility criteria are met, then the project does not progress and it can be re-evaluated in two years. If both the eligibility criteria are met, then proceed to Step 3.

### STEP 3 ADDITIONAL DATA COLLECTION

The applicant will need to provide all data collected in Step 2 to City staff. It is important to note that the resident is responsible for describing the issue and providing preliminary data to support the issue.

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City staff will review the applicant-collected data and verify that the project meets eligibility criteria. Because the data collected by the applicant may not encompass enough information to continue the NTC process, City staff may collect additional speed and volume counts to accurately determine the underlying issues and appropriate solutions.

#### **STEP ④ SCORING AND PRIORITIZATION**

NTCP project locations will then be prioritized using objective criteria to help the City invest its limited funding in locations with the greatest need. The criteria, which are intended to represent the underlying factors that contribute to safety risks, are described in greater detail in the following section (**TABLE 1**). Criteria and scoring vary depending on the intended function (functional classification) of the roadway being evaluated.

A periodic scoring of the project locations will be conducted by City staff. If a project location scores in the top 10 locations citywide, then the project can proceed to Step 5, which is identifying an appropriate NTC treatment. Project locations that do not score in the top 10 locations in the list will be retained for future consideration.

#### **STEP ⑤ IDENTIFY TRAFFIC CALMING MEASURE AND APPROVALS**

Because the City has limited resources available to invest in NTC projects, it is likely that no more than two or three projects can be implemented each year. As such, the City staff will develop solutions for the 10 locations with the highest score. An impact analysis will be conducted as part of the City's process for identifying appropriate solutions. The impact analysis will evaluate if the proposed solution would shift the problem elsewhere or introduce other unintended issues. This analysis will evaluate such impacts as possible

increases in emergency response times and impacts to adjacent residential streets. Preliminary cost estimates for the traffic calming measure(s) at the top 10 project locations will also be prepared by City staff as part of this step.

Once potential NTC measure(s) are identified, City staff will reach out to the applicants of the top 10 locations to share the potential NTC measure(s).

Applicants will be asked to petition to neighborhood residents and collect signatures of support (from at least 50% of residents). They must also receive support from the Neighborhood Association where the project is located. If the applicant receives the required support from residents and the Neighborhood Association, then proceed to Step 6.

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## STEP 6 IMPLEMENTATION

Once approvals in Step 5 are acquired, the project location will go into a pool of projects available for funding consideration. When funding is available, City staff will develop a Draft Project Plan. The Draft Project Plan will include the design concept of the identified traffic calming measure(s), preliminary cost estimate, impact analysis, and implementation schedule.

The draft plan will be forwarded to the Neighborhood Association for their final approval. Any additional requests from the Neighborhood Association could be added at this time and incorporated into a Final Project Plan.

Notice of the Final Project Plan will be posted on the project street and an opportunity to appeal the project will be provided. If the proposed project is appealed, a hearing will be scheduled with CATC, which acts as an oversight committee for traffic projects within the City of Salem. If there is no appeal, then the Final Project Plan will be submitted to the City Engineer for detailed design.

The NTCP projects will be constructed in order of priority, as funding is available. City staff may conduct before-and-after evaluations of NTCP installations to ensure that they are functioning properly and that they achieve the desired outcome.

## PRIORITIZATION CRITERIA

The prioritization criteria are used in Step 4 of the NTCP process to rank each project location based on the underlying safety risks. See **TABLE 1**. This prioritization method helps provide a consistent and quantifiable way to identify the highest need locations throughout the City.

However, it should be noted that this tool is just a guide and was created to assist the Public Works Department in making fair and equitable decisions. Final decisions on the importance of a project location may deviate from this tool after thoughtful and careful consideration by Public Works staff.

**TABLE 1. NTCP PRIORITIZATION CRITERIA FOR PROJECT LOCATIONS**

| CRITERIA                        | LOCAL STREETS  |               | RESIDENTIAL COLLECTOR & RESIDENTIAL ARTERIAL STREETS   |               |
|---------------------------------|--|---------------|--|---------------|
|                                 | DETAILS  | MAXIMUM SCORE | DETAILS  | MAXIMUM SCORE |
| <b>Speed</b>                    | • (85th percentile speed - posted speed) x 5 pts   | <b>40</b>     | • (85th percentile speed - posted speed) x 5 pts   | <b>40</b>     |
| <b>Volume</b>                   | • 1 point for every 75 vehicles per day  | <b>15</b>     | • 1 point for every 400 vehicles per day   | <b>15</b>     |
| <b>Pedestrian Generator</b>     | <ul style="list-style-type: none"> <li>• 5 points for the presence of 3 of the following land uses within 300 feet; 3 points for the presence of 2 of the following land uses within 300 feet; 2 points for the presence of 1 of the following land uses within 300 feet:<br/><i>Apartment complexes, Parks, Schools</i></li> </ul>  | <b>5</b>      | <ul style="list-style-type: none"> <li>• 5 points for the presence of 3 of the following land uses within 300 feet; 3 points for the presence of 2 of the following land uses within 300 feet; 2 points for the presence of 1 of the following land uses within 300 feet:<br/><i>Apartment complexes, Parks, Schools</i></li> </ul>  | <b>5</b>      |
| <b>Family Friendly Bikeways</b> | <ul style="list-style-type: none"> <li>• 5 points if a portion of the segment is designated as a Family Friendly Bikeway</li> </ul>  | <b>5</b>      | <ul style="list-style-type: none"> <li>• 5 points if a portion of the segment is designated as a Family Friendly Bikeway</li> </ul>  | <b>5</b>      |
| <b>Sidewalks</b>                | <ul style="list-style-type: none"> <li>• 5 points if no sidewalks</li> <li>• 3 points if sidewalks are discontinuous or on one side</li> </ul>   | <b>5</b>      | <ul style="list-style-type: none"> <li>• 5 points if no sidewalks</li> <li>• 3 points if sidewalks are discontinuous or on one side</li> </ul>   | <b>5</b>      |
| <b>School</b>                   | <ul style="list-style-type: none"> <li>• 5 points if a school abuts the subject street and has a marked crossing</li> <li>• 3 points if either a school or marked crossing are present</li> <li>• 0 points if neither are present</li> </ul>   | <b>5</b>      | <ul style="list-style-type: none"> <li>• 5 points if a school abuts the subject street and has a marked crossing</li> <li>• 3 points if either a school or marked crossing are present</li> <li>• 0 points if neither are present</li> </ul>   | <b>5</b>      |
| <b>Equity</b>                   | <ul style="list-style-type: none"> <li>• Equity score is equal to the Transportation Equity Score for the census tract where the project location is located in.</li> <li>• The Transportation Equity Score is calculated by Mid-Willamette Valley Council of Governments.</li> <li>• If project is located within multiple census tracts, select higher of the scores.</li> </ul> | <b>25</b>     | <ul style="list-style-type: none"> <li>• Equity score is equal to the Transportation Equity Score for the census tract where the project location is located in.</li> <li>• The Transportation Equity Score is calculated by Mid-Willamette Valley Council of Governments.</li> <li>• If project is located within multiple census tracts, select higher of the scores.</li> </ul> | <b>25</b>     |
| <b>TOTAL</b>                    |  | <b>100</b>    |  | <b>100</b>    |

## TRAFFIC CALMING MEASURES

There are two types of traffic calming strategies identified in the NTC, Level 1 and Level 2.

**Level 1** measures can be implemented on any residential street. These measures are education and enforcement and are typically low-cost and easy to implement. Some measures require coordination with the Police Department.

**Level 2** measures require engineering study and community acceptance. These measures can alter the configuration of streets, impede traffic flow, and change travel patterns to discourage speeding and lower vehicle volumes. They are more expensive to implement.

A comprehensive list of potential NTC measures, descriptions of their effectiveness, and their corresponding levels can be found in the **APPENDIX A**.

## WHICH STREETS ARE SUITABLE FOR TRAFFIC CALMING MEASURES?

There are many streets where traffic calming is not appropriate nor effective due to the road users, vehicle volumes, speeds, and intended function of the street. The City of Salem TSP<sup>1</sup> designates the functional classification for all streets in Salem, as described below.

**LOCAL STREETS** provide direct access to homes, businesses, and other destinations. Local streets are intended to have the lowest volume and lowest travel speeds, making them an ideal candidate for traffic calming.

**COLLECTOR STREETS** are the primary connection between Local Streets (neighborhoods) and Arterial Streets (major travel ways), and are intended to serve moderate volume levels and travel speeds. Traffic calming is most effective on Collector Streets that are residential in nature.

**ARTERIAL STREETS** move traffic across the city, connecting major activity centers and highways and providing a high degree of mobility for through-traffic. Arterials generally serve the highest volume and travel speeds of any city street. Traffic calming is most effective on Arterial Streets that are residential in nature.

### STREET TYPES ELIGIBLE FOR TRAFFIC CALMING

#### ALL LOCAL STREETS

All streets classified as Local Streets in the TSP are eligible for traffic calming.

#### RESIDENTIAL COLLECTORS

Streets designated as a Collector Street that have at least one driveway or approach to a residential land use or supporting residential land use per 150 feet of roadway.\*

#### RESIDENTIAL ARTERIALS

Streets designated as an Arterial Street that have at least one driveway or approach to a residential land use or supporting residential land use per 150 feet of roadway.\*

*\*Based on ORS 801.430. Supporting residential land uses include residential care facilities, churches, public parks, and dwellings or buildings used for business*

<sup>1</sup> <https://www.cityofsalem.net/home/showpublisheddocument/5158/637798388452130000>

Below is a list of Level 2 measures that are suitable for each street type. The NTC measures are described in detail in [APPENDIX A](#).

**FIGURE 2. LEVEL 2 MEASURES SUITABLE FOR EACH ELIGIBLE STREET TYPE**

| LOCAL STREETS   | RESIDENTIAL COLLECTORS  | RESIDENTIAL ARTERIALS   | OTHER COLLECTORS & ARTERIALS     |
|---|---|---|----------------------------------|
| CENTER ISLANDS<br>CHICANES<br>CHOKERS<br>CURB EXTENSIONS<br>DIVERTERS<br>INTERSECTION REALIGNMENT<br>MEDIANS<br>ON-SREET PARKING<br>ONE-WAY STREETS<br>PART-TIME RESTRICTIONS<br>RAISED CROSSWALKS<br>REDUCED SPEED LIMIT<br>* SPEED BUMPS<br>SPEED CUSHION<br>SPEED FEEDBACK SIGNS | CHICANES<br>CHOKERS<br>CURB EXTENSIONS<br>DIVERTERS<br>INTERSECTION REALIGNMENT<br>LANE STRIPING<br>MEDIANS<br>ON-STREET PARKING<br>ONE-WAY STREETS<br>PART-TIME RESTRICTIONS<br>RAISED CROSSWALKS<br>REDUCED SPEED LIMIT<br>SPEED CUSHION<br>SPEED FEEDBACK SIGNS<br>TEXTURED PAVEMENT | CHOKERS<br>CURB EXTENSIONS<br>LANE STRIPING<br>MEDIANS<br>PARKING<br>REDUCED SPEED LIMIT<br>SPEED FEEDBACK SIGNS<br>TEXTURED PAVEMENT | NOT SUITABLE FOR<br>NTC MEASURES |

\* Asphalt or recycled rubber products allowed

# SETTING SPEED LIMITS IN SALEM

Statutory speed limits are specifically defined in Oregon state law based on the road type as shown in **TABLE 2** (ORS 811.111 and ORS 811.105). Speed limits that differ from the statutory speed limit of a roadway are known as designated speed limits. ORS 810.180 allows ODOT primary authority to designate speeds on all public roadways when it is different than the statutory speed. In order to post a designated speed limit, ODOT must complete an engineering investigation and obtain approval from the State Traffic Roadway Engineer. The investigation is based on both Oregon law and national best practices, and includes a full review of roadway characteristics.

In 2021, House Bill 3055 amended ORS 810.180, adding subsection (5)(g). This new subsection allows ODOT the ability to delegate its authority of speed limit setting to any incorporated city and two counties (Multnomah and Clackamas)

**ATTRIBUTES USED TO SET SPEED LIMITS INCLUDE<sup>1</sup>:**

**CONTEXT TO THE ROADWAY, AS DEFINED IN THE OREGON ADMINISTRATIVE RULES (OARS)**

**FEDERAL FUNCTIONAL CLASSIFICATION**

**CRASH HISTORY**

**LAND USE AND DENSITY**

**TRAFFIC VOLUMES**

**ROADWAY ALIGNMENT, WIDTH AND SURFACE**

**MOTOR VEHICLE SPEEDS**

upon their request. This request can be made for all roads under the jurisdiction of the requesting agency. Delegations are only allowed if ODOT determines the requesting agency “will exercise the authority according to criteria adopted by the department.” Additionally, a city may establish, by ordinance, a designated speed for a road under the jurisdiction of the city that is five miles per hour (mph) lower than the statutory speed if

the highway is located in a residence district and is not an arterial highway per subsection (11)(c).

In summary, the City does not have the authority to change the process or criteria for setting designated speed limits on city streets. However, in residential districts, the City may elect to set a designated speed of 20 mph (5 mph lower than the 25 mph statutory speed) consistent with ORS 810.180(11).

TABLE 2. STATUTORY SPEED LIMITS

| ROAD TYPE                                      | SPEED LIMIT (MPH) |
|--|-------------------|
| Alleys / Narrow Residential Roads              | 15                |
| Business District Roads                        | 20                |
| Roads in Public Park                           | 25                |
| Local or Collector Roads in Residence District | 25                |
| Interstate Highway                             | 65                |
| All Other Roads                                | 55                |

*Note: Refer to ORS 801.430 and 801.170 for the definition of “Residence District” and “Business District”*

<sup>1</sup> Attributes used to establish speed zones per OAR 734-020-0015



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## ENFORCING SPEEDS IN SALEM

The Level 1 measures focus on traffic enforcement and education.

Enforcement of posted speeds is most effective when patrolling and ticketing is conducted by the Police Department. There are also tools, such as radar cameras, that are available to assist with speed enforcement.

While traffic enforcement efforts can be effective, they also pull resources from other important law enforcement activities. Implementing enforcement strategies must be coordinated with Salem Police and balanced with competing needs for the limited funding and staffing available.

Oregon Revised Statute (ORS) 810.434 states that any city may operate cameras designed to photograph drivers who either fail to obey a traffic control device (e.g., running a red light at a traffic signal) or who violate the posted speed by 11 miles per hour or greater. This authority is limited to the operation of cameras at signalized intersections.

The statute also states that a city that chooses to operate a camera for either of these purposes must:

- Provide a public information campaign to inform local drivers about the use of cameras before citations are actually issued.
- Conduct a process and outcome evaluation every two years that includes the camera's effect on traffic safety, its degree of public acceptance, and its process of administration for use.

Currently, the City of Salem operates several speed enforcement cameras within the City.

These speed enforcement cameras are aimed at improving safety by targeting high volume intersections with a focus on reducing crashes.

# 2

## NEIGHBORHOOD STOP SIGN PLAN

### BACKGROUND

The City of Salem receives a high number of requests every year from residents for the installation of stop signs in their neighborhood. Often, the requested intersections do not have traffic volumes high enough to meet stop sign evaluation criteria.<sup>1</sup> However, the City acknowledges that there are situations where an intersection or neighborhood area would benefit from the installation of stop signs despite the MUTCD criteria not being met. The purpose of this plan to provide a consistent process and set of guidelines for implementing neighborhood stop signs. The guidelines are based on collected data, local knowledge, and traffic engineering principles.

### PLAN DEVELOPMENT

The NSSP utilizes current local, regional, and national research and best practices related to stop sign installation. This Plan was developed in coordination between City staff, the Citizens Advisory Traffic Commission (CATC), and Neighborhood Associations.

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<sup>1</sup> Criteria and guidance for stop sign installation can be found in the Manual on Uniform Traffic Control Devices (MUTCD), Chapter 2.

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## PROCESS

Refer to **APPENDIX B** for a flow chart of the NSSP process.

The NSSP starts with a resident's request for stop sign(s) at a single or multiple locations. If a single location is requested, then City staff determines if the stop sign request is appropriate and if it meets MUTCD criteria. If it does, then the stop sign(s) will be installed.

If stop signs at multiple intersections within a neighborhood are requested, or if the single stop sign is not determined appropriate by City staff, then a NSSP is pursued.

The NSSP starts with the identification of the neighborhood boundary by City staff. The resident requesting the stop sign(s) will need to show City staff that there is general support for the requested stop signs from the neighbors and Neighborhood Association.

If there is support, then City staff will develop the NSSP with input from the Neighborhood Association. Ballots will be mailed to the neighborhood and the City staff will count the ballots and post the results to the City website. At least 50 percent of residents must support the NSSP.

## DEFINITIONS

**Neighborhood:** A residential district (>50% single family homes and/or apartments) that can clearly be identified and bounded on all sides by major streets (parkway, major arterial, minor arterial, collector), waterways, railroad, industrial land, commercial land, city limits, urban growth boundary, or other clearly identifiable boundaries. Neighborhood Association boundaries do not necessarily define a neighborhood for this definition.

## GENERAL GOALS FOR CREATING A NSSP:

- Establish the right-of-way for vehicles at each intersection in a logical and expected manner
- 600 feet spacing on local/residential streets
- 900 feet spacing on residential collector streets (if appropriate)
- Stop "every other block" in both directions
- All-way stops may be used where appropriate to achieve spacing goals
- All-way stops will NOT be supported for every intersection
- Short cul-de-sac streets will always be stopped
- "T" Intersections will be evaluated individually for potential all-way stop
- Show 50 feet parking restrictions at stop signs

## **APPENDIX**

### **A. NEIGHBORHOOD TRAFFIC CALMING PLAN MEASURES LIST**

### **B. NEIGHBORHOOD STOP SIGN PLAN FLOW CHART**

This appendix provides additional details about each of the traffic calming measures included in the NTMP. For each measure the following information is provided in the table:

| LEVEL | NTC MEASURE | DESCRIPTION | ROAD TYPE APPLICATION | BLOCK LOCATION | KEY DESIGN PARAMETERS | EXPECTED:       |                  |                 |                           | HAS RESEARCH PROVEN EFFECTIVENESS? |
|-------|-------------|-------------|-----------------------|----------------|-----------------------|-----------------|------------------|-----------------|---------------------------|------------------------------------|
|       |             |             |                       |                |                       | SPEED REDUCTION | VOLUME REDUCTION | CRASH REDUCTION | MULTIMODAL SAFETY BENEFIT |                                    |

- Each measure is categorized by **Level**. Level 1 measures focus primarily on education and enforcement and are typically low-cost to implement. Level 2 measures are engineering improvements which can alter the configuration of streets, impede traffic flow, and change travel patterns.
- The **NTC Measure** lists the name of the neighborhood traffic calming measure.
- **Description** provides a brief overview of the measure
- The **Road Type Application** indicates on which type of street classification a NTC measure is permitted. NTC measures can only be applied to Local streets, Residential Collectors, or Residential Arterials.
- The **Block Location** indicates where the measure can be installed. Measures can be installed midblock, at an intersection, both, or anywhere.
- The **Key Design Parameters** column provides a list of considerations for each measure, such as geometric constraints, land use context, and potential impacts.
- The level of **Expected Speed Reduction, Expected Volume Reduction, Expected Crash Reduction, and Expected Multimodal Safety Benefit** for each measure is rated as minor, moderate, significant, or none. Where available, these ratings are based on published documents from recognized transportation organizations such as The Federal Highway Administration (FHWA), the Institute of Transportation Engineers (ITE), National Association of City Transportation Officials (NACTO), Oregon Department of Transportation (ODOT), as well as other published research. In cases where research is not available, expected reductions or benefits are estimated based on local experience and anecdotal evidence from other agencies.
- The last column (**Has Research Proven Effectiveness?**) indicates if the expected traffic calming benefits shown in the previous columns are based on published reports and peer-reviewed research.

APPENDIX A. NEIGHBORHOOD TRAFFIC CALMING PLAN MEASURES LIST

● MINOR ●● MODERATE ●●● SIGNIFICANT

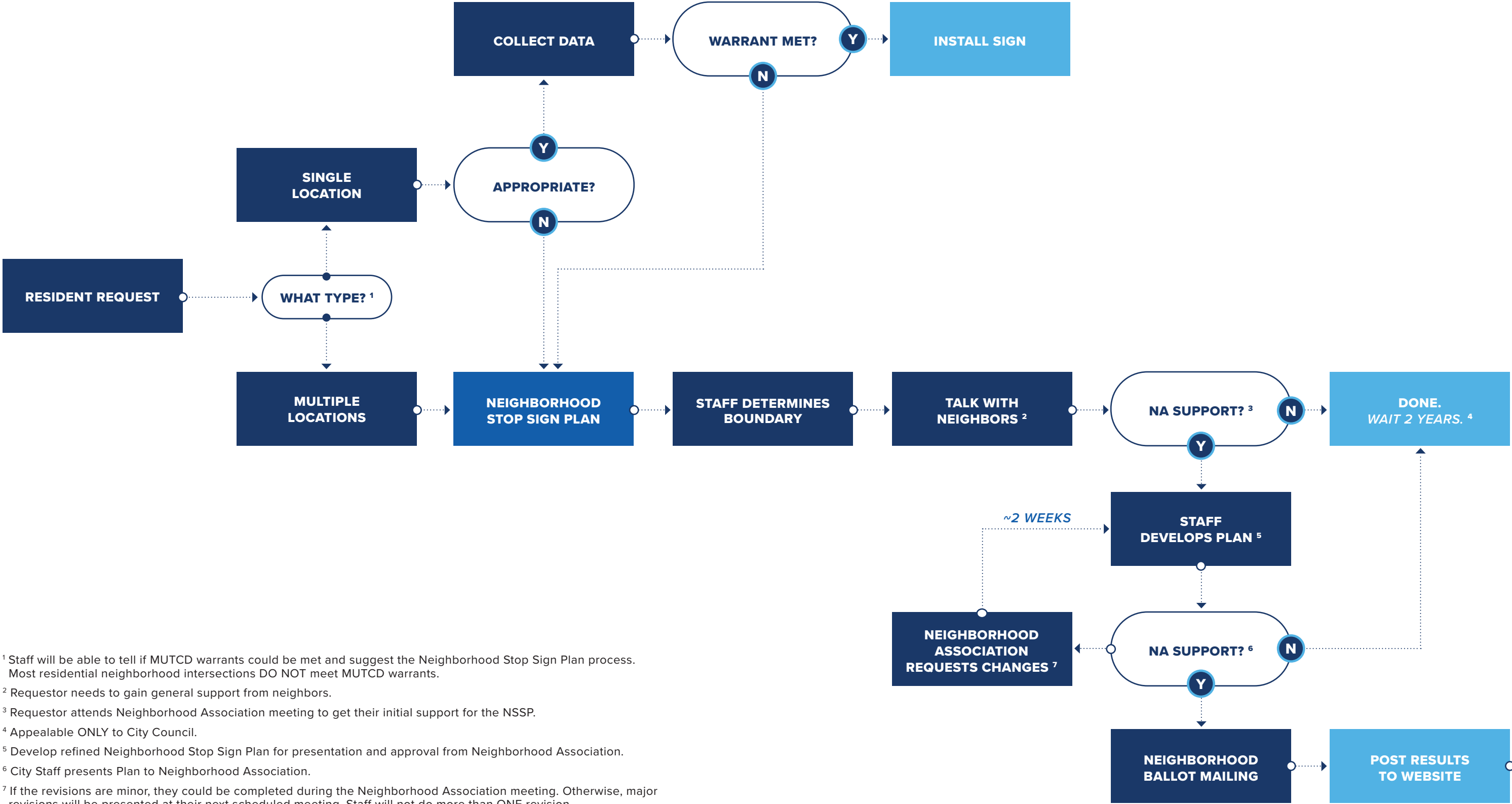
| LEVEL | NTC MEASURE                            | DESCRIPTION   | ROAD TYPE APPLICATION                              | BLOCK LOCATION         | KEY DESIGN PARAMETERS  | EXPECTED:       |                  |                 |                           | HAS RESEARCH PROVEN EFFECTIVENESS? |
|-------|--|---|--|------------------------|--|-----------------|------------------|-----------------|---------------------------|------------------------------------|
|       |  |   |  |                        |  | SPEED REDUCTION | VOLUME REDUCTION | CRASH REDUCTION | MULTIMODAL SAFETY BENEFIT |                                    |
| 1     | Radar speed evaluation                 | Handheld radar gun provided by City to public to gather speed data  | Local, Residential Collector, Residential Arterial | Midblock               |  | ●               |                  |                 |                           | No                                 |
| 1     | Portable radar trailer                 | Trailer equipped with a radar unit placed by City of Salem PD which detects and displays the speed of passing vehicles on a digital reader board                          | Local, Residential Collector, Residential Arterial | Midblock               |  | ●               |                  |                 |                           | No                                 |
| 1     | Signage (warning, statutory, etc)      | Communicates with roadway users to regulate speeds and warn about upcoming speed reduction zones  | Local, Residential Collector, Residential Arterial | Midblock, intersection | <ul style="list-style-type: none"><li>Consider quantity of existing nearby signage to avoid “sign pollution”</li><li>Signs that <b>will not</b> be considered: <i>SLOW CHILDREN AT PLAY, SPEED LIMIT 15 MPH</i></li></ul>  |                 |                  | ●               | ●                         | No                                 |
| 1     | Enforcement (selective)                | Police issuing tickets to vehicles violating speed zones  | Local, Residential Collector, Residential Arterial | Any                    | <ul style="list-style-type: none"><li>Depends on law enforcement availability; resident must request by contacting police non-emergency</li></ul>  | ●               |                  |                 |                           | Yes                                |
| 1     | Public Awareness                       | Flyer distribution, newsletters, and yard signs to educate neighbors or visiting drivers about local safety concerns  | Local, Residential Collector, Residential Arterial | Any                    | <ul style="list-style-type: none"><li>Yard signs must be kept clean and moved periodically</li><li>www.keepkidsalivedrive25.org</li></ul>  |                 |                  |                 |                           | No                                 |
| 2     | Lane striping                          | Delineates parking areas, travel lanes, bike lanes, walking areas. Can be used to narrow travel lanes in an effort to reduce vehicle speeds                               | Residential Collector, Residential Arterial        | Midblock, intersection |  | ●               |                  |                 |                           | No                                 |
| 2     | Speed Feedback Radar signs (permanent) | Directs a driver’s attention to the posted speed limit and digitally displays the vehicle’s speed on a message board  | Local, Residential Collector, Residential Arterial | Midblock, intersection | <ul style="list-style-type: none"><li>Note that speed reductions are only maintained through short distances</li><li>Appropriate near intersections or where sight distance is restricted</li></ul>  | ●●              | ●                | ●               | ●                         | Yes                                |
| 2     | Raised crosswalk                       | A raised area of roadway pavement approximately 3 inches in height with a marked crosswalk on top, typically located at a mid-block location                              | Local, Residential Collector                       | Midblock               | <ul style="list-style-type: none"><li>Only use on streets 25 mph or less</li><li>Use where speed control at ped crossings is desired (school zones or near parks)</li><li>Must meet ADA guidelines for pedestrian use"</li></ul>   | ●●●             | ●●               | ●●              | ●●●                       | Yes                                |
| 2     | Speed bump                             | A raised and rounded area of roadway pavement approximately 3 inches in height that causes a vehicle to produce a rocking motion. Material may be substituted for rubber. | Local  | Midblock               | <ul style="list-style-type: none"><li>Not appropriate for emergency routes, roads posted 30 mph or more, or grades greater than 8 percent</li><li>Asphalt bumps may last longer than rubber bumps</li><li>Rubber bumps may be cheaper than asphalt bumps"</li></ul>  | ●●●             | ●●               | ●               | ●●                        | Yes                                |
| 2     | Speed cushion                          | Similar to speed bumps, but includes gaps to allow for the expedient passing of emergency vehicles  | Local, Residential Collector                       | Midblock               | <ul style="list-style-type: none"><li>Can be used on emergency routes</li><li>Use may negatively impact snow removal on snow routes</li><li>Not appropriate for roads 30 mph or more or grades greater than 8 percent</li></ul>  | ●●●             | ●●               | ●               | ●●                        | Yes                                |
| 2     | Curb extension                         | Extending the curb toward the center of the street to narrow the roadway  | Local, Residential Collector, Residential Arterial | Intersection           | <ul style="list-style-type: none"><li>Must not extend into bicycle lanes</li><li>Often require extensive storm drainage modifications, impacting cost</li></ul>  | ●●              | ●                | ●               | ●●●                       | Yes                                |
| 2     | Median                                 | Raised islands placed in the center of a roadway to separate opposing traffic and narrow the roadway  | Local, Residential Collector, Residential Arterial | Midblock               | <ul style="list-style-type: none"><li>Consider neighborhood, business, and emergency access</li><li>Consider large vehicles and turning radii</li><li>Consider parking and driveway impacts</li><li>Provides pedestrian safety improvements by allowing peds to cross one travel direction at a time</li></ul> | ●●              | ●                | ●               | ●●●                       | Yes                                |

APPENDIX A. NEIGHBORHOOD TRAFFIC CALMING PLAN MEASURES LIST (CONT.)

● MINOR ●● MODERATE ●●● SIGNIFICANT

| LEVEL | NTC MEASURE                        | DESCRIPTION   | ROAD TYPE APPLICATION                              | BLOCK LOCATION | KEY DESIGN PARAMETERS  | EXPECTED:       |                  |                 |                           | HAS RESEARCH PROVEN EFFECTIVENESS? |
|-------|------------------------------------|---|--|----------------|--|-----------------|------------------|-----------------|---------------------------|------------------------------------|
|       |                                    |   |  |                |  | SPEED REDUCTION | VOLUME REDUCTION | CRASH REDUCTION | MULTIMODAL SAFETY BENEFIT |                                    |
| 2     | Chicane                            | Channelization or curb extension that realigns the straight path of a street  | Local, Residential Collector                       | Midblock       | <ul style="list-style-type: none"><li>Best for speed limits 35 mph or less</li><li>Consider impacts to parking and driveways</li></ul>   | ●               |                  |                 |                           | Yes                                |
| 2     | Choker (pinch point)               | Use of curb lines, landscaped curb-side islands, or pedestrian extensions to narrow the roadway   | Local, Residential Collector, Residential Arterial | Midblock       | <ul style="list-style-type: none"><li>Only at midblock locations</li><li>Consider visibility by adding lighting, striping, or reflectors</li></ul>   | ●               |                  |                 |                           | Yes                                |
| 2     | Center island                      | A round island in the middle of an intersection   | Local  | Intersection   | <ul style="list-style-type: none"><li>Best for speed limits &lt;=35mph</li><li>Must be controlled by YIELD signs on all approaches</li><li>If intersection is already stop-controlled, requires restriping and re-signing</li><li>Consider large vehicles and turning radii</li></ul>  | ●               |                  |                 |                           | Yes                                |
| 2     | Diverter                           | Channelization or islands that restrict movements at an intersection; typically allows right turns and prohibits through traffic  | Local, Residential Collectors                      | Intersection   | <ul style="list-style-type: none"><li>Not appropriate for transit or emergency routes</li></ul>  |                 |                  |                 | ●●                        | Yes                                |
| 2     | Intersection realignments          | Skews a standard 3 or 4 leg intersection to deflect traffic   | Local, Residential Collectors                      | Intersection   | <ul style="list-style-type: none"><li>Most applicable at T-intersections (3 leg)</li><li>Not appropriate for roads &gt;25mph</li><li>Can be used along emergency routes</li></ul>  | ●               |                  |                 |                           | Yes                                |
| 2     | One way streets                    | Makes an access road one-way only   | Local, Residential Collectors                      | N/A            | <ul style="list-style-type: none"><li>Not appropriate along bus transit routes</li></ul>   |                 | ●                |                 | ●                         | Yes                                |
| 2     | Pavement texture pavement markings | Creates pavement roughness by installing reflective buttons or colored concrete with patterns; may be used as a centerline delineator on curves or a delineator between pedestrian paths and travel lanes | Residential Collector, Residential Arterial        | Any            | <ul style="list-style-type: none"><li>Consider striping maintenance (City street painting program) and snowplow access</li><li>Consider noise impacts</li></ul>  |                 |                  |                 |                           | No                                 |
| 2     | Parking on-street                  | Allowing car parking on both sides to narrow the roadway  | Local, Residential Collector, Residential Arterial | Midblock       | <ul style="list-style-type: none"><li>More appropriate in urban/suburban settings</li><li>Cannot be used at or near transit stops</li><li>Consider best practices near intersections; for example, should not be considered near roundabouts or within 50 feet of a traffic control device</li></ul>   |                 |                  |                 | ●                         | Yes                                |
| 2     | Part time restrictions             | Use signs to limit vehicle movements during key times (typically school times or peak hours)  | Local, Residential Collectors                      | N/A            | <ul style="list-style-type: none"><li>More appropriate in urban/suburban settings</li></ul>  |                 | ●                |                 |                           | No                                 |
| 2     | Reduced speed limit                | Reducing the statutory posted speed by 5 mph  | Local, Residential Collector, Residential Arterial | N/A            | <ul style="list-style-type: none"><li>85th percentile speed on study roadway must be at least 5 mph above posted speed</li><li>Consider on local or residential collectors that are within 1 block of schools that do not already have 20 mph school speed zones</li><li>Consider on designated family-friendly bikeways</li><li>Measure must be implented in partnership with enforcement</li></ul> | ●               |                  |                 | ●●                        | Yes                                |

APPENDIX B. NEIGHBORHOOD STOP SIGN PLAN FLOW CHART



<sup>1</sup> Staff will be able to tell if MUTCD warrants could be met and suggest the Neighborhood Stop Sign Plan process. Most residential neighborhood intersections DO NOT meet MUTCD warrants.

<sup>2</sup> Requestor needs to gain general support from neighbors.

<sup>3</sup> Requestor attends Neighborhood Association meeting to get their initial support for the NSSP.

<sup>4</sup> Appealable ONLY to City Council.

<sup>5</sup> Develop refined Neighborhood Stop Sign Plan for presentation and approval from Neighborhood Association.

<sup>6</sup> City Staff presents Plan to Neighborhood Association.

<sup>7</sup> If the revisions are minor, they could be completed during the Neighborhood Association meeting. Otherwise, major revisions will be presented at their next scheduled meeting. Staff will not do more than ONE revision.



APPENDIX B. NEIGHBORHOOD STOP SIGN PLAN FLOW CHART (CONT.)



<sup>1</sup> Resident Appeal of the “NO” vote to install Stop Signs.  
<sup>2</sup> Resident Appeal of the “YES” vote to install Stop Signs. Minority Appeal.  
<sup>3</sup> Overturn minority (<50%) vote and approve implementation of Stop Sign Plan.  
<sup>4</sup> Overturn majority (>50%) vote and deny implementation of the Stop Sign Plan.  
<sup>5</sup> Concur with Neighborhood Association decision to overturn minority (<50%) approval support and install stop signs.  
<sup>6</sup> Concur with Neighborhood Association decision to deny stop plan and the majority vote.