

# TOWN OF ERIE

## NEIGHBORHOOD SPEED MANAGEMENT PROGRAM

A Summary of Speed Calming Policy and Neighborhood Speed Management Strategies

March 2024





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## APPENDIX

**Appendix A** – Developing Erie’s NSMP: A summary of the Peer Review process, the work with the community focus Group and the key findings.

**Appendix B** - Sample NSMP resident application form

**Appendix C** - Blank NSMP petition sheet

**Appendix D** – Traffic calming measures – Summary of considerations

**Appendix E** - Detailed summary sheets for traffic calming devices to be used in Erie

**Appendix F** – Erie’s NSMP Project Timeline

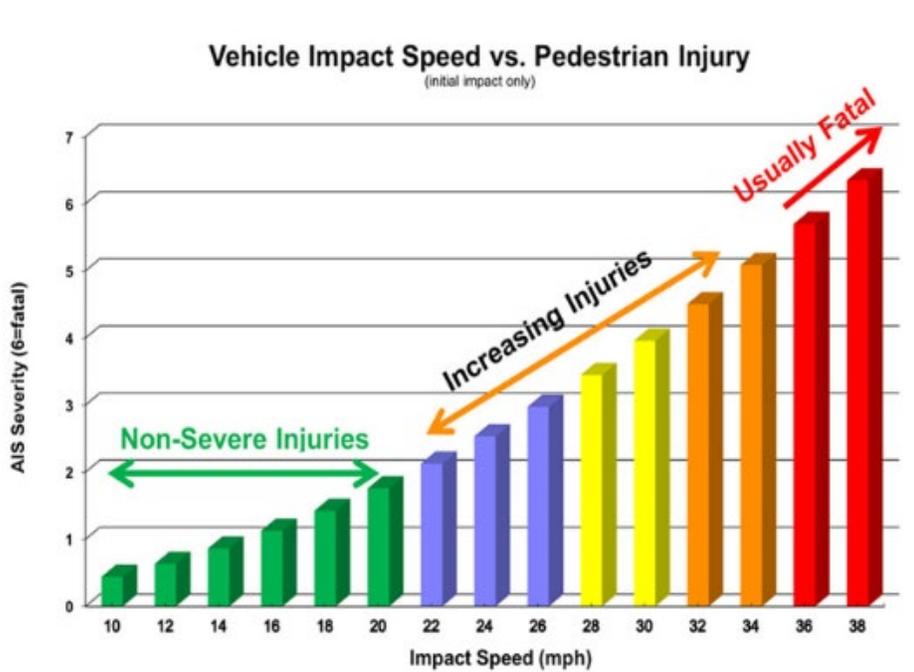
**Appendix G** – Erie’s NSMP implementation Flow Chart

## EXECUTIVE SUMMARY

The speed at which vehicles travel can significantly impact the severity of crashes. One of the most important goals of any community is providing safety and protecting residents from violent injury and death. The Town of Erie’s Neighborhood Speed Management Program (NSMP) is an integrated system of codified policies which allocate resources and apply a combination of Education, Enforcement, Engineering and Evaluation to mitigate the effects of speeding traffic, while considering both Equity and Emergency Response. The NSMP is part of the Town’s commitment to providing transportation safety and neighborhood livability/quality of life.

The figure below from the U.S. Department of Transportation (USDOT) Federal Highway Administration (FHWA) Speed Management Safety website visually shows the relationship between motor vehicle speed and the potential for pedestrians struck to suffer severe injury or death. According to this FHWA website, a person struck by a motor vehicle traveling at a speed of 20 miles per hour or less is not typically permanently injured, while a person struck by a motor vehicle traveling at a speed of 36 miles per hour or greater will often be fatally injured.

One of the benefits of appropriate use of NSMP measures will be a reduction in vehicle speed on residential streets. On these neighborhood streets there is a greater expectation of people walking and biking in the roadway where people are also driving. Lower speeds can also be an encouragement to people in the community who want to walk or bicycle as a mode of transportation and need that to include their neighborhood streets.



Source: USDOT FHWA Speed Management Safety Website



Town staff will use the NSMP to work collaboratively with residents to address safety concerns about speeding traffic in their neighborhoods. The use of traffic calming and the selection of traffic calming measures will require resident support and will be influenced by resident feedback. The Town will decide the level of funding to be allocated to the program each year in the budget process and Town staff will use these resources to evaluate concerns, use NSMP tools, construct mitigation and assess the effectiveness of the program actions.

This NSMP document outlines the following program components in 11 distinct sections:

- ❖ Section 1.0: Terminology and definitions of key terms used in the document.
- ❖ Section 2.0: A Definition of “Traffic Calming” and how it pertains to the Town of Erie.
- ❖ Section 3.0: Specific external (public) and internal (town staff) “Goals” for the NSMP.
- ❖ Section 4.0: The six E components of the NSMP.
- ❖ Section 5.0: How projects are identified and how a Town Resident can request traffic calming.
- ❖ Section 6.0: Eligibility for traffic calming on streets and Prioritization of potential projects.
- ❖ Section 7.0: The Toolkit of Engineering Measures (traffic calming) to be used in the NSMP.
- ❖ Section 8.0: The NSMP Timeline and Program Implementation.
- ❖ Section 9.0: NSMP Project Funding
- ❖ Section 10.0: Additional NSMP policies

Erie’s NSMP was developed following a Peer Review of existing traffic calming installation programs in fourteen U.S. Towns and Cities. A Community Focus Group of residents was assembled, and Town staff worked with the focus group to obtain community feedback on several key NSMP policy issues. The policies outlined in this document are significantly influenced by the findings of the Peer Review effort and the feedback received from the Community Focus Group. A summary of the communities surveyed, the key findings obtained from the Peer Review work effort and the minutes of each Community Focus Group meeting can be found in **Appendix A**.

The NSMP is administered by the Town of Erie’s Transportation Division and residents can contact the program’s administrator at **(303)-926-2870** with any questions.



## 1.0 TERMINOLOGY

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This section includes the definitions of some of the common technical terms used in this document.

**Arterial Roadway** - The primary function of arterial roadways is the movement of traffic. Arterial roadways collect traffic from collector roadways and other arterial roadways. Arterial roadways are often “Designated Emergency Response Routes” for emergency services.

**Average Daily Traffic (ADT)** - The amount of vehicular traffic that crosses an imaginary line across a roadway in a 24-hour period. Often derived from the average of several days of data collection. ADT information typically includes both directions of vehicle travel (if on a two-way street).

**Block** – A segment of roadway between two intersections. For the purposes of this program, the area being identified for a potential NSMP project. The town may choose to break up especially large blocks into 1,000 foot segments.

**Capital Improvement Project** - Town of Erie projects that often involve substantial changes to the infrastructure and may require more significant public process with the community. Often these projects require external funding due to their cost.

**Center Median** - A median treatment installed between two directional travel lanes which allows people crossing the street to have a refuge between directions of travel. This allows pedestrians to break up the crossing and only be concerned about gaps in traffic for one direction at a time.

**Collector Roadway** - A collector roadway connects and moves traffic between local roadways and arterial roadways. Collectors generally have more traffic and a higher speed limit than local roadways but lower traffic and speed limit than arterial roadways.

**Designated Emergency Response Route** - A group of roadways which identify the fastest, most efficient and most often used routes for emergency response vehicles (Police, Fire and Ambulance). Careful consideration is given to the use of Traffic Calming on Emergency Response Routes as these devices can impact emergency response times.

**Functional Classification** - A hierarchy of street designation for mobility and access. Higher mobility streets such as arterials tend to have less access function. Local neighborhood streets have numerous driveways and cross streets, resulting in lower mobility but greater access function.



**Local Roadway** - A street that is primarily used to provide access to the properties bordering it. Roadways with predominantly residential land use may be called Local Neighborhood Streets.

**Mobile Speed Display Trailers** - Mobile electronic devices mounted on a trailer which use radar to determine an approaching motor vehicle speed and display this speed alongside the posted speed limit. Some devices can display other messages at preset thresholds such as “Slow Down” or “Speed Kills”. Some devices can also display flashing lights which mimic police vehicles to encourage drivers to slow down.

**Percentile Speed** - The speed at which the percentage of the traffic observed is traveling at or below. The 85<sup>th</sup> percentile speed is the speed at which 85% of the traffic on the roadway is traveling at or below. The extent to which this speed is greater than the posted speed limit on a roadway is generally used as an indicator of speeding.

**Private Street** - A street within the Town of Erie which is not owned by the town and provides access to one or more private properties. Public easements may allow public access to the roadway but they are maintained by the owner of the roadway.

**Public Roadway** - A roadway open to the public but under the jurisdiction of and maintained by a governing agency and for the purposes of this program the Town of Erie.

**Speed Cushion** - A parabolic vertical traffic calming measure used to slow traffic speeds on low volume, low speed roadways. These measures are lower in cost and effective at mitigating speed to 20-25 mph. They are less impactful to some emergency response vehicles because the design includes gaps wide enough for larger vehicles like Fire Engines to pass through without going over the vertical elements. See Section 8.0 for additional information.

**Speed Hump** - A parabolic vertical traffic calming measure used to slow traffic speeds on low volume, low speed roadways. These measures are lower in cost and effective at mitigating speed to 20-25 mph but are very impactful to emergency response vehicles.

**Speed Related Crashes** – A category of crash for which the speed of traffic played a significant role in the occurrence or severity of the crash. For the purposes of this program these crashes are limited to those which have a serious injury or fatal outcome, as those are the crashes for which speed data will likely be available.

**Speed Table** - A trapezoidal vertical traffic calming measure used to slow traffic speeds on low to mid-volume roadways and applicable on speed limits up to 35 mph. Speed tables are often used in conjunction with center medians to create a safe and efficient crossing treatment. Speed tables are very impactful to emergency response vehicles.



**Traffic Circle** - A circular raised median in the center of an intersection, around which traffic circulates in a counterclockwise direction. Traffic circles provide horizontal deflection which slows motor vehicle traffic passing through it. Traffic circles create less impact to emergency response than other traffic calming devices but are more costly to install and maintain.

## 2.0 TRAFFIC CALMING DEFINITION

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There are many definitions for “Traffic Calming” in different reference materials. However, one of the most holistic definitions can be found on the USDOT FHWA Speed Management Safety website.

*The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce the desired effects.*

*Source: USDOT FHWA Speed Management Safety Website*

In summary, traffic calming projects reduce automobile speeds, through the use of physical measures to improve quality of life and neighborhood livability, increase transportation safety and enhance comfort for people walking and bicycling. The most important component is that they are a persistent and self-enforcing way to reduce speeding. For the purposes of the Town of Erie’s NSMP, traffic calming projects will only be constructed on local and collector public roadways with a majority of the adjacent land use being residential.

## 3.0 PROGRAM GOALS

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The Town of Erie’s NSMP has developed several program goals. The primary goals are external and focus on resident access to the program and the benefit that residents will receive through the program. Other secondary goals are internal and consider the best way for the Town of Erie to implement the program efficiently and effectively. These goals were considered in the development of program policy and Town staff should consider these goals when implementing the NSMP and when designing and implementing traffic calming projects.



The following external and internal goals have been established for the NSMP:

“External” Goals	
<b>Speed &amp; Safety</b>	Streets are safe and pleasant where crashes do not occur and people do not speed
<b>Quality of Life</b>	People feel safe to walk across the street, to let their kids play safely in their yards, and to walk and bike through neighborhoods
<b>Data</b>	Erie uses data to prioritize resources
<b>Emergency Response</b>	Medical and fire response are prioritized so that impacts to emergency response are minimized or avoided
<b>Community Input</b>	Community members are involved in contributing to the policy decisions for speed mitigation in their neighborhood and the process is clear and transparent
<b>Equity</b>	The program is designed to encourage any Erie resident to inquire about speeding concerns and have equitable access to the program. Program priorities will be determined solely by the Town from an equity and data-driven perspective.
“Internal” Goals	
<b>Collaborate with other city projects</b>	There is collaboration between this program and other Town programs and projects to maximize efficiency and use of the Town's resources
<b>Maintenance</b>	The program will prioritize the ability to conduct effective snow removal; street operations; and general maintenance of the mitigation tools
<b>Implementable &amp; Scalable</b>	The program will be implemented using the town's available resources, such as staff and budget, in a manner that can be sustained over time as the town increases in size
<b>Prioritized Safety Funding</b>	The program will be resourced and funded in a prioritized manner with other safety programs and initiatives of the Town of Erie



## 4.0 THE SIX E'S OF ERIE'S NSMP

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There are many important components to a successful speed management program. Some of the most important components are categorized as the “E’s of Traffic Calming”. The Town of Erie’s NSMP will include the following six E’s as components of the program:

- ✧ Education
- ✧ Enforcement
- ✧ Engineering
- ✧ Equity
- ✧ Evaluation
- ✧ Emergency Response

Any NSMP application from a resident which is submitted to Erie’s Transportation Division will be forwarded to the Erie Police Department. As resources allow, the Erie Police Department will deploy their mobile speed display trailers onto application roadways to provide **education** to the driving public, to discourage inadvertent speeding and to convey that residents are concerned about speeding in their neighborhood. This educational tool may be supplemented, as found to be warranted and as resources allow, by a Police presence on these roadways. Police can provide both **education** and **enforcement** on the application roadways through the use of a combination of warning tickets and issued tickets for speeding. Additional **education** about speeding concerns will be provided through the use of Yard signs provided by the town and the allowance for residents to create their own signs with respectful and appropriate messaging.

It is not expected that **education** and **enforcement** will eliminate speeding on these roadways, however it is likely that these tools will result in some mitigation of speeding. It will also serve as notice to drivers that there are community concerns about speeding on these roadways, which may lead to more aggressive engineering tools (traffic calming).

Should a roadway qualify for **engineering** and should the residents living on the roadway generally support this engineering approach, then traffic calming will be designed and constructed as funding is made available through the budget process. It is acknowledged that timely **emergency response** is a critical function of government and the design of all traffic calming in the Town of Erie will be done in a way that balances the cost and effectiveness of the traffic calming with any impacts to **emergency response**.

Once traffic calming has been in place for a minimum of one year, these measures will receive an **evaluation** of effectiveness, which will include speed (where speeds reduced) and volume (what were the impacts of diverted traffic). Should **evaluation** find that the traffic calming did not significantly mitigate speeding on the application roadway then the town should consider additional traffic calming efforts as part of a future project.

Access to all components of the NSMP will occur with **equity** in mind. It should be clear to residents seeking assistance from the NSMP that who they are; where they live; and their access to financial resources are not to be factors in their access to the program.



## 5.0 PROJECT IDENTIFICATION

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Some streets may be selected for Traffic Calming as part of other programmatic efforts by the Town, but it is anticipated that the majority of projects will be initiated from contact by residents. Concerns about speeding traffic can be made by any resident, neighborhood group or homeowner's association using the on-line registration on the Town's NSMP website. The information required from an applicant is the following:

- ✧ Name of Applicant.
- ✧ Address of Resident.
- ✧ Contact information (phone number and/or email).
- ✧ The street name and block(s) where there are speeding concerns.
- ✧ A petition with adequate signatures (10 households or 25% of households per block).
- ✧ A summation of the speeding concerns and any specific requests for action.
- ✧ Whether the applicant is representing a group of residents, a neighborhood association or a homeowner's association.

Upon receipt of a complete application, the applicant should receive an automated response from the Town confirming receipt. Town staff will immediately forward the application to the Erie Police Department so that they can begin Education and Enforcement measures, as their resources allow. Town staff will also make the applicant aware of the opportunity to obtain Yard signs for deployment by residents in their yards. Town staff will also undertake an assessment of the request to determine whether the roadway is eligible for physical mitigation. A sample application form and a blank petition form are provided in **Appendix B** and **Appendix C**.

Upon receipt of an application, Town staff will develop logical project boundaries that will address the speeding concerns and will consider potential traffic diversion to other streets. This may include expanding the project area to include streets which have not been petitioned.

All successful applications will be assessed by Town staff to determine whether the traffic calming needed for the project can be addressed through the limited resources of the NSMP or whether it needs to be considered a Capital Project. Projects which are impacting designated emergency response routes; have large amounts of diverted traffic onto similar or lower classification streets; have relatively high costs (>\$20K per project) or for any other reason may require more substantial public process and funding than the NSMP can provide will be classified as future Capital Improvement Projects. These projects will pursue design, public process and funding through the Capital Improvement Project process and will be prioritized against all other Capital Improvement Projects including other Town safety projects.

The purpose of the NSMP is to address speeding traffic on residential streets and not to address other transportation issues such as high traffic volumes, traffic signal operations, pedestrian crossing treatments or other non-speeding related transportation issues. Elements of an NSMP project may provide additional transportation benefits, but it is not the purpose of the NSMP to design projects with those benefits as goals. Applications requesting these types of improvements will be forwarded to the appropriate Town staff contact for response.



## 6.0 PROJECT ELIGIBILITY AND PRIORITIZATION

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### Eligibility for NSMP projects:

The staff and financial resources available for the NSMP are limited and it is necessary that they be used only when they are responding to a serious speeding issue and in a prioritized manner. All applications which successfully move through the “Project Identification” phase of the NSMP will be screened for eligibility. The following eligibility criteria are required for a roadway to qualify for traffic calming through the NSMP:

- ✧ The roadway must be entirely within the Town of Erie. The NSMP will not pursue traffic calming projects in which any part of the project area is outside the town’s boundaries.
- ✧ More than 50% of the land-use adjacent to the project area roadway(s) should be designated as residential, public park or owned by a school (public or private). NSMP resources should be focused on neighborhood streets.
- ✧ The project area roadway(s) must be designated as local roadways or collector roadways. Arterials and highways are used significantly by emergency responders and typically have high enough speeds to eliminate most traffic calming from consideration.
- ✧ As part of the on-line application form, the applicant (a resident of the block) must secure and provide signatures from ten households or from 25% of the households on the block, for each requested block of the project area roadway(s). This is to ensure that there is a baseline level of support for traffic calming within households on the block.
- ✧ Following data collection and evaluation, the project area roadway(s) must have an 85<sup>th</sup> Percentile Speed of 5 mph greater than the speed limit or higher.
- ✧ Following data collection and evaluation, the project area roadway(s) must have an average daily traffic volume of 500 vehicles per day or greater.

All eligible NSMP traffic calming projects will undergo a prioritization process so that Town staff can determine an appropriate budgetary request for the following construction season and applicants can know whether funding is being requested for their project in the coming construction season. NSMP projects which are not prioritized for funding in a given year will be added to the following years NSMP projects and prioritized accordingly. Each year the Town will construct as many of the prioritized projects as funding allows.

### Prioritization Process:

It is likely that there will be times when the number of eligible NSMP projects and their associated costs will exceed the resources available to the NSMP. In these circumstances, it is important that eligible NSMP projects be prioritized for implementation. This will allow the highest priority projects to be constructed, while rolling projects that cannot be funded into the prioritization process for the next year.



NSMP projects will be prioritized based on the following criteria:

- ✧ The 85<sup>th</sup> Percentile speed of traffic and how much it exceeds the roadway speed limit.
- ✧ The traffic volume on the roadway (the potential for conflict with motor vehicles).
- ✧ The occurrence of any “speed related” crashes on the roadway.
- ✧ Whether there are key pedestrian land use generators such as schools, places of worship, public parks, public playgrounds, recreation or senior centers or neighborhood commercial areas within one block of the project roadway.
- ✧ Whether a project has been identified for the petitioned block in the Town of Erie’s Transportation Master Plan (TMP).
- ✧ The presence of and type of sidewalk or other pedestrian facility on the project roadway, as well as the presence of signed and marked crosswalks.

Applications will be prioritized according to the highest number of “**Prioritization Points**” (PPs) accumulated. A prioritized list of projects will be generated for each year of applications. The following scoring process will be used to prioritize eligible NSMP projects:

Prioritization Criteria	Scoring	Notes
Speed of Traffic	+3 PPs for each MPH that the 85 <sup>th</sup> Percentile speed is higher than the speed limit	Round any decimal up. No maximum scoring.
Traffic Volume	+1 PP for each 500 vehicles per day on roadway	Round any decimal up. Score a maximum of +10 PPs for this scoring category.
Speed related Crashes	+5 PPs for each “Speed Related Crash” on roadway	No maximum scoring.
Nearby Pedestrian Generators	+2 PPs for each generator within one block of roadway	No maximum scoring.
Crossing activity	+1 PP for each signed and marked crosswalk on roadway	No maximum scoring.
TMP identified Project	+2 PPs for having a project located on the block identified in the current Erie TMP.	Score a maximum of +2 PPs for this scoring category.
Pedestrian Facilities	+2 PPs for no sidewalk on either or both sides of roadway	Score a maximum of +2 PPs for this scoring category.
	+1 PP for a detached sidewalk on either side of roadway	
	+0 PP for detached sidewalks on both sides of the roadway	



## 7.0 ENGINEERING (TRAFFIC CALMING) TOOLKIT

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There are many types of traffic calming devices which have the potential to slow traffic on residential streets. Town staff has reviewed potential devices, determined which devices are appropriate and desirable for use in the NSMP and these devices constitute the “Toolbox of traffic calming treatments” that can be used in NSMP projects.

A summary table of all toolbox treatments considered for Erie’s NSMP with pertinent information about each device is provided in **Appendix D**. This is a comprehensive list of potential traffic calming devices and many would be appropriate only for capital projects. The table provides a rating for several fundamental categories that span from Very Good to Poor, or in some cases simply note “Benefit”. These assessments were determined using information provided on the USDOT FHWA Speed Management Safety Website, information from other jurisdictional programs as well as the engineering judgment of staff who have experience implementing and studying traffic calming. These are the categories:

Speed – This category is an assessment of how effective the traffic calming tool generally is in reducing speeds on residential roadways. A “Poor” rating is expected to have very little impact on motor vehicle speeds while a “Very Good” rating is expected to significantly impact speeding.

EMS – This category describes the level of impact that this traffic calming tool will likely have on emergency response. A “Poor” rating will have significant impact on emergency response, while a “Very Good” rating will either have little impact or the impact is easily avoidable.

Bikes and Peds – This category describes how well this traffic calming device provides benefit specifically to bicycles and pedestrians operating on the roadway. A “Poor” rating suggests some impact to people walking or riding a bicycle at the treatment, while a “Very Good” rating suggests that the treatment may be beneficial to people walking or riding a bicycle in the area.

Cost – This category describes the relative cost of implementing this traffic calming treatment per device. The costs are estimates and will vary over time due to inflation and other economic factors. The number of \$ symbols suggest the following costs:

\$ - A cost less than \$6,000.

\$\$ - A cost between \$6,000 and \$20,000.

\$\$\$ - A cost between \$20,000 and \$50,000.

\$\$\$\$ - A cost greater than \$50,000.

A separate and more detailed one-page summation for the specific traffic calming treatments planned for use in the Town of Erie’s NSMP (Median Islands, Speed Cushions and Traffic Circles) can also be found in **Appendix E**. These are devices that the town could use for non-capital NSMP projects.



An ideal traffic calming tool would be highly effective at reducing speed, low in cost, have little to no impact on emergency response and support bicycle and pedestrian use of the roadway. Unfortunately, there are no traffic calming devices which fit this “Ideal” status and Town staff will have to balance each of these factors in developing appropriate traffic calming projects. It is anticipated that NSMP projects will use a combination of Median Islands, Speed Cushions and/or Traffic Circles, for traffic calming as these devices are effective, lower in cost and minimize impact to emergency response.

It is also desirable to have consistency with traffic calming devices in the community so that residents can quickly become accustomed to using them. Focusing on a limited number of traffic calming devices will provide that consistency.

## 8.0 NSMP TIMELINE AND PROJECT IMPLEMENTATION

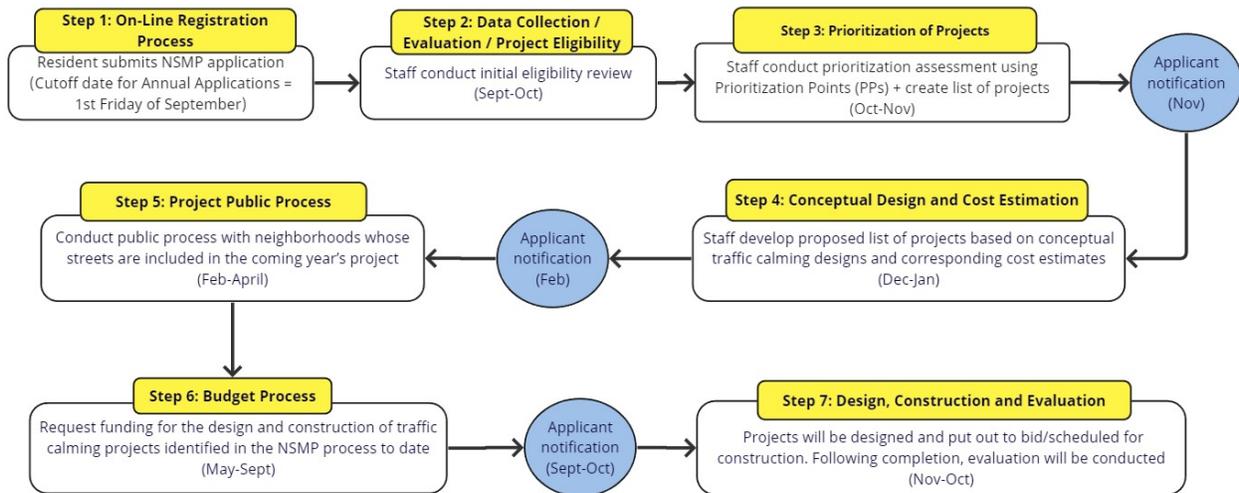
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This section details the implementation process for the Town of Erie’s NSMP. The process is managed through a series of steps beginning with the completion of an on-line registration form (prior to the application deadline in any given year) and concluding with the construction of selected traffic calming devices and the evaluation of the mitigation’s effectiveness. Applications submitted prior to the deadline in any year will be evaluated and, if eligible, prioritized for potential traffic calming project funding in the next available budget process. Applications submitted after the deadline will be included in the following year’s evaluation and project development process.

A graphical timeline detailing all phases of an NSMP project can be found in **Appendix F**. It should be noted that the entire implementation process cycle, from application to final design and construction, takes approximately three years to complete.

In the first year, the program will be accepting and confirming applications, collecting and analyzing pertinent data and beginning conceptual design for potential projects. In the second year, the program will be conducting public process, modifying design based on feedback, creating cost estimates, prioritizing projects, submitting financial requests through the town’s budget process and beginning final design for projects approved through the budget process. In the third year, the program will be finishing final design, soliciting contracts and constructing the mitigation projects. A new cycle is expected with a new round of applications to begin the process each year so multiple NSMP process steps will be occurring concurrently for each year that Erie’s NSMP is operational.

The program steps for each cycle are detailed in this section. The following flow chart also describes the steps in each NSMP cycle. A more detailed graphic can be found in **Appendix G**.



## Step 1

### On-Line Registration Process

- a) The Town of Erie will accept applications on-line each year through the application deadline (first Friday of September each year). The application list for that year will include any application received before the deadline. A sample application form is provided in the Appendix.
- b) The applicant must provide contact information (through the on-line application) which will be used to contact them with information and process updates. Contact information will be verified and the if the applicant does not provide verified contact information, the application will be considered incomplete and will not move forward in the process.
- c) Each application will be reviewed to ensure that it meets the aforementioned initial “Eligibility” criteria. The applicant for any application which does not meet these criteria will be told their application is not eligible for an NSMP traffic calming project. They may still access educational tools and receive enforcement as resources allow. Incomplete applications can be resubmitted the following year.
- d) Each application which meets the initial “Eligibility” criteria will be processed for data collection and evaluation. The application will be forwarded to the Erie Police Department for their consideration of mobile speed display deployment and targeted officer speed enforcement.



**Step 2**

**Data Collection / Evaluation / Project Eligibility**

- a) Upon receipt of an application, town staff will initiate data collection and will use speed and volume data to help determine eligibility for a traffic calming project. Eligible applications will be evaluated and prioritized. The specific data collection needed for an NSMP application is outlined below:
  - I. Speed and Volume data collected over a seven-day period (to include weekday and weekend data) on one or more locations representative of the speed and volume of the application roadway(s). Data obtained should include the average speed, 85<sup>th</sup> percentile Speed and average daily traffic (ADT) volume. This same data should also be collected on any roadways parallel to the project roadway which may receive diverted traffic as a result of traffic calming.
  - II. A review of the last five years of available crash data on the roadway, to document any crashes which engineering judgment suggest may have been mitigated by traffic calming treatments.
  - III. Documentation of key pedestrian land use generators such as schools, places of worship, public parks, public playgrounds, recreation or senior centers or neighborhood commercial areas within one block of the project roadway.
  - IV. Documentation of the adjacent pedestrian facilities including:
    - Presence of sidewalk and if so, whether attached or detached.
    - Presence of one or more signed and marked crosswalks across the project roadway.
- b) It should be noted that during this time period, data collection will also be occurring to evaluate projects that were implemented in the prior year. Data collection occurs for both evaluation of new projects and evaluation of success for projects constructed in the prior year.
- c) Applications which met initial “Eligibility” criteria but do not meet speed and/or volume criteria will not be eligible for a traffic calming project. Applicants with applications which do not meet these criteria will be contacted by Town staff and informed of that outcome. They may still have access to educational tools and receive enforcement. Applications which did meet all NSMP eligibility criteria will move on to the prioritization phase of the program.



### Step 3

### Prioritization of Projects

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- a) The data collected for all eligible NSMP applications will be used to prioritize projects for each year. Each eligible NSMP application will tally a number of “Prioritization Points” (PPs) for each of the prioritization criteria and these tallies will be used to create a preliminary prioritized list of potential traffic calming projects.
- b) Town staff will review this list and consider whether there are any opportunities to collaborate with other planned projects or maintenance activities or if the scope of a project is likely to require a capital project to implement. These findings may change the prioritization. Applicants will be contacted and informed of the prioritization position of their application using their provided contact information.

### Step 4

### Conceptual Design and Cost Estimation

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- a) During the months of December and January, Town staff will develop conceptual traffic calming designs and corresponding cost estimates for each application.
- b) Comparing the prioritized project cost estimates to an expectation of available funding, Town staff will develop a proposal which will include a prioritized group of projects to move forward through the upcoming Town of Erie’s Budget process.
- c) Applications which are not included in this group of projects will be included in the Prioritization process for the following year.
- d) The final list of projects moving in the budget process will be posted to the town’s website by the end of January. Town staff will inform applicants of their application status using their provided contact information.

### Step 5

### Project Public Process

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- a) Public processes with neighborhoods whose streets are included in the coming year’s project package will begin in February. This process should be structured to conclude by the end of April, so that Town staff can begin preparing for the upcoming budget process.



- b) The public process will include a flyer sent to residents living on the blocks in which traffic calming is being proposed. Flyers will also be sent to residents living within one block of the project area. The flyers will detail the project proposal and provide information such as the types of traffic calming being proposed and their approximate location on the roadway. For larger projects, a conceptual drawing of the mitigation may be needed to convey detail clarity. The flyer should also include summations of the problem being solved including traffic volume, speed and any other factors that influenced the decision to recommend traffic calming on this roadway. Finally, the flyer should provide town staff contact information for residents to provide feedback on the proposal.
- c) It is expected that Town staff will receive feedback from the community on some projects. If Town staff determines that there is not a general consensus of support for a traffic calming project, they may include a public meeting in the process. This public meeting can include any or all projects for that year and should be structured so that there are conceptual drawings of the projects, and Town staff will be available to answer questions where these drawings are posted. Participants will be requested to submit their comments using a comment form.
- d) Town staff will create a summation of the comments received through all the public process steps and will use this information to determine the disposition of each traffic calming project being reviewed. This determination may result in the traffic calming project remaining the same; the project being redesigned, and cost estimated to reflect feedback from the community; the project being moved to a subsequent year; or the elimination of the project from consideration by the NSMP.
- e) Potential changes will be determined by the end of April. Any changes to the disposition of a traffic calming project will be posted to the town’s website. The Town staff will inform the applicants of any change to their project’s disposition using their provided contact information.

## Step 6

## Budget Process

- a) Town staff will need to prepare information for the budget process each year, which seeks to secure funding for the design and construction of traffic calming projects identified in the NSMP process to date. This will include standard (lower cost) NSMP traffic calming projects but may also include capital projects that have been generated through the NSMP process. It is expected that the NSMP generated capital projects will be prioritized for funding along with other capital projects identified by the Town of Erie.
- b) Town staff will use the month of May to prepare these materials and will participate in the budget allocation process throughout the summer and fall.



- c) A typical Town of Erie budget process concludes in November with the Town Council's adoption of the upcoming year's budget. At this time, Town staff will know how much funding they have received for the NSMP, and consequently which projects can be scheduled for final design and construction. NSMP Projects which did not receive funding will be rolled over into the following year and prioritized with the next round of project submissions.
- d) The list of the projects moving forward will be posted to the town's website by the end of January. Town staff will inform applicants of the funding outcome using their provided contact information.

## Step 7

## Design, Construction and Evaluation

- a) The final design of each approved project will begin late November, following the budget process. Projects will be designed and put out to bid/scheduled for construction over the following winter and spring months in preparation for the upcoming construction season. When a project is scheduled for construction, Town staff will contact the applicant to let them know the timeline of construction using their provided contact information.
- b) NSMP projects will be constructed during the construction season, generally between the months of April and October. Efforts will be made to ensure that construction in the vicinity of schools will occur during the summer when school is not in session.
- c) The traffic calming constructed through an NSMP project will be allowed to operate and function for approximately one year before evaluation of its effectiveness occurs. During the same time as new application data collection (September to October in each year), Town staff will collect travel speed and ADT volumes on the roadways which had traffic calming projects constructed the prior year and upon any roadways which may have been impacted by diverted traffic. The primary assessment of traffic calming effectiveness will be whether the 85<sup>th</sup> Percentile speed on the mitigated roadway was dropped to a value which would no longer qualify for NSMP mitigation. If a project's mitigation is determined to not be effective then the residents can reapply for additional NSMP mitigation.

Below is a list of key “town staff connections with the community” points within the NSMP process and the anticipated month in which this connection should occur. Town staff will need to determine which staff member(s) have these responsibilities.

### Key outreach to applicants and updates to the town's website

- ✧ Applicants will be contacted following submittal of the online application. This is done to acknowledge receipt of the application and to inform the applicant whether their application meets the initial NSMP eligibility for the program. **This occurs in September each year.**
- ✧ Applicants will be contacted following the data collection and qualification process. This is done to let them know whether their roadway qualifies for mitigation through the data collection evaluation process. Prioritization of successful projects will also have been completed and



applicants will be told the prioritization status of their project. The town’s website will be updated to include a prioritized list of qualifying projects. **This occurs in November each year.**

- ✧ At the conclusion of conceptual design and preliminary cost estimating, applicants will be provided with a list of projects that are moving forward into the budget process. The website will be updated to include this list. **This occurs by the end of January each year.**
- ✧ Any project whose status changes as a result of the public outreach process will have that status change reflected on the town’s website and Town staff will inform the applicant of these changes. **This occurs in April of each year.**
- ✧ Following the adoption of the following years budget, the funding allocated to NSMP, and which projects are approved for design and construction will be known. The town’s website will be updated and any applicants whose projects were considered in the budget process will be contacted and informed of their status. **This occurs in September of each year.**
- ✧ Applicants will be contacted when their project is scheduled for construction. **This can occur anytime between October and March of each year.**

## 9.0 PROJECT FUNDING

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The Town of Erie will fund NSMP traffic calming projects through an allocation in the town’s budget, adopted by the Town Council in the previous year. For equity reasons, the town will not ask or allow residents to pay for any portion of the construction of these traffic calming features, and the willingness to provide funding for traffic calming in one’s neighborhood will not be a factor in the prioritization of projects. Landscaping is a sometimes-desired component of a neighborhood traffic calming project that can be difficult for the town to manage over time. Town staff may allow residents to augment a traffic calming project with components of landscaping which they agree to maintain at their own expense.

The Town of Erie is growing in size and new neighborhood roadways are being constructed as part of the Town’s growth. In addition, new development traffic will use some existing neighborhood roadways. Consideration should be given to how traffic calming could be incorporated into new development proposals. Developers should be encouraged to mitigate existing speed issues on current town roadways and to ensure that speeds are mitigated on future roadways. If such mitigation is to be required of future developers, then the Town’s Design and Construction Standards should be updated.

NSMP projects may also be constructed through capital projects. The larger cost of these projects makes them potential candidates for state and federal grant funding. There are currently several safety related grant funding opportunities which exist in Colorado and NSMP funding may be available through these sources.



## 10.0 ADDITIONAL NSMP POLICIES

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### Use of traffic calming outside the context of the NSMP

Occasionally certain traffic calming devices will be installed as part of non-NSMP projects. This may be as a part of other Town of Erie Capital Projects or advanced through future development projects. Like the NSMP process, Town staff will involve the Police and Fire departments in the design phase of non-NSMP projects. NSMP goals including concerns about emergency response, will be a significant consideration of non-NSMP projects.

### Temporary versus permanent mitigation approaches

Several traffic calming tools have the option to be implemented with more temporary features (such as paint and flexible posts) or with permanent features (curb and gutter). Temporary features usually have the value of being significantly lower in installation cost and allow the community to experience and assess the treatments. However, these devices are much less durable and sustainable over time and consequently have a much higher maintenance cost. They also take Town staff time to track and maintain and are usually considered much less aesthetically desirable than permanent traffic calming measures. As a result of these impacts, temporary treatments will not be used for non-capital project NSMP projects. Temporary devices may be used for projects assigned to the capital program on a case by case basis.

### Traffic calming device removal or replacement

Engineering devices constructed through the NSMP will be reconstructed by the town through regular maintenance activities. Unless Town staff have identified a critical safety issue or maintenance issue, then the traffic calming constructed by the NSMP is not eligible for removal until after the evaluation of the devices has occurred and the town has been able to assess its value to the community. If residents want to have traffic calming removed from a roadway, they must follow a similar process to its original installation, including obtaining signatures from residents on the roadway and participation in a public process with residents who requested the traffic calming. The decision to retain or remove traffic calming will be made by the Town Council. If removal is required, it will occur as town resources are available (most often when the roadway is being resurfaced).

### The role of the NSMP as part of the Town of Erie's larger transportation safety strategy

The slowing of speeding traffic on residential streets is valuable to the community for many reasons. However, it is understood that most crashes with a severe outcome do not occur on these types of streets and that the Town of Erie will also be allocating resources to identify and mitigate severe outcome crash trends across the community. These mitigation efforts can be found in the Transportation and Mobility Plan. The NSMP is one of several safety programs developed by the town and the resources allocated to the NSMP in any given year will depend upon the availability of funding, considering not just the NSMP but all community safety needs.



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# **APPENDIX**

**Appendix A** – Developing Erie’s NSMP: A summary of the Peer Review process, the work with the community focus Group and the key findings.

**Appendix B** - Sample NSMP resident application form

**Appendix C** - Blank NSMP petition sheet

**Appendix D** – Traffic calming measures – Summary of considerations

**Appendix E** - Detailed summary sheets for traffic calming devices to be used in Erie

**Appendix F** – Erie’s NSMP Project Timeline

**Appendix G** – Erie’s NSMP Implementation flow chart



## Appendix A

### Developing Erie’s NSMP

#### The Peer Review process, working with the community focus Group and key findings.

In 2022 the Town of Erie, in Partnership with the Fox Tuttle Transportation Group and Leadline Consulting (the Project Team) began the development of their Neighborhood Speed Management Plan (NSMP). One of the first steps was to research existing successful speed management programs to better understand the key components and important policy decisions for a successful program.

A Peer Review process was undertaken with 10 Front Range communities and 4 communities from elsewhere in the United States. Programs in the following communities were researched:

Boulder, Colorado	Superior, Colorado	Fort Collins, Colorado
Greeley, Colorado	Thornton, Colorado	Aspen Colorado
Broomfield, Colorado	Lakewood, Colorado	Colorado Springs, Colorado
Frederick, Colorado	Davis, California	Madison, Wisconsin
Austin, Texas	Albuquerque, New Mexico	

The project team also reached out to staff from Denver, Colorado and Cambridge, Massachusetts. Denver did not have a speed management program similar to the other communities and the project team was unable to make contact with staff from Cambridge.

Each community involved in the Peer Review had a speed management program and when possible, staff responsible for the program were interviewed about their program. The following information was obtained through the Peer Review process:

- ❖ What components of Education, Enforcement, Engineering, Evaluation and Equity are included in the community’s speed management program?
- ❖ Does the speed management program have specific goals or objectives?
- ❖ How are potential speed management projects identified?
- ❖ Are there limitations on where projects are considered in your community?
- ❖ Are there eligibility criteria for consideration of a project?
- ❖ Is prioritization of projects necessary and if so, how does prioritization occur?
- ❖ Is your program just about speed mitigation or are other types of improvement included?
- ❖ Are there limitations on what engineering treatments are used in the program?
- ❖ How are your mitigation programs funded?
- ❖ Would you consider your speed mitigation program to be effective at meeting its goals?

A considerable amount of information was gathered through the Peer Review process and the project team used this information to develop key policy choices for Erie’s NSMP. Key findings from the Peer Review work effort included the following:



1. Most communities established Goals as a part of their Policies and Procedures. Good goal themes were identified in the Peer Research and used to shape Erie’s NSMP goals.
2. A key policy question is whether we want the application process to be a part of the “screening process” for potential projects. Should petitioning be used to ensure that there is support in the neighborhood for a traffic calming application?
3. Another key policy question is whether a program has qualification criteria or if you handle resource limitations through prioritization. Common qualification and prioritization criteria are associated with data on speed, traffic volume and speed related crashes. There is a fundamental relationship between how the program is resourced, how easy it is to qualify for mitigation and whether you need a prioritization process.
4. Decide what traffic calming tools are appropriate for your community. Some are effective at speed reduction, while others are less effective but generally more acceptable to more people. Others focus on shifting traffic off of the project residential street and over to others.
5. There is a tendency to want to do a lot of public processes with these types of projects. However, the downside of this is that a lot of resources can go into public process and evaluation rather than the construction of mitigation. Try to balance your community’s need for process with the limited resources available to focus more on construction than planning.
6. Leverage internal coordination heavily. Consider street maintenance and capital projects in the timing and prioritization of speed management projects. This will show good stewardship and stretch your resources for all programs.
7. Policies need to consider and protect emergency response. There must be a balance between meeting the other NSMP goals and providing good emergency response to the community.

Following the Peer Review information gathering and evaluation, the town began to outreach about speed management to the community using the town website. A video was created and run on the website to develop interest in the program and information about the development of the NSMP was advertised. Through these efforts the town was able to develop a Community Focus Group (CFG), which included the Project Team, staff from the Police Department and ten volunteer Erie residents.

The CFG met on October 26<sup>th</sup> and November 16<sup>th</sup> to review the key findings and policy questions. Feedback from the CFG informed the project team’s development of the NSMP. The following are the meeting minutes from each meeting.



### 10/26 Focus Group Notes

Participants	Staff
Terry	Commander Mike
Katie	Chief Mathas
Steve	Miguel
Tina	Jarod
Sandy	David
Mark K.	Margo
Erin	Bill

### Meeting notes/key comments from participants

- Shared concerns of speed signs around town - desire to see more intentional placement along the streets
- Meadowlark school projects did not address all the sides of the school area - interest in looking at that location, and other schools, as part of NSMP
- Participants were interested in what assets the town has to analyze data
  - Erie staff discussed how data based decisions are made. The group noted that data based decision making would be important in an NSMP
- Erin and Mark asked how the NSMP can inform proactive and future planning projects. Given the rate of development in Erie, the group wanted to understand how much control the town has over individual developers
  - David reminded the group of upcoming planning projects that, if adopted, can influence how developers and future neighborhood streets are built.
  - Miguel explained the implications of an upcoming ballot measure that considers moving Erie from Statutory Government to Home Rule, allowing for speed limits to be reduced
- Several members of the group reiterated their desire to develop a NSMP because they thought there was an opportunity to change behaviors close to people's homes. See this program as an opportunity to make an impact for their neighbors and neighborhoods since there is already law enforcement monitoring the larger roads and arteries
- The group discussed that much of the concerns they have are not just about their neighbors or residents but more so about the increased amount of delivery drivers, ubers, etc. that are now frequenting neighborhood roads
- Group agreed to proceed with the development of a NSMP for Erie





## Notes from Focus Group #2

Thursday, Nov 16, 2023

5-7pm

Attendees:

**Participants:**

- Terry
- Bob
- Katie
- Steve
- Rob
- Tina
- Sandy
- Mark K
- Erin M

**Staff:**

- Jarod
- Miguel
- David

<p>1. What input do you have on the goals that have been developed for Erie's NSMP?</p>	<ul style="list-style-type: none"> <li>• The goals feel reactive. How can we better reflect that there is a program in place, it's not just going to react to what the community requests; is there a way to have a proactive component? - Zoning, future planning, aligning goals with future development plans</li> <li>• Should direct law enforcement intervention be included in the goals?</li> <li>• See Steve's comments on printout</li> <li>• Revisit the vision-zero goal. It is not defined in the goals themselves so without previous explanation, how would people know what this means?</li> <li>• Vision zero goal references other safety measures - too vague, consider making more specific</li> </ul>
<p>2. What is your feedback on the components reviewed: education, enforcement, equity and evaluation?</p>	<ul style="list-style-type: none"> <li>• Include engineering</li> <li>• Evaluation is very important; willingness to change it if it isn't working</li> <li>• All important as long as everyone understands the level of importance and effectiveness</li> <li>• Trash can signs - depending on where you live in which town, those signs are a signal for people to take issue with it - consider if the tools prompt behaviors that you don't want</li> <li>• Focus money on educational tools that fit within HOA rules and are cost-effective</li> <li>• Group liked yard signs - people saw it, read it and actually hit the breaks</li> </ul>





	<ul style="list-style-type: none"> <li>● Is there an equivalent to a neighborhood watch sign that identifies which areas are part of the program or are communities that care about slowing drivers down?</li> </ul>
<p>3. How should Erie identify projects?</p>	<ul style="list-style-type: none"> <li>● Is the requirement to petition in itself an equity issue?</li> <li>● If the problem area goes between neighborhoods, how could that impact petitioning?</li> <li>● Petitioning would be impacted based on where houses are located</li> <li>● Yes, petitions should be required but it would need to be conditional and based on equity.</li> <li>● The permitting allows the responsibility to shift from the government's responsibility and puts the onus on the citizens to manage the problem</li> <li>● Setting equitable criteria</li> <li>● Issues with cut-off dates because it makes it inequitable</li> <li>● Cut-off date/schedule needs to be more than just timeline - manage prioritization on rolling basis</li> <li>● Don't call out cut-off date; keep that internal because it will make community members upset</li> <li>● DAVID: It is important for community to understand that things need to be done in cycles around budgeting timelines, evaluations</li> <li>● Build a process in an agile fashion</li> <li>● Determine a triage process to sift incoming complaints/requests to the right place</li> <li>● Identification needs to be data driven</li> <li>● Where do people give feedback, telling people where to go?</li> <li>● What would be the protocol in place to make sure that information gets to the right person?</li> <li>● What is the documentation/tracking of the requests - application or petition?</li> <li>● Share information/requests between law enforcement and city staff</li> <li>● The intake process needs to be accessible to people who speak other languages</li> <li>● Make the reporting process more organized via a phone line, social media, etc. - Traffic hotline?</li> <li>● Most agreed they would go online first, then call the town, call the police, call traffic engineering directly - build protocols to ensure it gets to the right people</li> <li>● Centralized place to go - everyone filtered to the same place</li> </ul>
<p>4. What eligibility criteria should Erie's NSMP establish? 5. Does Erie need to have a prioritization process to determine project priority?</p>	<ul style="list-style-type: none"> <li>● Design of the roadway should be a pre-qualifier - traffic problem is different based on the type of street design</li> <li>● Look at traffic volume and range relative to where it is</li> <li>● The number of crosswalks could be included in prioritization factor</li> <li>● No qualification criteria off the bat, consider re-visiting after program is established</li> <li>● Prioritization should be anchored back to the goals - lean into goals in terms of setting priorities</li> <li>● Steve disagrees - From day 1, there needs to be some criteria (quantifiable data) to quality</li> </ul>



	<ul style="list-style-type: none"> <li>• Does the outcome of the investigation trigger then a series of criteria or prioritization?</li> <li>• Crashes could inform prioritization but not qualification</li> <li>• Have some set of criteria that provides clarification about how it gets decided - share the evaluation and feedback</li> </ul>
6. Should Erie's NSMP have location based limitations?	<ul style="list-style-type: none"> <li>• How is the funding allocated? That will impact if different locations need to be set aside for each category. The location should be aligned with how transportation/street funding is separated</li> <li>• How is the city going to fund this? Will the town have a perpetual budget that rolls over? If the money isn't used for the program, will money get reallocated?</li> <li>• Limitations should go away - the type of solution/tool should depends on the type of road way</li> <li>• No interest in taking resources from arterial roadways to put it into NSMP; keep it separate</li> <li>• Are collector roadways included in this program? Erin thinks they should be</li> <li>• When a complaint is raised, the individual is told which avenue it is going to be addressed by. IE - this is not part of the NSMP</li> <li>• Consider non-engineering mitigations to consider outside of this program</li> </ul>
7. What engineering devices should be available?	<ul style="list-style-type: none"> <li>• Are speed dips a tool that can be used?</li> <li>• Liked the idea of refuge islands, mini roundabouts, raised medians</li> <li>• Why are there not more "stop" paint on the roads</li> <li>• Combine speed mitigation with other goals</li> <li>• How does the program build consistency with the tools used? Recommend that there is a concise list of options that people can get used to and get to know</li> <li>• Needs to be aesthetically pleasing</li> <li>• This needs to be connected to the process - eligibility, criteria, then what type - if, than</li> <li>• How is the public baked into the process of identifying the solution - most commonly, the neighborhoods</li> <li>• How is maintenance incorporated?</li> </ul>
8. How should Erie's NSMP be funded?	<ul style="list-style-type: none"> <li>• General consensus that developers should pay</li> <li>• Agree that residents should not pay</li> <li>• How to make sure that developers pay for it equally? If developers pay for mitigation, will that transfer to the homeowners? Is that equitable?</li> <li>• Developers should be investing in infrastructure (infrastructure before development)</li> </ul>



Unrelated questions from the group	<ul style="list-style-type: none"><li>• What quantifiable data does the town have that can validate the need for this program?</li><li>• How does road design influence speed problems and management?</li><li>• How long are data collection tools in place?</li><li>• A common theme of other programs were that it was based on a reactive response to crashes - NOT preferable for this program</li><li>• What are the counters set up to do?</li><li>• There needs to be a tier of evaluation to determine what type</li><li>• Will the board vote on the program details vs just a concept</li></ul>



## **APPENDIX B - Erie NSMP Sample Application Form**

Name of Applicant: \_\_\_\_\_

Address of Resident: \_\_\_\_\_

Contact information (how do you want to be contacted?)

Phone number: \_\_\_\_\_

Email Address: \_\_\_\_\_

The street name and block(s) where there are speeding concerns:

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

Please provide a summation of speeding concerns and specific requests for action:

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

Are you representing a group of residents, a neighborhood association or a homeowner’s association? If so, please specify:

Group of residents

Neighborhood Association

Home Owners Association

Have you provided a neighborhood petition (5 households per block)?

Yes

No

**For more information contact: Planning and Development Department | 645 Holbrook St. | Erie, CO 80516 | 303-926-2870**



# Traffic Control Effectiveness by Strategy / Treatment



TRAFFIC MANAGEMENT STRATEGY / TREATMENT	SPEED 	EMS 	BIKES & PEDS 	COST \$	OTHER IMPACTS
<b>VERTICAL ELEMENTS</b>					
Speed Hump				\$	
Speed Cushion				\$	
Raised Crossing				\$\$	Drainage and crosswalk considerations
Raised Intersection				\$\$\$\$	Drainage, Utilities, and crosswalk considerations
<b>HORIZONTAL ELEMENTS</b>					
Traffic Circle				\$\$	Maintenance
Curb Extension				\$\$ / \$\$\$	Drainage
Chicane				\$\$\$	Drainage, possible Maintenance
Choker				\$\$ / \$\$\$	Drainage, possible Maintenance
Lateral Shift				\$\$	Drainage, Utilities, possible Maintenance
Median Island				\$\$\$	Median Maintenance
On-Street Parking				\$\$	
Mini Roundabout				\$\$\$\$	Drainage, Utilities, Maintenance
Realigned Intersection				\$\$\$\$	Right-of-Way
<b>VISUAL ELEMENTS</b>					
Electronic Speed Display				\$\$	Maintenance and device failure
Striping				\$	
Roadside & Median Landscaping				\$\$\$	Median Maintenance

# Traffic Control Effectiveness by Strategy / Treatment



TRAFFIC MANAGEMENT STRATEGY / TREATMENT	SPEED 	EMS 	BIKES & PEDS 	COST \$	OTHER IMPACTS
<b>OTHER TOOLS</b>					
Roundabout				\$\$\$\$\$	Drainage, Utilities, Right-of-Way
Road Diet				\$\$\$\$	
Speed Limit Signage				\$	
High Visibility Crosswalk				\$\$	
Signed Turned Restriction				\$	
Road Narrowing / Detached Sidewalks				\$\$\$\$\$	Drainage, Utilities
Forced Turn Island				\$\$\$	Drainage, Utilities
One-Way to Two-Way Street Conversion				\$\$\$\$\$	
Two-Way to One-Way Street Conversion				\$\$\$\$\$	
Diagonal Diverter				\$\$\$	Drainage
Median Diverter				\$\$\$	
Closure (Full or Partial)				\$\$\$\$	Legal

The cost and maintenance factors depend on materials used. Hard surfaces will have higher cost but lower maintenance. Paint and Post will have lower cost but higher maintenance.

# Speed Cushions



Source: ITE, Jeff Goulden

## DESCRIPTION:

- Two or more raised areas placed laterally across a roadway with gaps between raised areas
- Height and length similar to a speed hump
- Spacing of gaps allows emergency vehicles to pass through at higher speeds

## APPLICATION:

- Local and collector streets
- Mid-block locations
- Avoid locations with grades greater than 8 percent
- Often placed in a series (typically spaced 260 – 500 feet apart)

## OTHER CONSIDERATIONS:

- Effective at slowing travel speed but average speeds are typically higher than for a speed hump.
- Typically preferred by emergency services when compared with speed tables or speed humps
- Drivers may aim for the gap when traversing the device and stray over the center line
- May divert local drivers to another route to avoid speed cushions
- May increase noise
- May not be appropriate along bus routes
- Drainage needs to be considered

## COMPLEMENTING IMPROVEMENTS

- Signing and striping

## Effectiveness

Speed



EMS



Peds  
Bikes



Cost



Benefit



Very Good



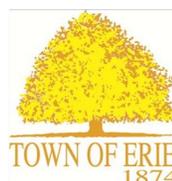
Good



Fair



Poor



# Traffic Circle



## DESCRIPTION:

- Raised islands placed in intersections around which traffic circulates

## APPLICATION:

- Intersections of Local or Collector Streets
- Installed at unsignalized intersections
- Typically installed at intersections with low large truck volumes

## OTHER CONSIDERATIONS:

- Typically circular in shape, but can be oval shaped
- Usually are landscaped within its center
- Usually designed to fit within the travel lanes of an existing intersection
- Approaching vehicles yield to those already in the intersection
- Slower speeds required to comfortably maneuver through the intersection.
- Can be used at intersections of both one-way and two-way streets
- Appropriate at streets with lower traffic volumes (<10,000 max on primary street recommended) with relatively low speeds (30 mph speed limit max) but less emergency response impact than vertical measures.
- Slows all vehicles, including large emergency vehicles and transit.
- May impact on-street parking near the intersection
- If landscaped, will require long term maintenance

## COMPLEMENTING IMPROVEMENTS:

- Signing and Striping

## Effectiveness

Speed



EMS



Peds  
Bikes



Cost



Benefit



Very Good



Good



Fair



Poor



# Median Islands



## DESCRIPTION:

- Raised islands placed in the center of the street to facilitate bicycle and pedestrian crossings.
- Also called median diverter, intersection barrier, intersection diverter, and island diverter

## APPLICATION:

- For use on arterial, collector, or local roads
- Along streets with high bicycle and pedestrian volumes
- Along streets with few acceptable gaps to cross both directions of traffic

## OTHER CONSIDERATIONS:

- Allows bicyclists and pedestrians to more comfortably cross streets.
- Can be used for access control/management
- Can be landscaped or used for urban design elements; leads to additional maintenance
- Can be used to restrict vehicular movements/define turning radii.
- Calms traffic on streets by physically and visually narrowing the roadway and in some cases causing lateral shift
- May impact drainage and existing utilities.
- Minimum median width requirements in order to serve as refuges

## COMPLEMENTING IMPROVEMENTS

- Signing and striping
- Curb extensions

## Effectiveness

Speed



EMS



Peds  
Bikes



Cost



Benefit



Very Good



Good



Fair



Poor

