CITY OF BURLINGTON, VERMONT
DEPARTMENT OF PUBLIC WORKS

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Neighborhood Enhancements

1. INTRODUCTION

In April of 1996 the Burlington Public Works Commission adopted a far reaching program establishing policies and process for meeting resident concerns about problems associated with growing traffic on City streets. In the intervening six years the Department has followed this innovative approach to engaging neighborhoods and developing responses to resident concerns.

We would judge the overall program as successful but in need of revision to incorporate changing attitudes and techniques and to continue to meet the expectations of Burlington's residents, visitors and property owners.

Burlington residents have been clear in their desire to address the adverse impacts of motor vehicle traffic in their neighborhoods.

Our efforts at revision seek to expand the ways in which the Department responds to resident concerns. Within this revision, traffic calming as it was thought of in 1996 is but one of several options available to city residents as they grapple with the adverse impacts of increased motor vehicle traffic on their streets. Traffic calming remains the core philosophy upon which our neighborhood traffic management efforts rest. The essential elements of this view are that traffic calming initiatives address quality of life issues, are enhancements to already well engineered streets, are driven by neighborhood action and consensus and contribute to the overall safety of the roadway network. Implicit within this approach is the understanding that safety – as defined by accepted engineering standards – is an overriding concern and is dealt with by the Department of Public Works (DPW) in its proactive application of generally accepted engineering standards. Where unsafe conditions exist the department will apply the resources necessary to define and address the circumstance.

In 1992 the DPW commissioned a pilot study of neighborhood traffic calming; began a review of practices in other comparable jurisdictions and followed up with a series of neighborhood meetings that all provided a foundation for the April 1996 program. We feel

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that these efforts remain valid. They are recounted here as part of the program revision.

1.1 Burlington Municipal Development Plan

The Burlington Municipal Development Plan of 1991 identified the problem of cut through traffic in residential neighborhoods.

"Streets are public places for many activities and functions. They are places of landscaped vistas, trees, and shrubs; paths for walking; places for talking and playing; rights-of-ways for utilities; and routes for the movement, stopping, and parking of vehicles. The prime function of residential streets is to serve the land that abuts them. They provide access to home and other uses. They are also travel routes for those who wish only to pass through an area. Here conflict arises between the presence of moving vehicles and the quiet of a residential street.... All efforts should be made to keep through traffic off local streets. ...traffic calming techniques will help keep through traffic off local residential streets. Though residential collector and major streets will carry substantial amounts of through traffic, the city can enhance both the safety and the quality of residential life on these streets. Shade trees can buffer homes from the streets. Sidewalks can be widened and bicycle lanes added where safe and appropriate. Street entrances can be narrowed and brick cross-walks added. These improvements can soften the traffic-residential conflict on collector or major streets. Some traffic mobility is lost but the quality of residential life is improved."[1]

2. DEFINITIONS

2.1 Neighborhood Traffic Management

Neighborhood Traffic Management is, as the phrase implies, the application of various techniques developed to influence and control motorist behavior on public streets. They are derived from standards described in traditional engineering texts; advisory and regulatory applications from the Manual of Uniform Traffic Control Devices (MUTCD), and more recent innovations most falling under the rubric of Traffic Calming or Neighborhood Enhancement.

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2.1.2 Traffic Calming/Neighborhood Enhancement

Traffic calming is a series of enhancements that can involve the physical redesign of streets or the use of psycho-perceptive design elements to encourage drivers to obey speed limits and to utilize arterial roads for through passage. The goal of traffic calming is to reduce the undesirable effects of automobiles and trucks, promote a more livable environment that fosters community and maintain an acceptable level of vehicular mobility. While contributing overall to the creation of safe streets and environments these enhancements are not mitigation for unsafe conditions as defined by accepted engineering standards. Implicit within this approach is the understanding that safety – as defined by accepted engineering standards – is an overriding concern and is dealt with by the Department of Public Works (DPW) in its proactive application of generally accepted engineering standards. Where unsafe conditions exist the department will apply the resources necessary to define and address the circumstance.

Enhancements will usually, though not always, be confined to local residential streets. Local streets serve primarily to provide access to property; arterial streets serve primarily to carry through traffic; and collector streets link local streets to arterial streets. In Burlington many streets serving as arterials and collectors also serve as residential streets. As a result traffic calming should not necessarily be thought of as confined to local residential streets only. Where opportunities present themselves arterials can be candidates for calming activities.

Enhancements enable residents to reclaim their street. Motor vehicles are treated as guests on neighborhood streets and street design encourages them to act accordingly. The street can then be used for walking, bicycling and social interaction, travel to local shops, parks, schools, etc., restoring a sense of community.

2.1.2.1 Pilot Study

Over the past several years the city has been re-evaluating transportation policies that historically have placed priorities on the needs of private passenger and commercial

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vehicles over other modes of travel such as walking, cycling and public transportation.

The City through the Metropolitan Planning Organization (MPO) commissioned a pilot study on traffic calming for Burlington in the summer of 1993 [2]. Results of that study encouraged both residents and the Public Works Commission to pursue further study of traffic calming practices, solicit neighborhood input and to allocate funds to pursue traffic calming.

2.1.2.2 Neighborhood Meetings

In the summer of 1995 Public Works staff met on four occasions with neighborhood groups, introduced traffic calming concepts and invited input on developing truck routes. The process continued into the fall with presentations at the city's Neighborhood Planning Assemblies (NPAs).

2.1.2.3 Other Jurisdictions

Staff also conducted extensive research, communicating with colleagues in Brookline, Massachusetts who were developing similar concepts; Seattle, Washington who have used various techniques for the past twenty years; and Toronto, Ontario who have just completed their first major installation. Staff visited Toronto, viewed the installation and met with officials responsible for implementing traffic calming.

2.1.2.4 Other research

Staff also reviewed several documents devoted to the subject[3]. As well as the internal policy documents of both Seattle and Toronto and draft documents from Brookline. In the fall of 2002 several staff members attended a Traffic Calming workshop at the University of Wisconsin, Madison.

2.1.2.5 Physical Elements

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Neighborhood Enhancements

Traffic calming enhancements are usually thought of as the implementation of physical changes to local residential streets which slow down motor vehicles or reduce traffic volumes to make neighborhoods more community oriented and to contribute to overall safety. These changes affect drivers' perceptions of the streets and influence driver behavior so that they drive more slowly. Successful traffic calming enhancements usually include a combination of the following:

- changes to the horizontal and/or vertical alignment of the roadway;
- road or lane narrowing;
- changes of roadway surface texture or color; and
- increases in vegetation (including trees and ground cover)

2.1.2.6 Scope

To be effective, traffic calming enhancements need to be part of a scheme extending along a street, several streets, or throughout a neighborhood. The aims are to control traffic over an area, not at an isolated site, and to be compatible with street activities and adjacent land uses.

2.1.2.7 Objectives

- Contribute to roadway safety, especially for children, by influencing conflict points, vehicle speeds and vehicle volumes.
- Improve the physical environment by lowering vehicle generated noise, pollution and disruption.
- Create a green and inviting streetscape.
- Promote safe and pleasant conditions for motorists, bicyclists, pedestrians and residents on neighborhood streets.

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Neighborhood Enhancements

- Encourage citizen involvement in all phases of neighborhood traffic calming activities.

2.1.2.8 Opportunities

2.1.2.9.1 Safety Contribution

At slower speeds drivers have more opportunity to react and this helps to prevent collisions. Traffic calming enhancements may assist in reducing the number and severity of traffic accidents.

The need to provide for separate facilities for cyclists diminishes if motor vehicle speeds and volumes are reduced.

2.1.2.9.2 Cleaner, greener and quieter environment.

Many neighborhoods have a proliferation of stop signs posted more often than not to slow traffic down than to establish right of way. Stop signs encourage drivers to slow down then speed up, alternately accelerate and brake, resulting in greater emissions of air pollution and noise. These effects can be reduced by encouraging drivers to proceed at more even, slower speeds.

Road narrowing can increase the amount of green space provided to a neighborhood. Some traffic calming elements add to existing green space and create new more usable public spaces. Some elements provide for natural answers to storm water run off issues.

Traffic calming enhancements comply with other city policies to reduce the volume and impact of motor vehicles on city streets. These enhancements encourage people to change travel modes from the private automobile to walking, cycling and public transit.

2.1.2.9.3 Reduced car domination of neighborhoods

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More varied use of the street by residents can be made when conflicts are reduced and the risk of collisions is minimized by calming traffic enhancements. By including the addition of landscaping and other amenities such as street furniture, benches, pedestrian scale lighting, etc. streets can become safer and more pleasant places in which to socialize.

Traffic calming enhancements offer the opportunity of creating safe routes to school for pedestrians and cyclists, giving students alternatives to being driven (or driving) to school.

2.1.2.10 Challenges

2.1.2.10.1 Emergency Services

Emergency service vehicles: police, fire and ambulance must respond to calls in residential neighborhoods. Traffic calming enhancements should result in response times being comparable to existing conditions.

2.1.2.10.2 Public Transit

Public transit is part of the solution to urban traffic problems and traffic calming should be supportive of transit. Transit is a guest in residential neighborhoods and defeats its own purpose when it is intrusive and becomes a target of angry neighbors. Much care must be taken when designing bus routes and vehicles that they are not out of scale with Burlington's compact neighborhoods.

2.1.2.10.3 Winter and other services

Snow plowing, storage and removal present greater challenges when streets are re-designed for traffic calming. These effects can be minimized by ensuring that the calming elements are relatively compact and the equipment fits the neighborhood scale. Narrowed pavements and expanded green belts can offer additional snow storage space in neighborhoods and may improve conditions for pedestrians. Streets must also accommodate street sweepers, garbage trucks and moving vans.

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2.1.2.10.4 Parking Supply

Traffic calming enhancements may reduce the amount of on street parking available.

2.1.2.10.5 Truck Routes

One obvious traffic calming technique is the restriction of vehicles based upon size, gross vehicle weight or cargo from certain streets.

DPW has developed concurrent with this program a truck routing plan that in addition to regulating the movement of trucks through the city defines those areas of the city which are feasible for most if not all traffic calming enhancements depending upon the specific need and setting and the results of a neighborhood planning process. This does not preclude the development of enhancements in what will be designated as truck routes.

2.1.2.10.6 Road network capacity

Traffic calming aims at discouraging the use of local residential streets for cut through traffic or as "rat runs" and encourages instead the use of arterial roads or major streets. Local residential streets should not have to carry large volumes of traffic.

Traffic calming can help to mitigate motor vehicle traffic growth by facilitating pedestrian and bicycle trips.

2.1.2.10.6. Techniques

As traffic calming is an evolving practice we do not consider the following techniques to be the final word in the area. We can anticipate further design techniques that achieve the goals as established in this policy.

2.1.2.10.6.1 Speed Humps

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Transportation Engineers recommends that speed humps have a maximum height of 3 to 4 inches with a travel length of 12 feet to 22 feet. Most drivers will slow to 15 mph at the hump and 20 mph to 25 mph between properly spaced humps in a system. Requires warning signs in approach. Humps may be coordinated with special paving for pedestrian crossings.

2.1.2.10.6.2. Changes in Surface Texture or Color

Rough surfaces can be accomplished by scarifying existing pavement, applying a rough gravel skim coat, adding rumble strips, or a change in paving to cobbles, bricks, or pavers. Rough roadway surfaces can be implemented with other devices, particularly when used to alert drivers to the presence of pedestrians. A pavement change can occur mid-block with other pedestrian crossing devices, over entire intersections creating a plaza effect, just on crosswalks at intersections, or over the length of a roadbed as seen in many historic districts.

2.1.2.10.6.3 Narrow Streets

Narrow traffic lanes of 9 feet at a minimum, encourage slower driving speeds, and reduce pedestrian crossing distances. Pedestrian accident risks increase as the road becomes wider since the time of exposure is increased. Roadways can also be "visually narrowed" by planting trees two to four feet from the curb edge and encouraging a minimal building set back.

2.1.2.10.6.4 Bicycle lanes

The creation of bicycle lanes by striping, marking and signing serves to narrow the street as well as provide a lane of travel for bicycles. The presence of bicycles can reduce speeds and reinforce the principles of shared public space in the street.

2.1.2.10.6.5 Street Closings

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A local street can be closed at one end. The turning area should have a radius appropriate to the types of vehicles expected. Minimum outside radii of 30 feet in residential areas and 45 feet in commercial areas are typically used. Travel lane should be 18' minimum. A planting island with mountable curb can be included.

2.1.2.10.6.6 Traffic Circles

Traffic circles are islands, usually landscaped, which are placed in the center of a non-arterial intersection in residential neighborhoods. They should be sized to the geometries of the existing intersection to allow a single unit truck to pass by without going over it. The circle is constructed with a mountable two foot wide concrete curb so that larger vehicles can get by without going into the landscaped area. Risers can be added to existing utility covers to bring them up to grade. Warning signs are placed in advance of the devices. Object markers are placed in the center of the circle, one facing each entering roadway.

2.1.2.10.6.7 Medians and Islands

Medians and islands can be used to channelize traffic, provide refuge for pedestrians, reduce the crossing distance, and improve the streetscape. Medians should be at a minimum six feet wide. Extend median noses to the extension of the intersecting curb line. Medians and islands are most suited to roads with minimal curb cuts, excess roadway width or underutilized parking lane. They are often not suited for residential streets with driveways. Medians and islands should have warning signs in advance and object markers on the device.

2.1.2.10.6.8 Raised Intersections

Raised intersections are a variation of a speed hump, raising the whole intersection to the same grade as the sidewalk. A raised intersection can be combined with rough textured or special paving to highlight an intersection as a pedestrian zone. The treatment is most appropriate where there are pedestrian/vehicle conflicts.

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2.1.2.10.6.9 Mid-Block Pedestrian Crossing

Mid-block crossings can be warranted on local roads in residential areas where there are pedestrian traffic generators such as markets, schools or parks along the street. There are three types of mid-block crossings: 1.) pedestrian refuge can be a raised median allowing pedestrians to cross only one direction of traffic at a time, 2.) pedestrian crossings can be created by a mid-block neck down or choker reducing the crossing distance, 3.) signalized crossings may be desirable if current warrants set in the MUTCD Section 4C are met.

2.1.2.10.6.10 Reduced Radii

A 10' radii at intersections of minor roads is adequate for passenger vehicles where there is little occasion for truck turning. The reduced radii forces slower turning and reduces pedestrian crossing distance.

2.1.2.10.6.11 Neck Downs

A "neck-down" or "bump-out" reduces speeds by reducing lane widths. They are typically extension of the curb, often coordinated with on-going street parking and crosswalks. General dimensions are 6 feet wide by 20 feet long with a 15 foot radius. As parking is not permitted within 50 feet of an intersection, the neck-down could take this whole length. An 8 foot width may be possible when travel lanes exceed 10 feet.

2.1.2.10.7. In General

In general, traffic calming enhancements as a neighborhood traffic management technique should be planned and undertaken over an area bounded by arterials, so that any motor vehicle traffic diverted from calmed streets reappears on the adjacent arterials and not on other local streets. In some cases where it can be determined that diversion of traffic will not cause traffic volumes to increase on adjacent local streets by more than a few percent, traffic calming may be considered for one street or block separately.

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3. PROCESS

3.1 Introduction

Today, Burlington residents are taking responsibility for quality of life issues in their own neighborhoods. Throughout the city residents are learning that neighborhood action can address many problems such as traffic on neighborhood streets.

The guiding principle of the City's neighborhood traffic management efforts is to create a process that is neighborhood driven. Residents concerned about traffic are encouraged to seek solutions themselves, and find a means to involve and inform other residents, their neighbors, who will be affected by the introduction of traffic control measures. Residents should have an opportunity to participate in discussions and decisions surrounding issues of traffic on their street. To achieve this goal, the following standards apply in order to initiate, develop, and implement area traffic management plans.

The City of Burlington will be a supporting partner helping neighbors devise creative and workable ways to restore and preserve our safe and peaceful streets.

3.2 If speeding is the issue

Driver behavior on city streets is influenced by several factors. When motorists exceed speed limits or simply drive faster than neighborhood conditions warrant there are many factors at play. In the extreme some motorists speed dangerously on our streets. When such behavior is identified and isolated police enforcement and legal action will be targeted to the area. When other clearly illegal behaviors are causing the disturbance and upsetting a neighborhood's quality of life enforcement is again the appropriate approach. But often times the complaint or the behavior is not so clearly defined. Perhaps the neighborhood is concerned with an increase in the speed in the overall traffic or an increase in traffic in general. In those instances neighborhood residents and city departments, primarily the Burlington Police Department (BPD), the Department of Public

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Works (DPW) and the Community and Economic Development Office (CEDO), need to work together to develop change in the neighborhood streets and in motorist's behavior.

3.2.1 Burlington Police Department

Resident concerns about speeding generally start with a call to the Burlington Police Department**.** Residents who believe that people routinely drive too fast on their street can begin the process with a call to the Burlington Police Department, 658-2700.
By contacting the Police Department, residents and businesses alert police officers to speeding problems in their neighborhoods. These calls will bring attention to the trouble spot. Police work with Public Works and CEDO staff in a team effort to address all of the factors influencing driver behavior. In the long run, police enforcement may lead to traffic engineering solutions to slow traffic. When residents call the Police Department they should be prepared to provide details about the speeding on their street. They need to let the police know the specific location and time of day speeding usually occurs. A police officer will visit the trouble spot. When police enforcement alone isn't solving the problem, the police will recommend that the neighborhood investigate other solutions with the Department of Public Works.

We need to remember that most people caught speeding are driving too fast in their own neighborhoods. "Speeders" aren't bad guys from somewhere else -- most are our neighbors and friends, responsible people like ourselves who are committed to safe, peaceful neighborhoods.

But speeding is a bad habit, and we need to help each other break it. That's why neighborhood involvement is so important. Neighbors remind neighbors to pay attention to their driving habits. They remind each other of their mutual responsibility to all of the residents -- particularly the children -- living in the community

3.2.1 Traffic Workshop

Residents should also consider attending a "Neighborhood Traffic Workshop" sponsored

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by the DPW, Police Department and CEDO. With the knowledge acquired at the workshop residents working with DPW staff will be able to assess whether physical enhancements to their street or changes to the regulatory environment are an appropriate course of action. Attendance at a workshop is required for residents wishing to pursue physical enhancements to their street.

3.3 Traffic Control Request

When residents request assistance from the City to control neighborhood traffic they will be asked to describe the problem and whether the issue has been raised with the City in the past. In case where the issue had been brought to the City's attention in the past residents will be asked what the results were. The City's actions will be based on this initial query and move along a continuum from Enforcement to Education to Engineering with considerable overlap along the way.

3.3.1 Problem Identification

The first task within the neighborhood is to obtain a consensus of the residents as to the type of real or perceived problems and their views toward the different types of area traffic control.

3.3.2 Preliminary investigation

Staff will review available data and meet with the neighborhood to make an initial assessment of the problem.

3.3.3 Preliminary problem assessment

Through the preliminary investigation staff may find that the problem is better treated by other programs and refer the neighborhood to those solutions.

3.4 Enforcement

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Police target the area with random enforcement pattern.

3.5 Education

Education can take many forms. Some involve direct communication with the motorist in us all or communicate by example, such as some of the following creative approaches to address neighborhood traffic issues

3.5.1 Neighborhood Activities

Burlington residents and businesses are creative and enthusiastic about traffic safety. Recently, community members created their own ways to remind people to observe speed limits. For example, one neighborhood designed lawn signs/flower planters with this message: "Welcome to our neighborhood and please Slow Down."

Any action that reminds people to watch their speed will affect potential speeders. For example, residents could walk their neighborhoods and place door hangers on nearby homes. A block party around the theme, "Slow Down"' gets people thinking and talking about their driving habits.

3.5.2 Speed Watch

BPD has a mobile speed radar trailer for use to raise awareness. The police department will place this trailer on streets at residents' request.

3.5.3 Lawn signs

In most cases, speeding results from habit, not from an intentional decision to break the law. So short-term reminders to slow down are effective in getting people to change their driving behaviors. Placement of lawn signs similar to those used by political candidates during elections with messages about driver behavior

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3.5.4 Letter writing campaign

Let drivers know that speeding threatens our sense of community and personal well-being. Write letters to the editors of neighborhood and community papers.

3.5.5 Learn more about transportation and traffic issues

Attend a Neighborhood Traffic workshop in the fall or spring. Sponsored by the Department of Public Works the workshops are informative and should your neighborhood wish to pursue an enhancement project, compulsory.

3.6 Engineering

Should enforcement and education appear to be inadequate and the problems persist the neighborhood may want to consider an engineering approach or street enhancements designed to influence driver behavior. The DPW is responsible for maintaining the City's right of way and drafting regulations to manage activities there.

- DPW will only work on neighborhood traffic management issues with residents who have successfully completed a Neighborhood Traffic Workshop.
- DPW will collect speed and volume data and make immediate recommendations for improvements when deficiencies as defined by accepted engineering standards are found.
- If residents wish to proceed with enhancements in their neighborhood with the goal of countering the negative impact of traffic on their quality of life they may choose to organize their neighbors and develop a street enhancement proposal.

3.6.1 Definition of Neighborhood & Organizing effort

The guiding principle of this policy is to create a process that is neighborhood driven. Residents concerned about traffic problems are encouraged to seek solutions themselves, and find a means to involve and inform residents who will be affected by the introduction of

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traffic control measures. Residents should have an opportunity to participate in discussions and decisions surrounding issues of traffic on their street. To achieve this goal, the following standards apply in order to initiate, develop, and implement area traffic calming plans.

- Residents choosing to pursue a neighborhood enhancement will be asked to complete a questionnaire (neighborhood profile/traffic management request form). DPW will assign staff and respond with a schedule for working on the project.
- DPW will assess the request and based on its potential impact on other streets in the neighborhood advise residents of their need to include neighboring streets or not.
- DPW will develop a measure for determining a project's impact on adjacent streets and establish baselines that will be used in assessing the significance of those impacts.
- Once the impact area has been defined organizers have three (3) months to inform ninety percent (90%) of residents of the affected area – street or neighborhood – about the intention to develop an enhancement proposal and demonstrate the support of thirty percent (30%) of the residents for continuing these activities. If support is not demonstrated within the allotted time either by petition or attendance at a community meeting, the City will not support moving ahead with the project.

3.6.2 Decision Making Process

- Once support has been established and demonstrated DPW and CEDO staff will meet with residents and begin developing an enhancement concept.
- Residents, DPW and CEDO staff – the enhancement team – will:

    - create a working group
    - re-state the problem
    - define project objectives
    - review options
    - create a time-line

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- DPW staff will notify property owners that the team has been formed and what its goals and objectives are and explain the overall process.

3.6.3 Enhancement Proposal

- Once a proposal is developed the team will present the proposal to the remainder of the residents.
- The presentation may take place at a neighborhood meeting or through other means.
- Support of sixty percent (60%) of residents is needed to implement the enhancement proposal.
- If support is demonstrated, DPW will set a schedule for implementation.
- If support is not demonstrated the team has ninety (90) days to revise the proposal for re-submittal to residents for a second review.
- Should this attempt also not receive the necessary support, the City will advise the organizers that they must now wait two years before beginning the process again.

3.7 Roles

It is in everyone's best interests that residents involve applicable City departments in original and ongoing traffic issue discussions.

3.7.1 City Departments

3.7.2 Burlington Police Department (BPD)

- When speeding is the issue Police Enforcement is the first stop for residents
- BPD is responsible for enforcing statutes related to motor vehicle operation

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3.7.3 Department of Public Works (DPW)

- Responsible for maintaining the City's rights of way
- Responsible for drafting local ordinances controlling traffic on city streets
- Will provide engineering support
- Will collect data
- Will ensure measures do not adversely affect adjacent streets
- Will advise DPW Commission of actions
- Will process requests
- Will communicate with affected parties
- Will define areas of impact
- Will develop a tool box of appropriate techniques
- Will develop criteria for traffic displacement

3.7.4 Community and Economic Development office (CEDO)

- Will assist residents with arranging meetings
- Will help residents with outreach efforts
- Will arrange for professional facilitation when necessary

3.7.5 Burlington Fire Department (BFD)

- Will review proposals and work with team to ensure resident needs are met without compromising their ability to accomplish their primary objectives of emergency response.

3.7.6 Residents

- Responsible for gathering support for their efforts and enhancement proposals
- Responsible for communicating with their neighbors

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- Must work in a team with City staff

3.8 Preferences

3.8.1 Those neighborhoods potentially impacted by construction of the Champlain Parkway will receive priority when their plans are presented.

3.8.2 Scheduled Street Reconstruction

3.8.3 Independent funding

With Commission approval, a project within 10% of top scoring project which can provide 50% or more of the total estimated cost of the project through another funding mechanism moves to top of the list

3.9 Monitoring

Installations will remain in place a minimum of two years and then are subject to removal by a petition signed by at least sixty percent of the residents or property owners of the streets where the installations are intended and by at least fifty percent of the residents or property owners of affected streets as determined by staff. If a review of the project within that two year period reveals an unanticipated public safety hazard or if the conclusion of a review is an agreement between the department and the neighborhood then a device may be removed.

3.10 Caveat

It should be pointed out that following the above procedure does not guarantee that a traffic calming plan will be forth coming since in some areas calming is simply not feasible and in other areas the majority of residents could be opposed to the concept of residential traffic calming.

3.11 Staff Initiated Projects

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Neighborhood Enhancements

Staff can initiate traffic calming projects. This most likely will occur on non-residential collector streets or at strategic points within the street network. A project will only be undertaken, however, if it is supported by the residents and businesses along the street. Community input will be solicited for staff initiated projects.

3.12 Final Thoughts

3.12.1 Stop Signs and Speed Limit Signs

The City of Burlington does not generally install stop signs as a way to slow traffic. The city installs stop signs where there might be a question about who should have the right-of-way to prevent crashes. When stop signs are installed to slow down speeders, drivers may, in fact, increase their speed between signs to compensate for lost time. This creates an even more dangerous situation. Stop signs in inappropriate places could result in more drivers running stop signs and speeding through neighboring streets.

Installing speed limit signs may seem to be a logical solution to remind drivers not to speed. But new speed limit signs don't seem to change people's driving behaviors. Only where the speed limit changes to a higher or lower speed does the City use its limited resources to install new speed limit signs.

To learn more about traffic signing, call Department of Public Works 863-9094

3.12.2 Burlington's Streets

Burlington is an old city. Many of its streets were laid out and plotted during the seventeenth century. Even streets platted in the twentieth century predate wide spread ownership of private automobiles. Most of our streets are residential streets.

The City was not designed to accommodate the automobile. Rather its form is one more conducive to walking. And in fact a great many residents enjoy the walk-ability of Burlington. But we also drive. A lot. We drive through each other's neighborhoods to get to parks, schools, shopping, downtown, work. As the commercial center of Northwestern

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Neighborhood Enhancements

Vermont a lot of residents from neighboring towns drive through our streets also to visit our parks, schools, shopping, downtown, to work.

There is great demand placed on our streets. Many serve as arteries carrying large amounts of traffic that just passes through. Many serve as collectors, feeding the arteries with traffic from local streets. Most are local streets, providing access to our homes and connections within our neighborhoods. Whether they are arteries, collectors or local most streets in Burlington are residential.

When we think about street enhancements and traffic control on residential streets in Burlington we need to think about how to balance all of these demands.

4. FUNDING

A funding floor of $100,000 identified in the Street and Sidewalk capital budget was established by the Commission in 1996 for traffic calming. This amount was increased to $110,000 for fiscal year 2003. Neighborhoods or neighborhood associations may bring independent funds to the traffic calming process as indicated in the following ranking system.

4.1 Ranking Projects

It is anticipated that there will be more requests for funding of projects than the department's annual budget could support. Therefore the following criteria will be used to establish a base formula from which to rank projects for funding. When necessary projects will be ranked with the following point system. Funding will be allocated until exhausted.

4.1.2 By classification as determined in the Municipal Development Plan

Local Streets - 20 points
Collectors - 5 points
No points for Major or Arterial streets

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4.1.3 By Speed

10 points for each percentage point exceeding 15% of desired speed.
Desired speeds determined by classification:
Major - 30 mph
Collector- 25 mph
Local - 20 mph

4.1.4 Proximity to schools and playgrounds

20 points within a 1/10 mile radius
5 points within a 1/4 mile radius

4.1.5 By Volume

Volume points determined by classification:
Major 1 point/500 vehicles > 10,000 a day
Collector 1 point/100 vehicles > 1,000 a day
Local 1 point/50 vehicles > 200 a day

5. EDUCATIONAL MATERIALS

5.1 Traffic Workshop

Residents should also consider attending a "Neighborhood Traffic Workshop" sponsored by the DPW, Police Department and CEDO. With the knowledge acquired at the workshop residents working with DPW staff will be able to assess whether physical enhancements to their street or changes to the regulatory environment are an appropriate course of action. **Attendance at a workshop is required for residents wishing to pursue physical enhancements to their street.**

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Neighborhood Enhancements

Public Works staff shall prepare a brochure explaining traffic calming policies and processes for distribution to neighborhoods. Promotion of Traffic Calming shall be included in the department's Travel Demand Management programming as well.

6. POLICIES

- Through traffic should be routed to major streets and collector streets as defined in the Municipal Development Plan.
- Traffic may be re-routed from one street to another as the result of an installation. The amount that is acceptable will be defined on a project-by-project basis.
- Problems should not be chased to other streets.
- Traffic Calming will take place on an area wide basis within city defined "Calming Zones."
- Reasonable auto access should be maintained. Projects should encourage and enhance pedestrian, bicycle and transit access to neighborhood destinations.
- Calming devices shall be planned and designed in keeping with sound engineering and planning practices. The city engineer shall direct the installation of traffic control devices.
- Emergency vehicle access must be preserved
- In implementing traffic calming the Department of Public Works will follow established procedures in processing requests in accordance with applicable codes and related policies and within the limits of available resources. The procedures provide for submittal of project proposals; evaluation of proposals by DPW staff; citizen participation in plan development and evaluation; communication

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of any test results and specific finding to area residents and affected neighborhood organizations before installation of traffic calming devices.

- Much care must be taken in designing bus routes and vehicles that they are not out of scale with Burlington's compact neighborhoods.

- The traffic calming component of the neighborhood traffic management program provides enhancements to streets and neighborhoods; improvements that provide for an enhanced quality of life and are provided at the neighborhood's invitation. The lack of such enhancements in a neighborhood does not materially affect the safety of the streets or traffic interactions

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Neighborhood Enhancements

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VI. Traffic Calming

Traffic Calming

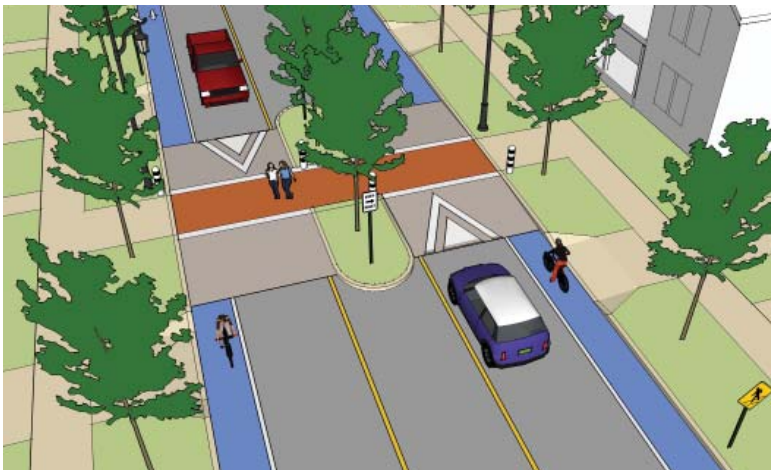
The design of the street network has a great influence on the livability, vitality and character of Burlington. Growth in Burlington and the surrounding region coupled with overall growth in automobile ownership and vehicle miles traveled, have seen attendant growth in traffic volume, speed and congestion. Much of the focus of street design in past decades has been on facilitating and expediting automobile circulation. Due to these various circumstances, many residents feel that their neighborhoods have become overwhelmed with speeding and cut-through traffic that erodes their quality of life.

The following section describes traffic calming approaches that are used to reduce speed, improve safety, and enhance the livability of the street environment while still accommodating through traffic. Traffic calming measures that address speed are typically grouped into the following categories: vertical deflections such as speed tables, textured pavement, raised crosswalks, and intersections; horizontal deflections such as chicanes and neighborhood traffic circles; and roadway narrowings such as center medians and curb extensions. Many of these measures are used in combination with one another in the street design guidelines to calm traffic and make environments more pedestrian and bicycle friendly. Other methods may be applied to streets that are not specifically addressed in the Street Design Guidelines.

For neighborhoods, implementing traffic calming measures should begin with an assessment of the problem that identifies the sources of the problem and includes neighborhood participation. Many communities have adopted traffic calming policies and a process for neighborhoods to study and adopt neighborhood traffic management plans and set priorities for funding and implementation.

Speed Tables and Raised Crosswalks

Speed tables are raised platforms of pavement placed within a traffic lane. They are typically used in mid-block locations and work well as raised crosswalks in those areas. Dynamic painting and textured paving help to increase visibility and driver awareness of pedestrians.



Speed tables that are 22 feet in length have been effective at reducing speed by an average of 18% (from an average of 36.7 to 30.1 miles per hour) and reducing accidents by an average of 45% (from an average of 6.7 to 3.7 accidents per year).

Raised Intersections

Raised intersections are flat raised areas covering the entire intersection. The intersection often employs colored and textured paving as well to demarcate the intersection as part of the pedestrian zone. Applied at an intersection, raised intersections calm two streets at once.

Raised intersections have been observed to result in a 1% reduction in speed (from an average of 34.6 to 34.3 mph).

Textured Pavement

Colored and textured pavement treatments are used to heighten the visual and tactile sense of prominent pedestrian zones. They are used in combination with raised crosswalks and intersections, and are sometime used along entire blocks. There is currently no data available that describes the effectiveness of textured pavement with respect to reducing speed.

Horizontal Deflection Measures

Neighborhood Traffic Circles or Intersection Island

Neighborhood traffic circles are raised islands placed within an intersection. They are not to be confused with modern roundabouts, which are applied to a different set of circumstances. Traffic circles require drivers to slow down in order to go around the circle. Like raised intersections, they have the advantage of calming traffic on two streets at once.

Neighborhood traffic circles are very effective at reducing speed and frequency of collisions, and with landscaping can be an attractive addition to the street environment. They should not be used where there is a high volume of buses and large vehicles.

Burlington has a neighborhood traffic circle at the intersection of Strong and Blodgett in the Old North End.

Neighborhood traffic circles have resulted in an average reduction of speed by 11% (from 34.1 to 30.2 miles per hour) and a 70% reduction in intersection collisions - a 28% reduction in collisions overall.

Chicanes

Chicanes are curb extensions that intrude into the street space and alternate from one side of the street to another. Chicanes can also be created by alternating on-street parking from one side of the street to another. Chicanes are applied in mid-block locations.

Chicanes must be designed carefully to ensure that drivers cannot cut a speed path through the center of the road. On a typical residential street chicanes will have an impact on on-street parking and driveways.

Data on chicanes' effecteness in reducing speed and collisions is limited. Experience in the City of Seattle has found chicanes to be effective in reducing speeds from 18 to 35% overall.

Horizontal Narrowings

Pedestrian Refuges or Center Islands

Pedestrian refuges or center islands are raised medians at the center of the road that narrow travel lanes at a particular location and provide a place for pedestrians to seek refuge from traffic as they cross a street. If they are not part of a pedestrian crossing they can be a visual amenity or gateway that narrows travel lanes and slows traffic at a specific location.

Islands without any vertical deflection result in an average speed reduction of 7%, or from an average of 34.9 to 32.3 mph.

Curb Extensions or Chokers

Curb extensions are areas of sidewalk or landscape islands that extend into the intersection or roadway. At intersections, curb extensions have several benefits for pedestrians including greater visibility, shortened crossing distances, and slower vehicle turning speeds.

Curb extensions without vertical or horizontal deflection have been effective in reducing speeds 7% (from 34.9 to 32.3 miles per hour).