2005

# TAMING TRAFFIC



## *Context-Sensitive Solutions in the DVRPC Region*

Delaware Valley
Regional Planning
Commission

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Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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# EXECUTIVE SUMMARY

The Delaware Valley Regional Planning Commission (DVRPC) conducts transportation and land use corridor studies that address problems that impede the efficient and equitable movement of goods and people in the Delaware Valley. With each new work program, DVRPC seeks to meet the ever-changing needs of the region, using an approach that embraces new thinking tempered by the long view of history.

At the vanguard of innovation in transportation planning is the concept known as Context Sensitive Solutions (CSS). CSS is a philosophy whereby safe transportation solutions are designed in harmony with the community while balancing transportation service needs. Context sensitive projects recognize community goals, and are designed, built and maintained to be sustainable while minimizing disruption to the community and the environment. Traffic calming, a tool of CSS, is a method used to manage traffic while minimizing negative impacts on communities. Both the New Jersey and Pennsylvania Departments of Transportation have embraced traffic calming planning and implementation. Pennsylvania has developed a traffic calming handbook and New Jersey is currently producing a traffic calming chapter to be included in the state's design manual. In addition, New Jersey has funded traffic calming studies through its Local Technical Assistance Program (LTAP).

This report is the final product of the Traffic Calming Planning and Implementation Case Studies project conducted as part of DVRPC's fiscal year 2005 work program. This effort applies traffic calming principles and best practices to address the negative impacts of traffic. Traffic calming is an effective strategy for advancing DVRPC's vision for the Delaware Valley as a place where people of all ages can walk and bike safely, on an efficient transportation system that is comprehensive and accommodates all modes.

The main components of the report are a background narrative on the goals and commonly used techniques of traffic calming, and two local case studies, one in Pennsylvania and one in New Jersey. In addition, a survey of county governments was conducted to identify high priority locations suitable for traffic calming. These results will inform future work program projects on traffic calming. This list is included in Appendix A.



***Context-Sensitive Solutions (CSS) is an attitude and a process, not an outcome.***

***- New Jersey Department of Transportation***

Newtown Borough in Bucks County, Pennsylvania, was chosen for the suburban case study. The focus area is the eastern boundary of the borough where Washington Avenue/State Route 332 crosses from Newtown Township into Newtown Borough. State Route 332 provides a direct connection to I-95 at interchange 30. Historic Newtown Borough is densely developed with single-family homes, sidewalks, and main street style businesses, while the township is less dense and has a more rural-suburban character. According to local officials, the speed of westbound traffic entering the borough is not appropriate for the borough setting. Higher speeds are encouraged by the slight down grade of the roadway. The study recommends a gateway treatment that utilizes traffic calming measures to slow motorists down as they enter the borough. This improvement also provides an opportunity to welcome travelers to the borough using signage, lighting, and landscaping—vertical deflection methods commonly used in traffic calming. The photo simulations provide a view of how the recommendations may be implemented.

Camden City, New Jersey is the setting for the urban case study, and the focus area is the Parkside neighborhood. Situated in the eastern end of the city along County Route 561/ Haddon Avenue, Parkside is a densely populated and walkable neighborhood, with good access to transit and regional highways. At issue here is the operation of the intersection at Haddon and Kaighn Avenues. According to local representatives, red light running on Kaighn Avenue and peak period congestion on both facilities are recurring problems. Red light running is mostly a result of this congestion, which is exacerbated by left turning vehicles queuing in the through traffic lanes on Kaighn Avenue. Long pedestrian crossings at the intersection of Haddon and Kaighn Avenues area also a problem.

Recommendations for mitigating these problems include the addition of dedicated left turn lanes on the Kaighn Avenue approaches. These lanes will allow through traffic to proceed unimpeded thus facilitating better traffic flow and reducing congestion. According to local officials, motorists often run red lights at the end of the green cycle on Kaighn Avenue out of frustration from waiting an inordinate length of time. It is anticipated that if more cars can get through the intersection, driver frustration will be reduced, resulting in fewer red light running violations. Neckdowns and special paving will make the intersection easier for pedestrians to cross. The photo simulation of the recommended improvements presents a revitalized Parkside business district, one that envisions Haddon and Kaighn as the town center, consistent with previous planning studies of this neighborhood.

# INTRODUCTION

Modern day traffic calming can be traced to a group of citizens in Delft, Netherlands in 1968. Fed up by the high speed of cars driving through their neighborhood, residents placed planters in the street to slow traffic. This rudimentary approach underscores the fundamental purpose of traffic calming: to improve livability by reducing the negative impacts of traffic to residents and pedestrians. In the years since then, innovative approaches to traffic calming have been tested in the United States and abroad.

As traffic calming becomes more commonplace, the methods for determining the need for traffic calming have both become more technical and remained qualitative. In some cases a problem may be easily quantified through technical means (as in speeding), while in other cases where hard data is unavailable the evidence is largely qualitative (as in a perceived compromise of pedestrian safety). Because the overriding goal of traffic calming is to improve quality of life, which can be highly subjective, both types of data are valid. The key to a well-executed traffic calming study is the involvement of local stakeholders. Local residents and leaders can identify and define the problems, collaborate on the recommendations, and ultimately take ownership of the improvements.

Multiple organizations have done significant work on traffic calming, including the Institute for Transportation Engineers (ITE), Federal Highway Administration (FHWA), the Transportation Research Board (TRB), the American Association of State Highway and Transportation Officials (AASHTO), the American Planning Association (APA), and the Congress for New Urbanism (CNU).

The approach taken by DVRPC in this study relied heavily on local stakeholders for problem identification, and incorporated both quantitative and qualitative data in the analysis. The first task was identifying and analyzing the negative traffic impacts occurring in two communities in the Delaware Valley region. The second task was recommending a variety of traffic calming techniques to address the problems and therefore improve the situation.

The work was conducted through a collaborative process that involved a local task force representing each community, comprised of law enforcement, municipal and county planners, and community activists. The identified problems and recommended improvements are unique to each location and have been endorsed by the local task force members. A list of the participants can be found at the end of the report. Finally, the recommended improvements are presented in before and after photo-simulations. These graphics are an effective tool used to assist local stakeholders in visualizing the implemented recommendations.

# WHAT IS TRAFFIC CALMING?

Although many definitions of traffic calming are available there are basic elements common to all. In the San Jose Department of Transportation's Traffic Calming Toolkit, it is defined broadly as "the management of traffic so that its negative impacts on residents, pedestrians and schools is minimized." The definition provided in the traffic calming policy document of The City of Johannesburg, South Africa reiterates these sentiments but also calls for balance by stating the need for "due regard to mobility and accessibility." The Institute of Traffic Engineers defines traffic calming as "the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users."

## *Regional Perspectives*

### Pennsylvania

In January 2001 the Pennsylvania Department of Transportation (PennDOT) published *Pennsylvania's Traffic Calming Handbook*. The handbook provides guidance for PennDOT when considering the use of traffic calming measures on State roadways in Pennsylvania. The handbook is also intended to provide municipalities with information that can help them establish a traffic calming program for roadways within their jurisdiction. The first three chapters of the publication discuss the history and purpose of traffic calming in addition to issues for consideration when implementing various techniques. The remainder of the document primarily focuses on traffic calming techniques and design guidelines.

**New Jersey**
The New Jersey Department of Transportation is currently developing a stand-alone traffic calming chapter that will become part of their roadway design manual. NJDOT has embraced traffic calming planning and implementation by funding local projects through its Local Technical Assistance Program (LTAP).

**DVRPC's Traffic Calming Policy**
Traffic calming is included in the bicycle and pedestrian component in DVRPC's Destination 2030, the long-range plan for the Delaware Valley Region. Listed under the title "Design Streets and Highways For All Users", the policy states: "DVRPC promotes the implementation of traffic calming techniques in a context sensitive approach." This policy supports the plan's bicycle and pedestrian goals of doubling the percentage of trips by foot and bicycle while reducing the number of injuries and fatalities suffered by bicyclists and pedestrians by 10 percent from current levels.

Although many examples of traffic calming can be found throughout the region few have been implemented as the end result of a comprehensive study. During the winter of 2004-2005, Haddonfield Borough in Camden County, NJ, conducted a comprehensive traffic calming study. DVRPC participated on the study task force. Led by a state funded consultant, the study examined qualitative and quantitative data from five target locations within the borough. A citizens' committee called the Borough of Haddonfield Transportation and Pedestrian Safety Committee (TAPS) identified these target areas. The TAPS committee, active before the study, was the driving force in getting local political support for the traffic calming study and securing state funds. The committee also participated in a walkable places audit of their town, and organized a *Drive25* campaign that has become an annual event. The Haddonfield study was successful because it had buy-in from municipal, county, and state governments, and from residents.

## *Goals of Traffic Calming*

Traffic calming is used to modify the behavior of traffic to match the context through which it passes. The Institute of Traffic Engineers identifies the following goals and objectives.

*The Institute of Transportation Engineers (ITE) maintains an in-depth traffic calming website at http://www.ite.org/traffic/.*

**Traffic Calming Goals:**

- Increasing the quality of life
- Incorporating the preferences and requirements of the people using the area (e.g., working, playing, residing) along the street(s), or at intersection(s)
- Creating safe and attractive streets
- Helping to reduce the negative effects of motor vehicles on the environment (e.g., pollution, sprawl)
- Promoting pedestrian, cycle and transit use

**Traffic Calming Objectives:**

- Achieving slow speeds for motor vehicles
- Reducing collision frequency and severity
- Increasing the safety and the perception of safety for non-motorized users of the street(s)
- Reducing the need for police enforcement
- Enhancing the street environment (e.g. streetscaping)
- Increasing access for all modes of transportation
- Reducing cut-through motor vehicle traffic

## *Traffic Calming Techniques*

Traffic calming techniques are an attempt to enhance traffic and pedestrian safety and preserve neighborhood character and livability. The primary effects produced by these traffic calming techniques are speed reduction, traffic volume reduction, increased driver awareness, and increased safety.

There are a variety of ways to organize or categorize traffic calming techniques. For the purposes of this study the techniques have been organized into four categories: education, engineering, enforcement, and policy. The following text includes background of each category and a brief description of each technique culled from the various publications researched for this report. Although a technique from any one of these categories may produce some level of benefit, these techniques work best when used together in a complementary fashion.

## Education

Education-based traffic calming measures include "programs implemented on a day-to-day basis to regulate, warn, guide, inform, enforce and educate motorists, bicyclists and pedestrians" as described in the *Traffic Calming Toolkit* published by the City of San Jose, California. Techniques that improve on-road visibility through striping, signing, and lighting can be implemented quickly and at a low cost, providing immediate benefit. The same can be true for safety education programs, which are relatively low cost initiatives that strive to inform motorists and non-motorists. Whereas the techniques described in the engineering section may require more extensive planning and design, and in some cases right-of-way acquisition, which can be costly and time consuming. Many traffic calming publications include standard striping and signing under the education category and not engineering. The following list is a sample of programs that are commonly implemented as educational traffic calming techniques.

***Neighborhood Traffic Safety Campaigns*** are education programs that consist of personalized letters or other materials distributed to all residents of a town or neighborhood typically citing statistics on speeding. These statistics can be a summary of national or state data, or be specific to the target locale. The purpose is to appeal to local residents to comply with traffic laws.

The ***Drive 25 Campaign***, a good example of a neighborhood traffic safety program, is an education-based program that informs motorists of the community benefits of traveling at the speed limit. Also known in some places as ***Slow Down for a Livable Town***, this program can be effective in municipalities where the speed limit exceeds the design speed. For example, the average travel speed may be higher than the posted speed on a given road. Also, roads that are targeted by law enforcement for speeding problems may be locations where the average speed is higher than the posted speed limit suggesting a mismatch between design speed and posted speed limit. Through the use of advertising and media coverage this program encourages motorists to be conscious of their speed, keeping it at the speed limit. The effectiveness of this program can be bolstered by increased police presence and enforcement of the speed limit. The temporary nature of the campaign is a downside of the program. In addition the cost of increased law enforcement can be prohibitive.

***Safe Routes To School*** is a federally funded program that strives to establish, improve, and maintain the walking and bicycling paths to school serving children grades K – 8. A


***Haddonfield, New Jersey's Drive 25 Campaign is an educational effort using media coverage and promotional materials, such as this window sticker at the Haddonfield PATCO station.***

minimum of 10% and a maximum of 30% of the funds must be used for non-infrastructure related activities such as education and enforcement. There are six categories of projects eligible for funding:

- Sidewalk improvements
- Pedestrian/bicycle crossing improvements
- On-Street bicycle facilities
- Traffic diversion improvements
- Off-Street bicycle and pedestrian facilities
- Traffic calming measures for off-system roads

## Engineering

The most definitive resource on traffic calming is the Institute of Transportation Engineers (ITE) report entitled *Traffic Calming: State of the Practice*, published in August of 1999. Since that time the ITE has created an extensive traffic calming web site at **www.ite.org/traffic/index.html** providing information and research regarding all aspects of traffic calming. The work of the ITE on this topic is cited in many other publications. Because of their authority on the subject, the following descriptions of engineering techniques were taken from *Traffic Calming: State of the Practice.* In addition, these descriptions and the way they are categorized were found to be the most comprehensive and logical. Although most traffic calming measures that involve changes to the physical environment have some effect on both volume and speed, they can be classified according to their dominant effect, i.e.: volume control or speed control.

Not included in this list are regulatory measures such as modifications to traffic signal timings, or the implementation of new stop signs. As stated in *Traffic Calming: State of the Practice* "regulatory measures are generally perceived as less effective at calming traffic than are physical measures that by their nature are self-enforcing." Regulatory measures are more passive, while physical measures are considered active. Stop signs and lane markings are considered to be more effective as a complimentary technique together with other physical measures than as a stand-alone technique.

## *Volume Control Measures*

Full and half street closures, diverters of various types, median barriers, and forced turn islands are classified as volume control measures. Their primary purpose is to discourage or eliminate through traffic.

***Full street closures*** are barriers placed across a street to close the street completely to through traffic, usually leaving only sidewalks or bicycle paths open. They are also called ***cul-de-sacs*** or ***dead ends***. The barriers may consist of landscaped islands, walls, gates, side-by-side bollards, or any other obstructions that leave an opening smaller than the width of a passenger car.

***Half Street Closures*** are barriers that block travel in one direction for a short distance on otherwise two-way streets. They are also sometimes called ***partial closures*** or ***one-way closures***. When two half closures are placed across from one another at an intersection, the result is a semi-diverter. Half closures are the most common volume control measure after full street closures. Half closures are often used in sets to make travel through neighborhoods with grid streets circuitous rather than direct.

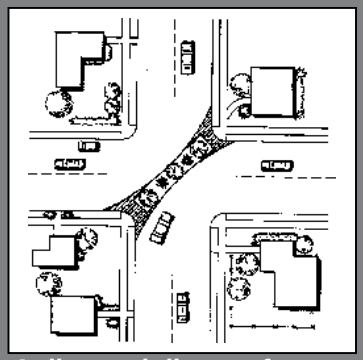
***Diagonal diverters*** are barriers placed diagonally across an intersection, blocking through movement. They are also called ***full diverters*** or ***diagonal road closures***. Like half closures, diagonal diverters are usually staggered to create circuitous routes through neighborhoods.

***Median barriers*** are raised islands located along the centerline of a street and continuing through an intersection so as to block through movement at a cross street. They are also referred to as ***median diverters*** or occasionally as ***island diverters***.

***Forced turn islands*** are raised islands that block certain movements on approaches to an intersection. They are sometimes called ***forced turn channelizations, pork chops***, or in their most common incarnation, ***right turn islands***.

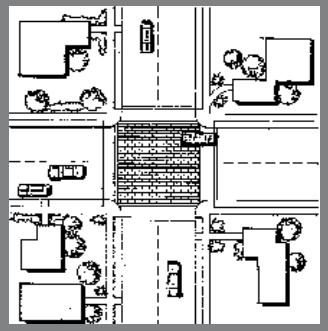
Finally, there are a few unusual measures such as ***star diverters*** and ***truncated diagonal diverters.*** Because of perennial concerns about traffic being diverted from streets that are calmed to parallel streets that are not, less restrictive forms of volume control are increasingly favored over the more restrictive full street closures. However, less restrictive forms are more easily violated, as when motorists drive around forced turn islands.

***A full street closure eliminates through traffic. Most street closures are found in suburban subdivisions, by design, and are more commonly known as cul-de-sacs. Such closures must be carefully planned as part of a larger street network providing connectivity. Photo by ITE.***



***A diagonal diverter forces traffic to turn. Graphic by ITE.***


*A speed table three to four inches high reduces speed. Fire departments prefer speed tables over speed humps. Photo by ITE.*



*A raised intersection reduces through speeds, and works well with textured crosswalks and curb extensions. Graphic by ITE.*

## *Speed Control Measures*

Speed control measures are of three types: 1) vertical measures, which use forces of vertical acceleration to discourage speeding; 2) horizontal measures, which use forces of lateral acceleration to discourage speeding; and 3) narrowings, which use a psycho-perceptive sense of enclosure to discourage speeding. Speed humps, speed tables, raised intersections, traffic circles, chicanes, chokers, lateral shifts, and realigned intersections are classified as speed control measures. Their primary purpose is to slow traffic. Because physical forces are more compelling, vertical and horizontal devices tend to be more effective in reducing speeds.

### ***Vertical Measures***

Vertical measures achieve their speed reductions by forcing motorists over vertical curves or over road surfaces that have a unique texture different from the main line.

***Speed humps*** are rounded raised areas placed across the road. They are also referred to as ***road humps*** and ***undulations***. The Watts profile hump, developed and tested by Britain's Transport Research Laboratory, is the most common speed control measure in the United States. ITE has a recommended practice for the design and application of speed humps. Its guidelines specify a speed hump that is 12 feet long (in the direction of travel), 3 to 4 inches high, and parabolic in shape, and that has a design speed of 15 to 20 mph. It is usually constructed with a taper on each side to allow unimpeded drainage between the hump and curb.

***Speed tables*** are essentially flat-topped speed humps often constructed with brick or other textured materials on the flat section. They are also called ***trapezoidal humps***, ***speed platforms***, and, if marked for pedestrian crossing, ***raised crosswalks*** or ***raised crossings***. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on top. Their long flat fields, plus ramps that are sometimes more gently sloped than speed humps, give speed tables higher design speeds than humps.

***Raised intersections*** are flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section. They are also called ***raised junctions, intersection humps***, or ***plateaus***. They usually rise to sidewalk level, or slightly below to provide a "lip" for the visually impaired. They make entire intersections—crosswalks and all—pedestrian territory. They are particularly useful

in dense urban areas, where the loss of on-street parking associated with other traffic calming measures is considered unacceptable.

***Textured pavements*** are roadway surfaces paved with brick, concrete pavers, stamped asphalt, or other surface materials that produce constant small changes in vertical alignment. Though including textured pavements among vertical features may appear a stretch to some readers, one need only observe travel speeds on old cobblestone and brick streets to appreciate the rationale. A noted limitation to textured pavements such as cobblestone is that they may present difficulties for pedestrians and bicyclists, particularly in wet conditions.

## ***Horizontal Measures***

Horizontal measures achieve their speed reductions by forcing drivers around horizontal curves and by blocking long views of the road ahead.

By far the most common horizontal measures are ***traffic circles and roundabouts***. Roundabouts are raised islands, placed in intersections, around which traffic circulates. They are sometimes called ***intersection islands***. They are usually circular in shape and landscaped in their center islands, though not always. Roundabouts are defined by yield control of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure that travel speeds are less than 30 miles per hour.

Roundabouts prevent drivers from speeding through intersections by impeding the straight-through movement and forcing drivers to slow down to yield. Drivers must first turn to the right, then to the left as they pass the circle, and then right again after clearing the roundabout. A roundabout is generally used for traffic calming where there are documented observations of speeding, high traffic volumes, or careless driving; or there is inadequate space for roadside activities, or where there is a need to provide slower, safer conditions for non-automobile users; or where new construction would potentially increase the volumes of "cut-through" traffic.

The modern roundabout is significantly different than the older traffic circle (or rotary), both in operation and design. The older traffic circle gave priority to entering vehicles, and experience with these in the United States and abroad indicated that the circles had a high rate of crashes and congestion. The very first traffic circle, known as the "Airport Circle," was built in Pennsauken, New Jersey in 1925. A total of 67 traffic circles were eventually



***A brick crosswalk in Washington Town Center (Washington Township, NJ) provides a visual and textural treatment to alert drivers to the crosswalk. The use of brick crosswalks or textured pavements is common in the Delaware Valley region.***

***A typical New Jersey traffic circle, or rotary, gives priority to entering vehicles. Higher volumes of cars traveling at high speeds have made the circles accident-prone, as cars attempt to merge and weave through the circle.***

*The modern roundabout gives priority to circulating cars, which always keep moving, unlike the traffic circle where gridlock can happen at high volumes. Roundabouts can better handle high volumes of traffic, while taking up less space because no weaving room is needed. Picture from Colorado.*

*A chicane is an S-shaped curve within an otherwise straight roadway, designed to slow drivers down. They are appropriate only at mid-block. The City of Chester uses a chicane in its downtown shopping district, one of the few in the Philadelphia region. Photo by ITE.*

built throughout New Jersey, with most built in the 1920's and 1930's. However, with increases in vehicle speeds and traffic volumes, the efficiency and safety of traffic circles has declined, and the New Jersey Department of Transportation has eliminated over half of them. Rotaries or traffic circles have very large diameters, resulting in high speeds in the circle. Roundabouts, on the other hand, were introduced in the United Kingdom in the 1960's, as a reaction to the traffic circle, and gave priority to traffic in the circle, making entering traffic "give way" or yield to circle traffic. Collisions and congestion were both reduced, and the modern roundabout has continued to gain acceptance.

There are several types of roundabouts, based on size and location considerations, such as the single-lane roundabout, double-lane roundabout, and compact roundabout. Some roundabouts can be installed within the existing right of way and would require no additional private property.

Some roundabouts can be flush with the ground to allow for wider turning radii for emergency vehicles, or to move a car in case of an accident to free up the travel lane. Another option to make the roundabout partially or wholly mountable is to add outer rings (called truck aprons), or to add conical-shaped center islands ("lips"). Alternatively, center islands can be designed with cutouts for buses and trucks with wide turning radii.

***Chicanes*** are curb extensions that alternate from one side of the street to the other, forming S-shaped curves. They are also referred to as ***deviations, serpentines, reversing curves***, or ***twists***. A chicane-like effect can be achieved, at a fraction of the cost, by alternating on-street parking from one side of the street to the other. Emergency vehicles and trucks can usually maneuver over them if necessary. They can be costly however, and on-street parking may be lost. A chicane must be designed well so drivers are aware of lane deviations.

***Lateral shifts*** are curb extensions on otherwise straight streets that cause travel lanes to bend one way and then bend back the other way to the original direction of travel. They are occasionally referred to as ***axial shifts, staggerings, or jogs***. Lateral shifts, with just the right degree of deflection, are one of the few measures that have been used on collectors or even arterials, where high traffic volumes and high posted speeds preclude more abrupt measures. Lateral shifts are like chicanes in that they can be created at moderate cost using protected parking bays. For significant speed reduction, lateral shifts of at least one-lane width and angles of deflection of at least 45 degrees have been used.

***Realigned intersections*** are changes in alignment that convert T-intersections with straight approaches into curving streets that meet at right angles. A former "straight-through" movement along the top of the T becomes a turning movement. Realigned intersections are sometimes called ***modified intersections***. While not commonly used, they are one of the few traffic calming measures for T-intersections.

***Narrowings***

The final set of traffic calming measures uses roadway narrowing to achieve speed reductions. Narrowing is usually accompanied by plantings, street furniture, or other vertical elements to draw attention to the constriction and visually bound the space. The addition of on-street parking, and/or striped bicycle lanes, is another method of narrowing lanes for speed reduction.

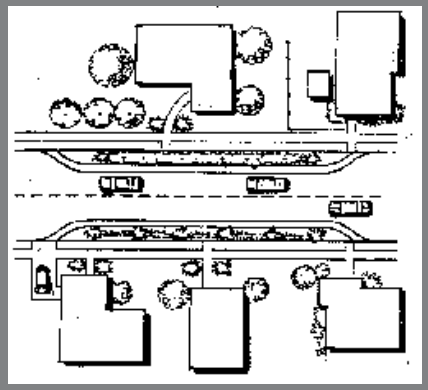
***Neckdowns*** are curb extensions at intersections that reduce roadway width curb to curb. They are sometimes called ***nubs, bulbouts, knuckles***, or ***intersection narrowings***. If coupled with crosswalks, they are referred to as ***safe crosses***. Neckdowns are the most common type of street narrowing. Their primary purpose is to "pedestrianize" intersections. They do this by shortening crossing distances for pedestrians and drawing attention to pedestrians via raised peninsulas. By tightening curb radii at the corner, the pedestrian crossing distance is reduced and the speeds of turning vehicles are reduced. This increases pedestrian comfort and safety at cross streets.

***Center island narrowings*** are raised islands located along the centerline of a street that narrow the travel lanes at that location. They are also called ***midblock medians, median slow points***, or ***median chokers***. They often are nicely landscaped to provide visual amenity and neighborhood identity. Placed at the entrance to a neighborhood, and often combined with textured pavement and monument signs, they are often called ***gateways***.

***Chokers*** are curb extensions at mid-block that narrow a street by widening the sidewalk or planting strip. In different configurations, they are ***called pinch points, mid-block narrowings, mid-block yield points***, or ***constrictions***. If marked as crosswalks, they are also called ***safe crosses***. Chokers can leave the street cross section with two lanes, albeit narrower lanes than before, or take it down to one lane. If the roadway is narrowed down to one lane, the lane may be parallel to the alignment or angled to the alignment. The

***Burlington City, New Jersey's downtown has neckdowns to make crossing the street shorter and safer.***

***A center island narrowing provides a mid-point refuge for pedestrian crossings, particularly useful on wide streets. Photo by ITE.***



***A choker is best used on local and collector streets or main roads through small towns. Graphic by ITE.***

former is called a ***parallel choker***, the latter an ***angled choker***, ***twisted choker***, or ***angle point***.

The following are sample costs for various traffic calming techniques, arranged from least to most expensive. These were culled from various sources, including the *ITE Traffic Calming State of the Practice*, which gathered data in the late 1990s from such locations as Sarasota, Florida, Portland, Oregon, and Seattle, Washington. Prices will differ based on numerous variables regarding materials, project extent, and local economies.

| | |
|---|---|
| Traffic Sign | $75-100 |
| Marked Crosswalk | $100-3,000 (low for painted, high for patterned concrete) |
| Curb Ramp | $1,500 |
| Speed Hump | $2,000-2,500 |
| Speed Table | $2,500 |
| Traffic Circle | $3,500-15,000 |
| Center Island | $5,000-15,000 |
| Half Street Closure | $6,000-40,000 |
| Choker | $7,000-13,000 (low for asphalt, high for concrete) |
| Bike Lane | $10,000-15,000 per mile to modify existing roadway |
| Curb Bulb | $10,000-20,000 |
| Median Barrier | $10,000-20,000 |
| Raised Intersection | $12,500-70,000 |
| Chicane | $14,000 |
| Traffic Signal | $15,000-60,000 |
| Full Closure | $30,000-120,000 |
| Diagonal Diverter | $85,000 |

## Enforcement

Police enforcement of traffic laws is an effective way of raising awareness at select locations. Unfortunately the constraints of targeted enforcement and ticketing for moving violations make this approach less successful, and unsustainable in a practical sense, when compared to self-policing engineering techniques. Constraints include the costliness of increased law enforcement, and the often temporary effects on driver behavior of increased enforcement. As stated in the education section, targeted police enforcement is a practical complementary strategy when used in companion with Neighborhood Traffic Safety Campaigns.

Another enforcement-based program is the ***Radar Speed Trailer*** unit that displays a motorist's speed as they approach the device. The ***Neighborhood Speed Watch*** program empowers local residents to record speeds of motorists passing their homes, record license plate and vehicle information, and submit the information to local law enforcement. The police then mail warning letters to the owners of offending vehicles, reminding them of the posted speed limit and the neighborhood's concern for safety.

The installation of ***Red Light Cameras*** allows police to videotape red light runners at busy intersections. The system monitors traffic through sensors embedded in the road that are synchronized with the traffic-light cycle. The cameras take two photographs of offending vehicles. The first shot shows the red light and the vehicle before it crosses the "stop bar" at the entrance to the intersection. The second photo also shows the red light, as well as the vehicle after it has entered the intersection. The second shot also shows the car's license plate. Tickets are issued to the registered owner of the car. The photos do not show the driver.

Red light cameras reduce red light running and "T-bone" crashes. Motorists are often aware that cameras have been installed, but not specifically where, which can have a positive effect by increasing safety in the entire neighborhood. Critics of the cameras claim they can lead to an increase in rear-end collisions, as motorists stop quickly so as to not run the light and be mailed a violation. To combat this, an education program to inform residents of the cameras and their purpose usually accompanies the installation of cameras. In some cities it has been shown that rear end collisions go down overall after the initial spike. Some are opposed based on privacy issues. The City of Philadelphia installed red light cameras in early 2005 at several intersections along Roosevelt Boulevard in Northeast Philadelphia, specifically at Grant Avenue, Red Lion Boulevard, and Cottman Avenue. Roosevelt Boulevard is frequently cited as one of the region's (and indeed the nation, according to a study of accident data conducted by State Farm Insurance in 2001) most dangerous roads.

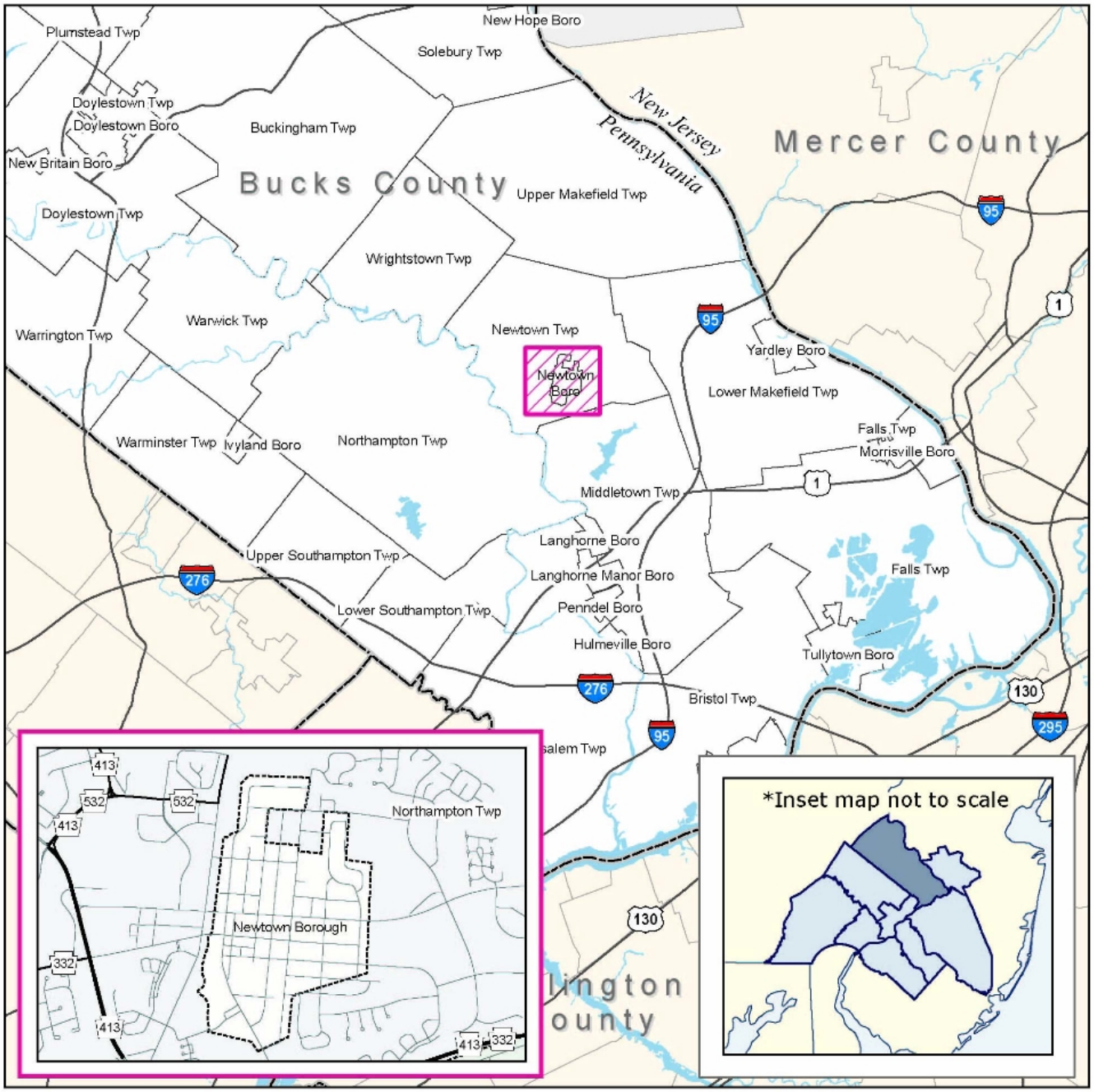
## Policy

The policy approach to traffic calming can be characterized as pro-active. The techniques described in the education, engineering, and enforcement categories are mostly re-active, addressing an existing problem. Although little data was gathered on the use of policy approaches to address traffic calming issues, it is logical to incorporate the goals of traffic

***A neighborhood traffic circle/roundabout in Washington Town Center (Washington Township, NJ) appears to have aesthetics and landscaping as its primary function, given the low volume of traffic and lack of channelization on the approach roads. It is an attractive gateway to the neighborhood.***

calming when developing or redeveloping infrastructure, or during a new land development, as to avoid the need and added cost of reactive treatments.

The policy approach seeks to set standards or performance measures for the transportation system and its users (pedestrians, bicyclists, and motorists), that maintain mobility, create connectivity, and ensure safety. Some tools that may be used in a policy approach are the municipal ***Comprehensive*** or ***Master Plan*** including an ***Official Map*** delineating road rights-of-way, bicycle and pedestrian routes, and multi-purpose shared facilities. ***Engineering Specifications*** can be tailored to ensure that new roads are designed to meet lower design speeds, and to incorporate innovative pedestrian accommodations where necessary. This provision can also be applied to roads as they are rehabilitated during maintenance. If the goals of traffic calming can be incorporated at the policy level, a municipality can set standards that promote a higher quality of life by preventing the negative impacts of traffic in a comprehensive manner.




Source: DVRPC, 2005.

# CASE STUDY: NEWTOWN BOROUGH AND NEWTOWN TOWNSHIP, BUCKS COUNTY

## Study Area

Newtown Borough and Newtown Township are historic communities that date back to 1683, part of the William Penn land grant. Newtown became the county seat of Bucks County in 1725, and remained so until 1813 when that function moved to Doylestown. Newtown split into Newtown Borough and Township in 1838. Today it is a vibrant community with an active retail district along State Street, and a charming mix of colonial buildings in the Borough and newer homes in the Township. While the Borough's population size remains in the 2,000 range (2,312 in 2000) the Township continues to grow, from 2,002 residents in 1970, to 15,857 in 1995, to 18,245 in 2000.

The study area is the Borough of Newtown and the area of Newtown Township encompassed by the Newtown Bypass. Consideration is given to growing townships beyond Newtown Township as well, although these areas are not technically part of the case study area. The case study work was guided by a local steering committee, made up of representatives from Newtown Borough, Newtown Township, Bucks County Planning Commission, Joint Newtown Development Corporation, Newtown Borough Police, and Newtown Township Police.

As a first step, DVRPC assessed the strengths, weaknesses, opportunities, and threats (SWOT) of the study area.

## SWOT Analysis (Strengths, Weaknesses, Opportunities, and Threats)

Strengths

- Newtown Borough is a healthy, active downtown with a good mix of local and destination retail.
- Borough residents are within walking distance of downtown.
- There is steady residential growth in the surrounding townships and county overall.

***Newtown Borough is a historic, walkable small town with a wide variety of shops and restaurants, such as the Brick Hotel , an inn and restaurant.***

- The Newtown Bypass is a bypass of the Borough's central business district, and was also designed to divert truck traffic and other significant volumes of traffic away from residential neighborhoods. While functioning of the Bypass needs improvement, it is still an important element of the overall transportation network.

Weaknesses

- As the Township and surrounding communities continue to grow, traffic congestion also continues, and few alternatives to the automobile are available. New suburban housing developments are often built with a single access or entry point, leading to congestion as motorists try to access these developments.
- The Bypass is not functioning as well as it could.
- Pedestrian connections are lacking in places in the Borough and Township.

Opportunities

- Shaping future development to include traffic calming measures, pedestrian linkages and more context sensitive site planning.

Threats

- Continued suburban growth and traffic resulting in deterioration of downtown.

## Intergovernmental Coordination

Newtown consists of both Newtown Borough and Newtown Township, both of which have their own Planning Commissions, in addition to the following organizations. Both the Township and the Borough have their own police departments, as well as numerous topical committees.

### Joint Downtown Newtown Corporation (JDNC)

The Joint Downtown Newtown Corporation was formed in 2000 primarily to initiate a "Main Street" program spanning the commercial and industrial districts of both Newtown Borough and Newtown Township. The Borough itself was too small to apply for the program independent of the Township. The JDNC works to protect older structures and encourage appropriate development of under-utilized properties. The JDNC wants to retain the unique qualities of the downtown area, while also enhancing the area's shopping centers and the Newtown Industrial Commons area. The JDNC has recently applied and received a grant from the Pennsylvania Department of Community and Economic

Development for permanent pedestrian lighting on State Street between Centre and Washington Avenues. The grant may also be used for replacing sidewalks and installing wayfinding signage.

### Joint Comprehensive Plan and Joint Planning Commission

Newtown Township is part of a Zoning Jointure with Wrightstown and Upper Makefield Townships. The Joint Planning Commission acts as an advisory board to the Joint Zoning Council, assisting in the review of planning issues and the Jointure's Comprehensive Plan.

## Existing Plans and Studies

### Newtown Borough 1999 Comprehensive Plan

Major goals of the Borough include preserving the sense of place, preserving residential neighborhoods, and improving the borough's gateways. These goals are consistent with the goals of traffic calming. The Borough also has an active Shade Tree Commission that enhances roadways, quality of life, and traffic calming. The Borough has also inventoried gaps in the existing sidewalk network, and lists completing this network as the top priority in pedestrian access.

Residents were asked in 1999 what they felt were the most important problems facing the Borough. Traffic, parking (both in providing enough parking downtown and in limiting the further development of lots), lack of public transportation, and preserving the uniqueness of the borough in the face of the township's growth were listed, among others. An important issue identified was reducing the impacts of traffic generated outside the Borough on borough streets and neighborhoods.

### Newtown Borough Pedestrian Circulation Study

*The Newtown Borough Pedestrian Circulation Study,* prepared by the Bucks County Planning Commission, studied 16 intersections within the Borough for their pedestrian accessibility. These include: Court Street at Washington Avenue, and at State Street; Washington Avenue at Congress Street, at Chancellor Street, at Lincoln Avenue, and at State Street; Lincoln Avenue at Jefferson Street, at Greene Street, at Centre Avenue, at Penn Street, and at Lafayette Street; State Street at Penn Street, at Mercer Street, and at Lincoln Avenue; and lastly, Chancellor Street at Sterling Street and at Jefferson Street. Possible solutions to make these intersections more pedestrian-friendly include: stop bars, better and more visible signage ("stop here on red", "ped xing", "yield to pedestrians"), properly marked crosswalks, lighted crosswalks, speed humps, and raised crosswalks with

***Newtown-Yardley Road becomes Washington Avenue as one enters Newtown Borough from the east.***

*State Street is a major arterial street and the southern gateway into Newtown Borough. It is also the main downtown shopping district.*

bulb-outs. The report concludes with several funding resources, including the Hometown Streets/Safe Routes to School Program, the Transportation Enhancement Program (TE), and the Transportation Improvement Program (TIP), all of which are administered by DVRPC.

### DVRPC's Bucks County Regional Traffic Study

DVRPC is beginning a Fiscal Year 2006 study, *Bucks County Regional Traffic Study*, that will improve safety and mobility by identifying improvements that would result in a reduction of motor vehicle crashes and enhance the transportation infrastructure in the defined study area. The study will look at traffic through lower central Bucks County, specifically seven municipalities, including Newtown Township, Newtown Borough, Lower Makefield Township, Upper Makefield Township, Northampton Township, and Yardley Borough. Traffic calming will be one of the many aspects of traffic evaluated in the study, particularly in relation to regional truck traffic issues.

### Newtown Bus Rapid Transit and Pedestrian Trail Concept Study

Bucks County Planning Commission, in cooperation with Montgomery County Planning Commission, has issued a Request for Proposals for consultant assistance to undertake a yearlong study that began in July 2005. The study will determine the feasibility of providing bus rapid transit service and a pedestrian trail along SEPTA's currently unused R8 Regional Rail Newtown branch, to serve the Newtown area.

## Existing Conditions

### Road Network

Major roadways radiating out from the Borough include Routes 413 (State Street, Newtown Pike), 532 (Sycamore Street, Washington Crossing Road), 332 (Washington Avenue/Newtown-Yardley Road), and Swamp Road. In the Borough, Washington Avenue is classified as an arterial street, as is State Street from the southern Borough line to Washington Avenue. Arterials are designed to provide access between portions of the region and through and around towns, for large traffic volumes and high-speed traffic. Access to properties is often restricted.

Major collectors include State Street from Washington Avenue to Jefferson Street, Jefferson Street from State Street to the Newtown Township line, and Centre Avenue from State Street to the Newtown Township line. Major collectors connect municipalities and activity centers, and provide for access as well as traffic movement at lesser rates of speed

and at lower volumes. Minor collectors include Lincoln Avenue, Jefferson from State to Lincoln, and Frost Lane from Lincoln Avenue to the eastern Borough boundary. Minor collectors move traffic within and between neighborhoods and are designed for low volumes of traffic at lower speeds, and direct traffic from local roads to arterials and major collectors.

**Map 1: Aerial View and Road Network** illustrates the overall road network and location of signalized intersections.

The Newtown Bypass (PA 332/PA 413) consists of a four-lane divided controlled access facility from Durham Road (PA 413) south and east to Newtown Yardley Road (PA 332), with a speed limit of 55 miles per hour. The village of Newtown is located north of the highway. The Newtown Bypass provides an alternative route around the Borough, and through traffic volumes on the local Washington Avenue and State Street were reduced after construction of the bypass in 1999, even though overall traffic continued to increase. The timing of traffic lights on the bypass impedes traffic flow, causing drivers to use the local Washington Avenue, which then backs up, causing drivers to use other local streets to cut through. Although the Bypass is a controlled access facility, there are seven traffic signals from the eastern gateway of the Bypass at Newtown-Yardley Road to the western gateway at Swamp Road. This may also deter drivers from using the Bypass.

The Environmental Impact Statement (EIS) for the Newtown Bypass in 1995 rationalized the need for the bypass due to:

- Heavy and growing overall traffic volumes
- Heavy truck movements during the day
- Frequent traffic delays in the center of the shopping district affecting cars and pedestrians
- High noise levels

Sycamore Street (PA 532) is in the midst of a reconstruction and revitalization project. Newtown Township has a Sycamore Street Committee that meets monthly to review the continuing work. Improvements include repaving, new curbs and driveway aprons, sidewalks with decorative concrete patterns (a slate finish), crosswalks with decorative concrete patterns (brick herringbone), antique styled street lights, with banner poles and flower pots, and park benches for pedestrians and trash receptacles. Given the area's

***Lincoln Avenue is a minor collector street in Newtown Borough.***

*The intersection of Washington and Lincoln Avenues is considered a key intersection for traffic calming.*

revitalization, it is expected that demand for parking will increase. On-street parallel parking will be added along Sycamore, which should help to calm traffic along the road. A new traffic light will be added at Sycamore and Jefferson, to address previous safety, speed, and volume concerns along the corridor.

Newtown Borough wants to maximize the effectiveness of the Bypass, and minimize trips on State Routes 332 (Washington), 532 (Sycamore), 413 (State), and to and from I-95 and Oxford Valley. The Borough feels there is much externally generated through traffic, given the area's steady growth. The Bypass should be the primary mover of large volumes of through traffic, enabling local retail and residential streets to retain a high quality of life.

**Map 2: Street Classification and Circulation Issues** illustrates the primary streets the Borough feels could benefit most from traffic calming, which are:

- Lincoln Avenue
- Washington Avenue
- Center Avenue

To a lesser extent, the following streets should also be considered:

- Edgeboro Drive
- Jefferson Avenue
- Congress Street
- Greene Street
- Norwood Avenue
- Maple Avenue

**Map 2** notes the key intersections the Borough feels could benefit from traffic calming, which are:

- Washington Avenue and State Street experiences backups because of high volume of traffic (12,100 on Washington Avenue in 1996 and 7,300 on State Street in 1996)
- Washington Avenue creek crossing
- Jefferson Street creek crossing
- State Street and Center Avenue
- Washington and Lincoln Avenues


# Taming Traffic Study

## Map 1: Aerial View and Road Network

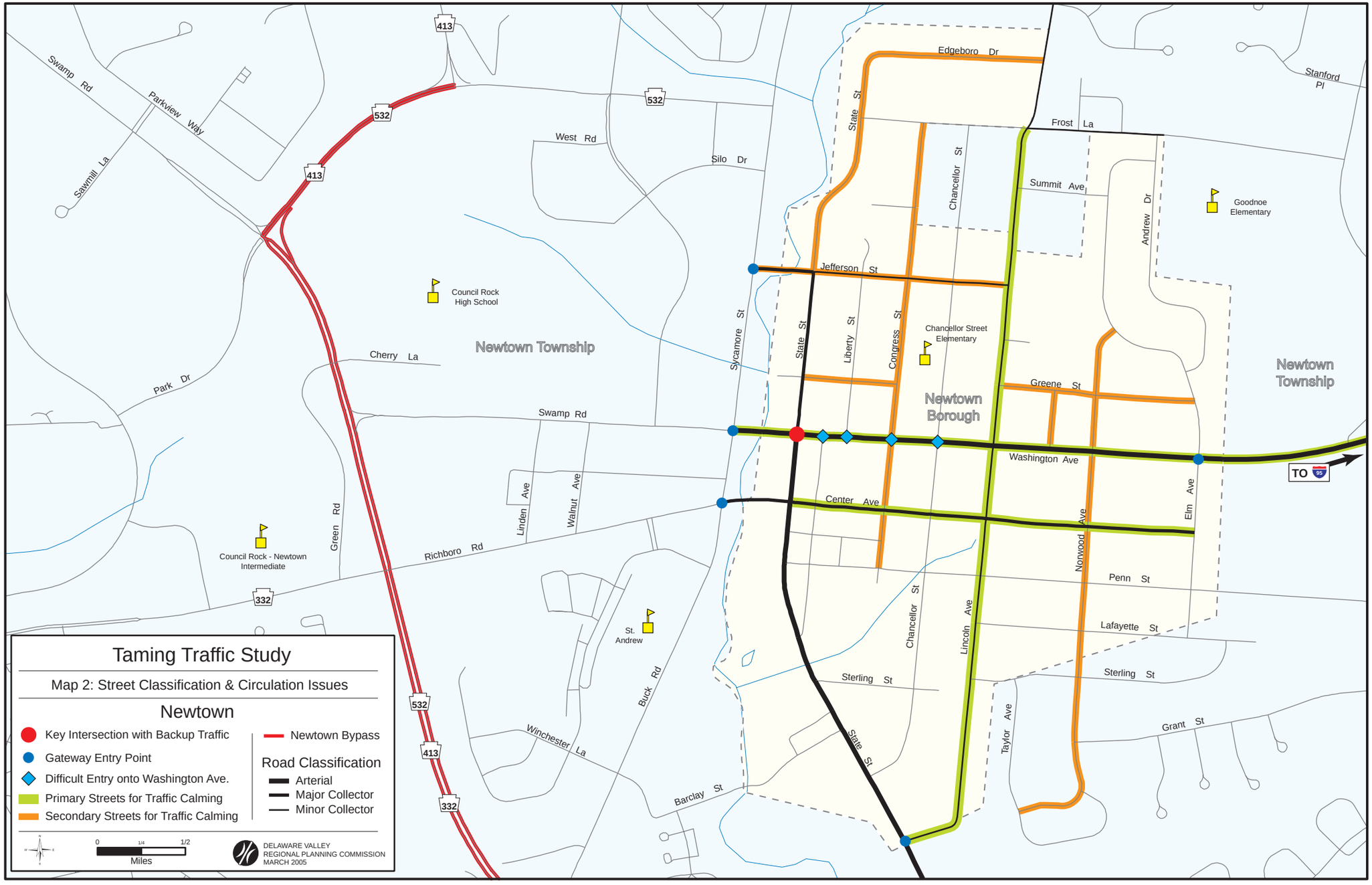
### Newtown

Signalized Intersection

0 0.1 0.2

Miles

Delaware Valley
Regional Planning Commission
May 2005


Taming Traffic Study
Map 2: Street Classification & Circulation Issues
Newtown
Key Intersection with Backup Traffic
Gateway Entry Point
Difficult Entry onto Washington Ave.
Primary Streets for Traffic Calming
Secondary Streets for Traffic Calming
Newtown Bypass
Road Classification
Arterial
Major Collector
Minor Collector
0
1/4
1/2
Miles
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
MARCH 2005
Newtown Township
Newtown Borough
Council Rock High School
Council Rock - Newtown Intermediate
Chancellor Street Elementary
Goodnoe Elementary
St. Andrew
Swamp Rd
Parkview Way
Sawmill La
West Rd
Silo Dr
Cherry La
Park Dr
Green Rd
Richboro Rd
Linden Ave
Walnut Ave
Winchester La
Buck Rd
Barclay St
Edgeboro Dr
Stanford Pl
Frost La
Summit Ave
Andrew Dr
Jefferson St
Sycamore St
State St
Liberty St
Congress St
Chancellor St
Greene St
Washington Ave
Center Ave
Norwood Ave
Elm Ave
Penn St
Lafayette St
Sterling St
Lincoln Ave
Taylor Ave
Grant St
TO
413
532
332

**Map 3: 2000-2003 Crash Locations** indicates the locations of crashes on the two state roads located in Newtown Borough. The map also shows the locations of signalized intersections. A cursory crash analysis was performed in an effort to identify safety problems that may be addressed by way of traffic calming measures. Crash data from the Pennsylvania Department of Transportation's database for years 2000, 2001, and 2003 was utilized. Year 2002 data has not been made available by the state. In addition, only data for crashes occurring on state roads was available at the time of the study. The analysis focuses on crashes that took place on the two state roads located in Newtown Borough: 1) Washington Avenue between State Road and the municipal boundary with Newtown Township to the east, and 2) State Road between Chancellor Street and Jefferson Street. These are the only locations for which crash data was available from the PennDOT Crash Database within the borough.

During the three-year period, 17 crashes were recorded on Washington Avenue, four of which occurred at the intersection with State Street. Angle crashes were the most frequent collision type, accounting for 8 accidents, and rear-end crashes were next, accounting for 5 crashes. Combined these two categories represent 76 percent of the 17 crashes. The higher percentage of angle crashes may be related to the frequency of left turns to and from Washington Avenue. Regarding severity, there were eight no injury crashes, six minor injury crashes, one major injury crash, and one unknown injury crash. No fatalities were recorded on Washington Avenue during the analysis period. One crash involving a bicyclist was recorded. Concerning weather and road conditions, 94 percent of the crashes occurred under good weather conditions, and 88 percent while the road surface was dry. The crash total was nearly split between daylight and nighttime conditions.

The total number of crashes for the three-year period was 17 on State Street, the same number that occurred on Washington Avenue. Angle and rear-end crashes accounted for the first and second most frequent collision types with 8 and 5 respectively, combined representing 76 percent of the 17 crashes. Five crashes occurred at the intersection with Washington Avenue, the busiest intersection in the study area. Regarding severity, there were no major injuries and no fatalities recorded on State Street during the analysis period. Six crashes resulted in minor injuries, six in no injury, 4 in unknown injury, and one in a moderate injury. Concerning weather and road conditions, 14 of the crashes occurred under good weather conditions, two during rainy conditions, and one while it was snowing. Twelve crashes occurred during the daylight, four at night under streetlights, and one at night with no street lights.

***There are traffic backups at the intersection of Washington Avenue and Sycamore Street, which is one block from the key congestion (and accident) point of Washington Avenue and State Street.***

*The Yardley SEPTA R3 Regional Rail station is the closest train station. Regional Rail service to Newtown ceased in 1983.*

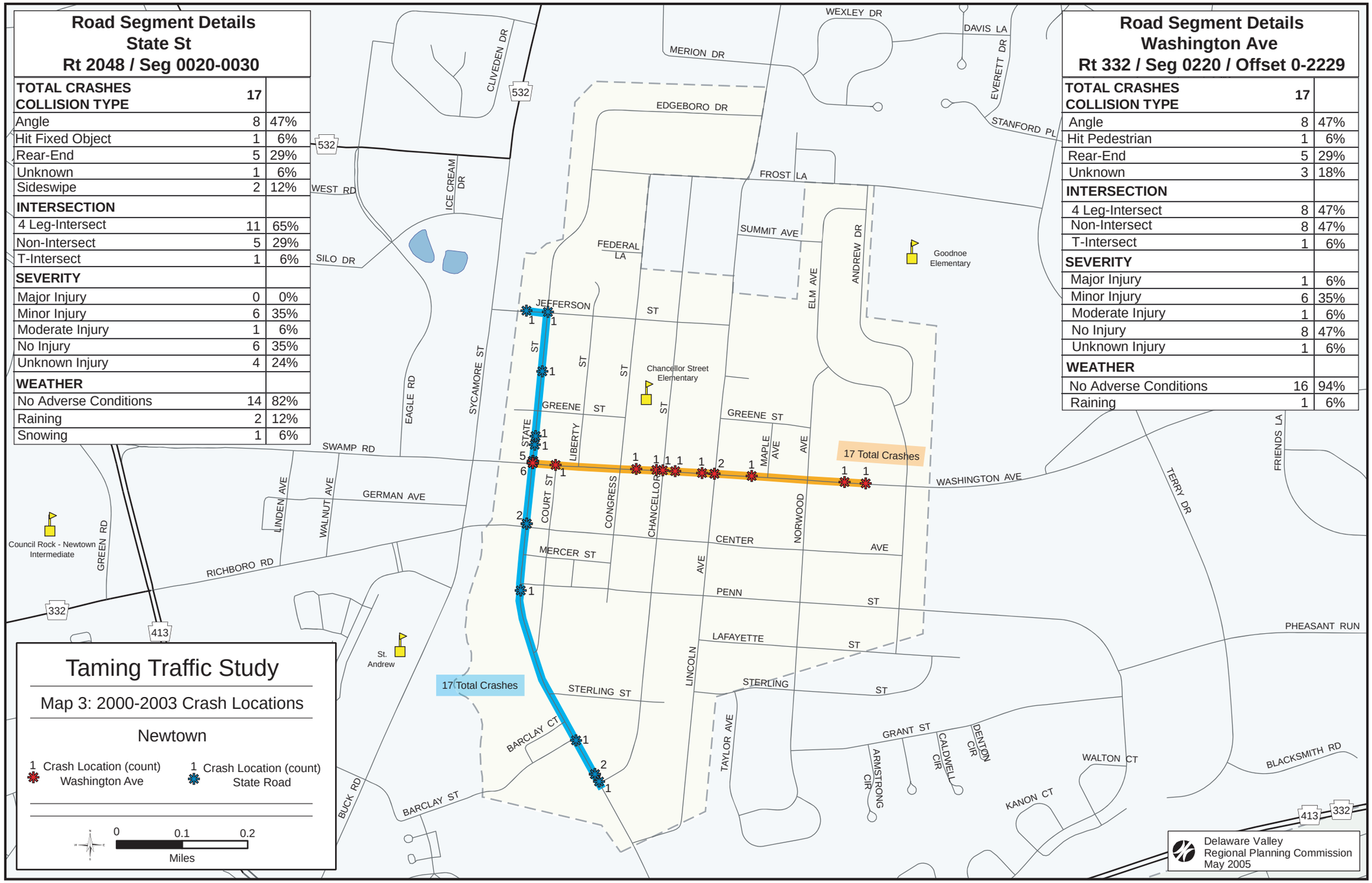
The total number of crashes recorded on both Washington Avenue and State Street within the study area for the three year period does not meet the minimum threshold criteria used by DVRPC to identify crash cluster locations as published in other studies. A more detailed crash analysis utilizing crash diagrams may reveal trends that can be addressed by geometric improvements. Although traffic calming methods may address the factors contributing to crash frequency and severity, this relationship is not clearly apparent in the Newtown focus area. A table summarizing crash data for each road is presented on **Map 3: 2000-2003 Crash Locations.**

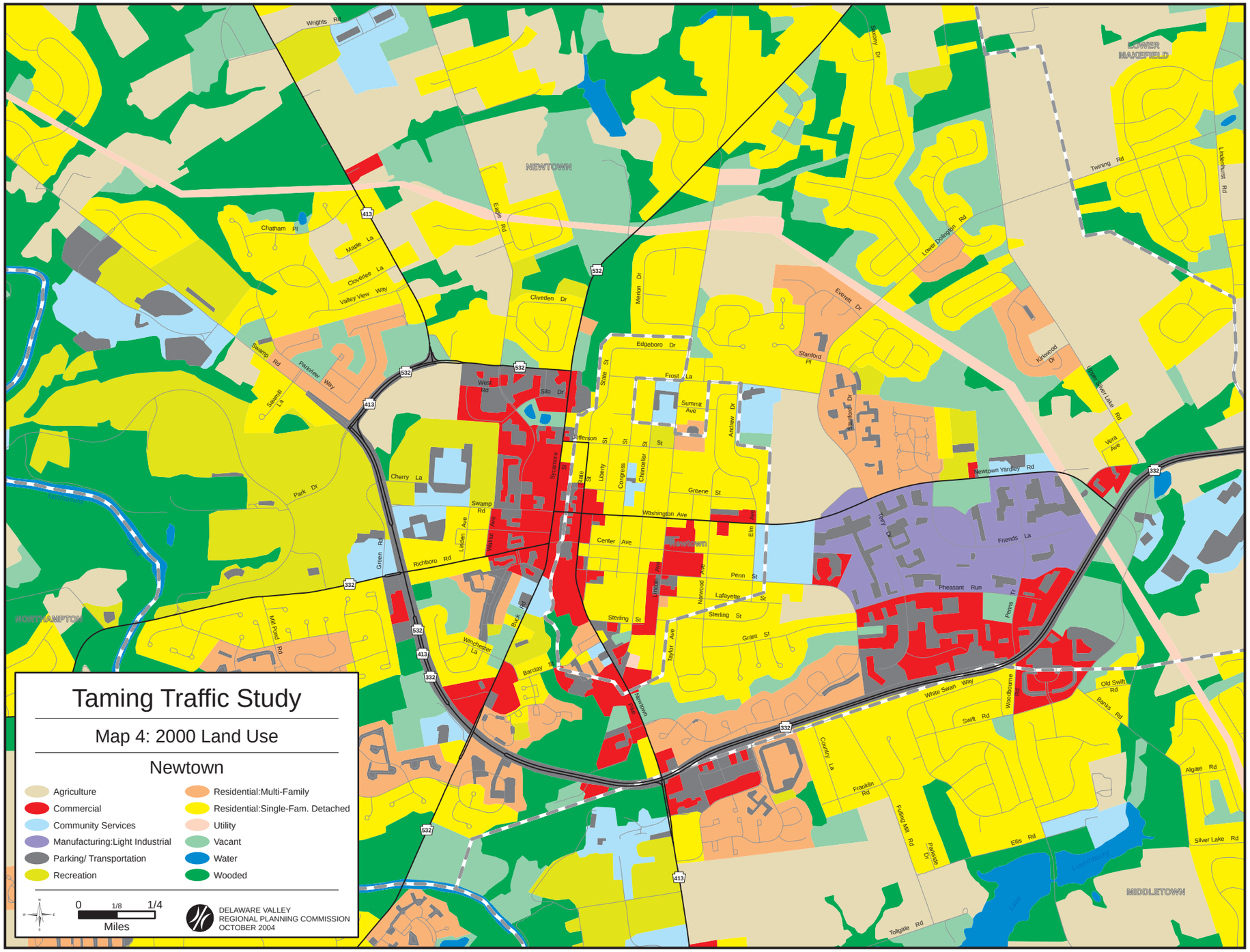
## Transit

Newtown Borough is currently not served by any regional rail service, as SEPTA passenger service was discontinued in 1983 due to low ridership. The Newtown line was a single track, non-electrified extension from the Philadelphia R8 Fox Chase line. It ran 8.3 miles from County Line Road in Southampton Township to its terminus in Newtown Borough, with station stops at County Line, Southampton, Churchville, Holland, George School, and Newtown. The Newtown station, a train shed, was located at Lincoln Avenue and Penn Street, with limited parking available. SEPTA Bus Route 301 replaced this train service, linking passengers in Newtown with the Fox Chase R8 rail line. Lack of ridership prompted SEPTA to terminate the Route 301 bus in 2003.

As far as active bus service, Newtown Borough and Newtown Township are served by SEPTA Bus Route 130. This line follows a northeasterly path serving points from the Franklin Mills Mall to the south and Bucks County Community College to the north, via Neshaminy Mall and Newtown. Other major destinations include the Glenview Corporate Center, Philadelphia Park, Horizon Corporate Center, St. Mary Medical Center, Summit Square Shopping Center, Newtown Industrial Commons, and the Newtown Shopping Center. From end to end this bus route is a two-zone trip. Major roads traversed by the 130 bus include: Knights Road, Street Road, Old Lincoln Highway, Neshaminy Boulevard, Hulmeville Road, PA 413, Newtown Bypass, and Swamp Road.

This bus operates on one-hour headways during the week and on Saturday. Sunday service is also hourly but the bus only runs between Franklin Mills Mall and Neshaminy Mall, leaving the northern half of the route unserved. Bus connections can be made at Franklin Mills Mall (SEPTA Buses 20, 67, 84, 129), and Neshaminy Mall (SEPTA Buses 14, 58, 127, 128, 130). Bus patrons can also connect with the SEPTA R3 (West Trenton) at the Langhorne Station.


Road Segment Details
State St
Rt 2048 / Seg 0020-0030
TOTAL CRASHES 17
COLLISION TYPE
Angle 8 47%
Hit Fixed Object 1 6%
Rear-End 5 29%
Unknown 1 6%
Sideswipe 2 12%
INTERSECTION
4 Leg-Intersect 11 65%
Non-Intersect 5 29%
T-Intersect 1 6%
SEVERITY
Major Injury 0 0%
Minor Injury 6 35%
Moderate Injury 1 6%
No Injury 6 35%
Unknown Injury 4 24%
WEATHER
No Adverse Conditions 14 82%
Raining 2 12%
Snowing 1 6%
Road Segment Details
Washington Ave
Rt 332 / Seg 0220 / Offset 0-2229
TOTAL CRASHES 17
COLLISION TYPE
Angle 8 47%
Hit Pedestrian 1 6%
Rear-End 5 29%
Unknown 3 18%
INTERSECTION
4 Leg-Intersect 8 47%
Non-Intersect 8 47%
T-Intersect 1 6%
SEVERITY
Major Injury 1 6%
Minor Injury 6 35%
Moderate Injury 1 6%
No Injury 8 47%
Unknown Injury 1 6%
WEATHER
No Adverse Conditions 16 94%
Raining 1 6%
17 Total Crashes
17 Total Crashes
Taming Traffic Study
Map 3: 2000-2003 Crash Locations
Newtown
1 Crash Location (count) Washington Ave
1 Crash Location (count) State Road
0 0.1 0.2
Miles
Delaware Valley Regional Planning Commission
May 2005
WEXLEY DR
DAVIS LA
MERION DR
EVERETT DR
STANFORD PL
EDGEBORO DR
CLIVEDEN DR
532
FROST LA
WEST RD
ICE CREAM DR
SILO DR
FEDERAL LA
SUMMIT AVE
ANDREW DR
ELM AVE
Goodnoe Elementary
JEFFERSON ST
SYCAMORE ST
EAGLE RD
Chancellor Street Elementary
GREENE ST
STATE ST
LIBERTY ST
MAPLE AVE
SWAMP RD
WASHINGTON AVE
FRIENDS LA
TERRY DR
LINDEN AVE
WALNUT AVE
GERMAN AVE
COURT ST
CONGRESS ST
CHANCELLOR ST
NORWOOD AVE
CENTER AVE
MERCER ST
PENN ST
LAFAYETTE ST
LINCOLN AVE
STERLING ST
PHEASANT RUN
GREEN RD
RICHBORO RD
Council Rock - Newtown Intermediate
St. Andrew
BARCLAY CT
BARCLAY ST
BUCK RD
TAYLOR AVE
GRANT ST
ARMSTRONG CIR
CALDWELL CIR
DENTON CIR
WALTON CT
KANON CT
BLACKSMITH RD
332
413


Taming Traffic Study
Map 4: 2000 Land Use
Newtown
Agriculture
Commercial
Community Services
Manufacturing:Light Industrial
Parking/ Transportation
Recreation
Residential:Multi-Family
Residential:Single-Fam. Detached
Utility
Vacant
Water
Wooded
0 1/8 1/4
Miles
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
OCTOBER 2004
NEWTOWN
NORTHAMPTON
LOWER MAKEFIELD
MIDDLETOWN
Wrights Rd
Chatham Pl
Maple La
Cloverlee La
Valley View Way
Swamp Rd
Parkview Way
Summit La
Park Dr
Green Rd
Richboro Rd
Mill Pond Rd
Winchester La
Barclay St
Buck Hill
Cherry La
Swamp Rd
Linden Ave
Walnut Ave
Sycamore St
West Rd
Silo Dr
Cliveden Dr
Ewing Rd
Merion Dr
Edgeboro Dr
Frost La
State St
Summit Ave
Andrew Dr
Jefferson St
Liberty St
Congress St
Chancellor St
Greene St
Washington Ave
Center Ave
Lincoln Ave
Norwood Ave
Penn St
Lafayette St
Sterling St
Grant St
Taylor Ave
Newtown Park
Elm Ave
Everett Dr
Stanford Pl
Stanford Dr
Kirkwood Dr
Lower Dolington Rd
Twining Rd
Lindenhurst Rd
Upper Yardley Rd
Vera Ave
Newtown Yardley Rd
Terry Dr
Friends La
Pheasant Run
Penns Tr
White Swan Way
Woodbourne Rd
Old Swift Rd
Banks Rd
Swift Rd
Algate Rd
Silver Lake Rd
Country La
Franklin Rd
Fulling Mill Rd
Parkside Dr
Ellis Rd
Tollgate Rd
Lake
Lake
413
532
332

The Borough supports any effort to reinstate rail service to Newtown Township. The Yardley station on the R3 West Trenton line is accessible by heading east on Route 332 into the Borough of Yardley. The R3 line offers service to downtown Center City Philadelphia, as well as to West Trenton, and points between. The Yardley station has 275 parking spaces, at a weekday usage rate of 61%. Peak fare to Center City is $5.50 and off-peak is $4.25.

Bucks County Transportation Management Association (BCTMA) recently launched a short line job access shuttle service called the Newtown Rush. Bucks County TMA also completed a study in 2004 on the viability of a municipal shuttle bus service for residents to move around town. The Newtown Rush connects area businesses to the SEPTA R3 Woodbourne station during the a.m. and p.m. peak periods only. It serves the Newtown Business Commons, Holy Family University, ICT Inc., Lower Makefield Business Park and Lockheed Martin. The shuttle serves 5,000 total jobs along the route, and helps alleviate congestion along PA Route 413 and the Newtown Bypass (PA Route 332). A small park-and-ride lot is located in the parking lot of Newtown Business Commons to accommodate 25-30 vehicles. Service coincides with departing and arriving trains at the Woodbourne station. The target population is commuters residing along the R3 line from West Trenton, New Jersey to Philadelphia. Employers believe service will build steadily among employees who now drive but are frustrated with the driving time and congestion they face each day. The greater Newtown area is not currently accessible to many employees by transit, thus the shuttle provides access to a more diverse workforce. The Newtown Industrial Commons has a good deal of vacant space, due in part to the lack of public transportation options available to workers there, making it difficult to attract tenants. More hourly service jobs can be created at the Commons with the provision of additional public transit.

## Parking

The comprehensive plan reviews parking in the Borough, and finds that overall there is capacity to park in private lots and church parking lots, though less so in on-street spaces downtown, particularly during lunch hour. The Borough recommends better management of the existing parking supply, such as through the creation of more short-term visitor parking spaces (such as one-hour meters, rather than two-hour, for example), rather than providing new parking lots. On-street parallel parking will be added to Sycamore Street as part of its reconstruction, adding further spaces. Two main municipal parking lots exit on


***Many streets in the Borough offer on-street parking, such as Lincoln Avenue above.***

*While there is a crosswalk at the intersection of Sycamore Street and Center Street, there is a "no peds" sign discouraging crossing.*

to Center Avenue, so many cars use Center Avenue in the evenings to leave town. Two parking studies of the Borough were completed in recent years.

## Bicycling

According to the Bicycle Coalition of Greater Philadelphia's Regional Bicycle Map, Washington Avenue, Center Avenue, Penn Street, Chancellor Street, State Street, and Frost Lane are all average for bicycling conditions. Average is defined as "moderately suitable for on-road cycling; cyclists of lesser skill and experience riding in traffic may find conditions unfavorable." The Newtown Bypass is listed, not surprisingly, as below average, i.e. "less suitable for on-road cycling; while riding on these roads may not be pleasant, they may be the most direct route between two points." The nearest off-roads trails are in Tyler State Park to the west and near Township Line Road and Newtown-Yardley Road east of Newtown Borough. These cycling conditions ratings are determined using a combination of traffic volumes, roadway geometry and field observations.

## Pedestrian Environment

Newtown Borough has prepared a map showing existing gaps in the sidewalk system, as well as areas where there is no sidewalk system. Streets that have gaps include: State Street, Greene Street, Congress Street, Chancellor Street, Washington Avenue, Norwood Avenue, Centre Avenue, Mercer Street, Penn Street, Sterling Street, Lincoln Avenue, and Lafayette Street. Portions of the following streets have no sidewalks altogether: Elm Avenue, Penn Street, Centre Avenue, Maple Avenue, Greene Street, Lincoln Avenue, Summit Avenue, Congress Street, Sterling Street, Chancellor Street, Barclay Street, Edgeboro Drive, and Frost Lane. More information on recommendations for pedestrian improvements can be found in the Newtown Borough Pedestrian Circulation Study, described previously.

## Land Use/Growth

Newtown Township's growth comes as a result of its accessible location, near to Bucks and Montgomery County, Philadelphia and New York City employers. Interstate 95 is nearby, with an interchange at Route 332, Newtown-Yardley Road, which becomes Washington Avenue, the main shopping street in downtown Newtown. Route 1 is also located south of the Bypass. New shopping centers have been built along Sycamore Street and along the Bypass. Lockheed Martin is also located in the Township. Strong residential growth in surrounding areas also adds to the traffic. **Map 4: 2000 Land Use** illustrates the land uses in the year 2000.

## Focus Area: Washington Avenue Gateway Into the Borough from I-95

With any traffic calming effort, careful attention must be paid to what alternate traffic patterns will result, and what effects any changes would have on neighboring streets and land uses. Through discussions with the Borough and Township staff, Borough and Township police, Bucks County Planning Commission, Bucks County TMA, and through review of existing plans and studies, the following concerns were identified.

### Existing Conditions

The Borough's comprehensive plan recommends that gateway points into the Borough should be enhanced visually through landscaping, street furniture, lighting, paving, and land use/design. One of the main access points from the Township into the Borough is along Washington Avenue to the east, as one approaches Elm Avenue and the Borough line. This is included on **Map 2: Street Classification and Circulation Issues.**

Other key entry points that could benefit from gateway treatments are:

- Washington Avenue (west)
- Jefferson Avenue (west)
- Center Avenue (west)
- State Street (south)

### Identified Problem: Speeding on Washington Avenue Entry Into the Borough

Though technically Washington Avenue is considered an arterial, it was not designed for high speeds or large volumes of traffic, and access is not restricted. According to **Map 5: Traffic Counts**, average annual daily traffic (AADT) at Washington and Lincoln Avenues (the count location) in 2004 was 14,122 vehicles. An AADT count of 13,677 was recorded at Newtown-Yardley Road (which becomes Washington Avenue) between Penn's Trail and Friends Lane in 2003. (The Newtown Bypass recorded an AADT of 15,404 westbound vehicles in 2004, and 14,333 eastbound, by comparison.) Clearly there is a large volume of traffic entering the Borough via Washington Avenue.

Vehicles traveling along Washington Avenue from I-95 face an abrupt lowering of speed from 45 mph to 35 mph upon entering the Borough, along with a slope and curve of the roadway. Besides the small "Welcome to Newtown Borough" sign, this is the only

***Washington Avenue abruptly changes from 45 mph to 35 mph as one enters Newtown Borough. The curve and slope of the road slows some drivers down, but not others.***

*Newtown has two signs indicating entry into the Borough, though neither is compelling enough to slow traffic.*

indication that vehicles have entered the Borough. While psychologically the curve and slope may slow some drivers down, most disregard or do not notice the speed change.

New homes are planned for the immediate area northeast of the intersection of Elm and Washington Avenues, providing further incentive to improve this area for all roadway users, especially pedestrians. It is possible that the developer might help pay for these roadway improvements.

## Improvement Strategies

*Enforcement:* Enforcement of the speed limit could be stepped up at this location, but given the size of the Borough and Township police forces, this may not be the best solution. A temporary digital "Your Speed Is" sign could be added that reminds motorists to slow down, though these can be unattractive in a village setting. A stop sign might be added that would slow the entry of vehicles into town.

*Engineering:* **Figure 1: Aerial Plan View of Washington Avenue Gateway** illustrates the proposed improvements. **Figure 2: Existing Conditions on Washington at Elm** shows what Washington Avenue presently looks like. **Figure 3: Photo Simulation of Washington Avenue Gateway** illustrates what traffic calming treatments might be possible at this entry point into the Borough.

The illustration includes a new landscaped median, with trees, a welcome sign, and a stone border that echoes the stone found in the community, as well as the old homes along the road. This technique is called a center island narrowing or median choker. Along with the median, a cobblestone wedge divider, improved sidewalks, and a new tree lawn narrows the existing travel lanes. Narrowing the cartway to 24 feet (from approximately 28 feet) reduces pedestrian crossing distance and improves pedestrian and motor safety. This gateway treatment slows traffic and better communicates to drivers that they are entering into the Borough setting. The trees and sidewalks also provide a visual buffer for motorists and pedestrians. The speed limit is reduced from 35 to 25 miles per hour and a "Reduced Speed Ahead" sign is added to alert motorists to this change. Special brick paving is added at the intersection of Elm Avenue and Washington Avenue, along with intersection neckdowns to further slow traffic and make the pedestrian crossing distance shorter. An alternative would be to install a raised intersection, or special paving such as stamped or textured concrete. This illustration represents a middle ground traffic calming approach.

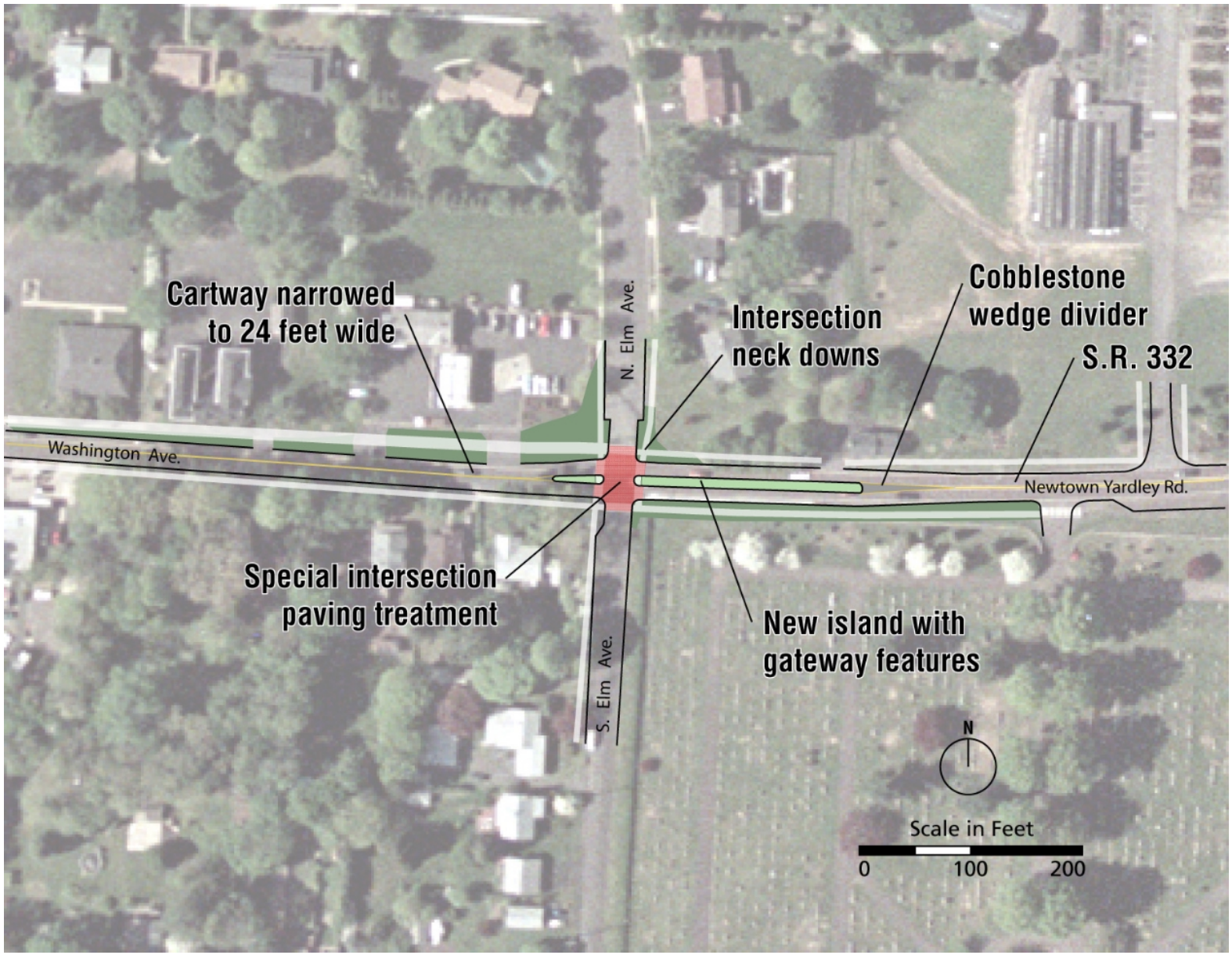



**Figure 1: Aerial Plan View of Washington Avenue Gateway. Spring 2005. Source: Wallace, Roberts & Todd LLC.**

**Figure 2: Existing Conditions on Washington at Elm.  Spring 2005.  Source: DVRPC.**


**Figure 3: Photo Simulation of Washington Avenue Gateway. Spring 2005. Source: Wallace, Roberts, & Todd LLC.**

The possible cost of such a project, based on national data mentioned previously in the traffic calming techniques section is:

- Center median: $15,000-$20,000 per 100 feet. The median in the illustration is approximately 250 feet, for a cost of $37,500 to $50,000.
- Reduced Speed Ahead sign: $100.
- Improved sidewalks: $30-$40 per linear foot for 5-foot wide walkway. Approximately 2,000 feet of new sidewalk would cost $60,000-$80,000.
- Brick paving at intersection: $3,000 per paved concrete crosswalk.
- Intersection neckdowns: $10,000-$20,000 per bulb. Four neckdowns would cost approximately $40,000-$80,000.
- Additional costs would need to be allocated for trees, lighting, cobblestone paving, welcome sign, and the new tree lawn. These figures are not included in the national estimates.

Another possibility at this location not shown in the illustration is to install a modern roundabout. A roundabout is generally used for traffic calming where there are documented observations of speeding, high traffic volumes, or careless driving; or there is inadequate space for roadside activities, or where there is a need to provide slower, safer conditions for non-automobile users; or where new construction would potentially increase the volumes of cut-through traffic. Such a roundabout might also work well, or even better at Lincoln Avenue, given the amount of turns and volume on Lincoln, and the need for speed enforcement on Lincoln. The gateway median would probably work best at Elm Avenue. A roundabout along Washington Avenue, while possible to design to accommodate trucks, might be less appealing to truck drivers, who might then have further reason to use the Newtown Bypass and avoid cutting through the Borough. More study of roundabouts is needed to determine its context and applicability in Newtown.

Other low-cost traffic calming measures that could work here are speed bumps or tables, or rumble strips, though these measures are far less sophisticated.

*Education:* The Borough could develop a “Drive 25” Campaign that encourages motorists to drive 25 mph on Washington Avenue and State Streets through town. Local media could support this effort, as well as local schools. A possible slogan might be “Slow Down for a Livable Town”.

*Policy:* The Borough could adopt an official map designating all streets and public facilities, showing widenings, narrowings, and pedways. The official map is described in the Pennsylvania Municipalities Planning Code (Act 247 of 1968, as amended).

The governing body of each municipality has the power to make an official map of all or a portion of the municipality which may show appropriate elements or portions of elements of the comprehensive plan with regard to public lands and facilities, and which may include, but need not be limited to:

- Existing and proposed public streets, watercourses, and public grounds, including widenings, narrowings, extensions, diminutions, openings or closings of same
- Existing and proposed parks, playgrounds, and open space reservations
- Pedestrian ways and easements
- Railroad and transit rights-of-way and easements
- Flood control basins, floodways and flood plains, storm water management areas and drainage easements
- Support facilities, easements and other properties held by a public body

## Other Identified Problems and Traffic Calming Issues

***Identified Problem: Backup of Traffic at Washington Avenue and State Street***
The key intersection of Washington Avenue and State Street experiences backups because of the high volume of traffic (8,486 AADT in 2004 at intersection of Washington and State) relative to the highway's capacity traveling through town.

**Improvement Strategy:** Not all congestion is bad congestion; some amount is good for a business district. When the congestion becomes such a problem that people are reluctant to patronize businesses downtown due to traffic, then measures should be taken to improve the functioning of the intersection while also preserving the character of the shopping district. Signal optimization is needed at this intersection, along with the Washington Avenue and Sycamore Street intersection. Ideally, the best solution is the use of the Bypass for through trips, by drivers who do not intend on stopping downtown. Better functioning and education about the benefits of using the Bypass would help this cause. Given the recent improvements to the Bypass (left turn arrows, dual left turn lanes, closed

***State Street in downtown Newtown contains an eclectic mix of local and destination retail, dining, and services, while retaining a small town feel. Balancing traffic and a vital downtown is one goal of the Joint Downtown Newtown Corporation.***

*The intersection of Sycamore and Jefferson is a common cut-through point in the Borough, as drivers avoid the congested intersection of Washington and State.*

*Jefferson Street heading eastbound travels past many older homes in the Borough.*

loop system, cameras that regulate volume and timing of lights, and improved intersections), the Bypass should be functioning better in the near future and may help alleviate some of the congestion at Washington Avenue and State Street. Media coverage and an educational campaign about these improvements to the Bypass could help spread the word among area drivers.

***Identified Problem: Difficult to Enter Washington Avenue from Side Streets***

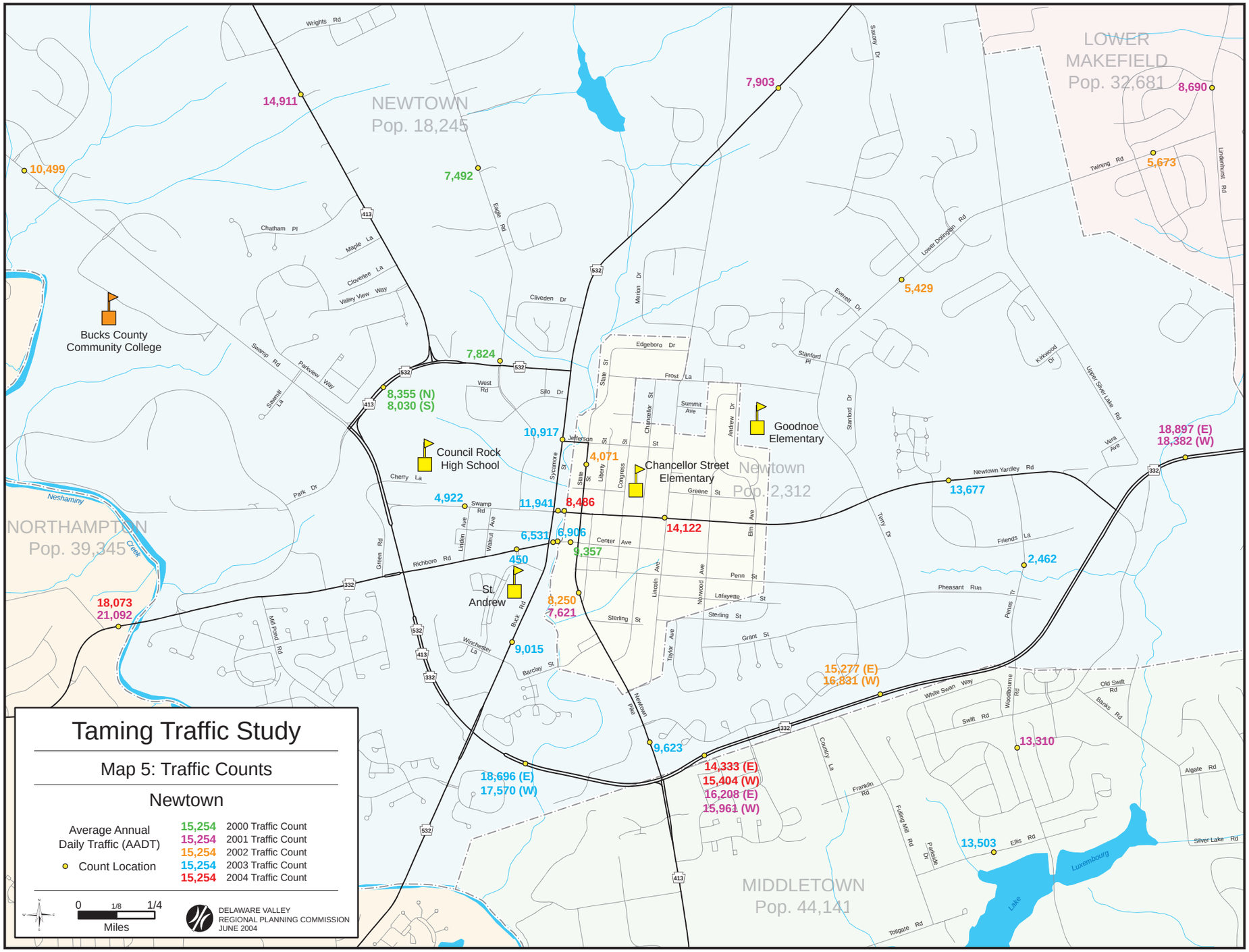
There is difficulty in entering Washington Avenue from side streets between State Street and Lincoln Avenue, due to high volumes on Washington and backups of traffic at the Washington Avenue and State Street intersection.

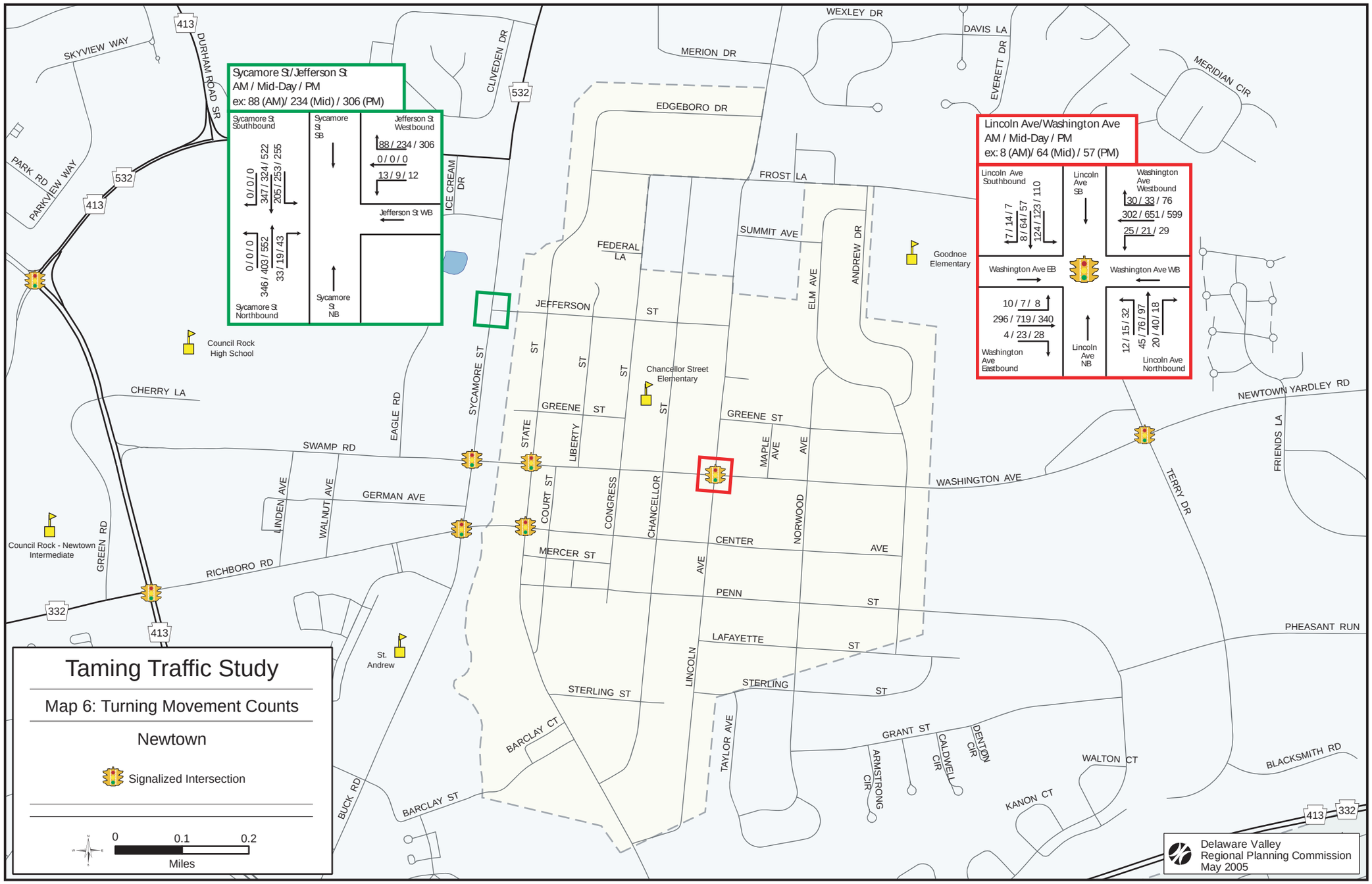
**Improvement Strategy:** The proposed change of the speed limit to 25 mph on Washington may help to make entry into traffic flow on Washington from side streets easier. As mentioned above, better functioning of the Bypass will help ease congestion on Washington. Another option is to prepare an access management plan for the entire Borough, or for specific corridors such as State Street, Washington Avenue, and Lincoln Avenue.

***Identified Problem: Traffic Cuts Through Borough Rather Than Using Newtown Bypass***

Because of the congestion along Washington Avenue, drivers use local access streets (which should be used for providing access to abutting properties, not for through traffic) to find alternative routes. This is known as cut-through traffic. Cut-through traffic observed includes vehicles turning off Sycamore southbound to Jefferson eastbound, to Lincoln southbound, then on to Washington eastbound, thus avoiding the congested intersections of Washington Avenue and State Street, and Washington Avenue and Sycamore. The reverse pattern is also true, with vehicles turning off Washington Avenue before Sycamore on to Lincoln northbound, then turning westbound to Jefferson, then turning northbound on to Sycamore.

Turning count movements conducted by DVRPC in spring 2005, which can be seen on **Map 6: Turning Movement Counts**, substantiates this pattern. The map indicates that for traffic traveling southbound on Sycamore, 205 cars turned left onto Jefferson in the a.m. peak hour, 253 during the mid-day peak hour, and 255 in the p.m. peak hour. These counts are conducted over three, three-hour time intervals (a.m., mid-day, and p.m.) and the


NEWTOWN
Pop. 18,245
LOWER MAKEFIELD
Pop. 32,681
Newtown
Pop. 2,312
NORTHAMPTON
Pop. 39,345
MIDDLETOWN
Pop. 44,141
Bucks County Community College
Council Rock High School
Goodnoe Elementary
Chancellor Street Elementary
St. Andrew
14,911
10,499
7,492
7,903
8,690
5,673
5,429
7,824
8,355 (N)
8,030 (S)
10,917
4,071
18,897 (E)
18,382 (W)
13,677
4,922
11,941
8,486
14,122
6,531
6,906
9,357
450
2,462
18,073
21,092
9,250
7,621
9,015
15,277 (E)
16,831 (W)
13,310
9,623
14,333 (E)
15,404 (W)
16,208 (E)
15,961 (W)
18,696 (E)
17,570 (W)
13,503
Taming Traffic Study
Map 5: Traffic Counts
Newtown
Average Annual Daily Traffic (AADT)
Count Location
15,254 2000 Traffic Count
15,254 2001 Traffic Count
15,254 2002 Traffic Count
15,254 2003 Traffic Count
15,254 2004 Traffic Count
0 1/8 1/4
Miles
DELAWARE VALLEY REGIONAL PLANNING COMMISSION
JUNE 2004


Sycamore St/Jefferson St
AM / Mid-Day / PM
ex: 88 (AM)/ 234 (Mid) / 306 (PM)
Sycamore St Southbound
0 / 0 / 0
347 / 324 / 522
205 / 253 / 255
0 / 0 / 0
346 / 403 / 552
33 / 19 / 43
Sycamore St Northbound
Sycamore St SB
Sycamore St NB
Jefferson St Westbound
88 / 234 / 306
0 / 0 / 0
13 / 9 / 12
Jefferson St WB
Lincoln Ave/Washington Ave
AM / Mid-Day / PM
ex: 8 (AM)/ 64 (Mid) / 57 (PM)
Lincoln Ave Southbound
7 / 14 / 7
8 / 64 / 57
124 / 123 / 110
Lincoln Ave SB
Washington Ave Westbound
30 / 33 / 76
302 / 651 / 599
25 / 21 / 29
Washington Ave EB
Washington Ave WB
10 / 7 / 8
296 / 719 / 340
4 / 23 / 28
Washington Ave Eastbound
Lincoln Ave NB
12 / 15 / 32
45 / 76 / 97
20 / 40 / 18
Lincoln Ave Northbound
Taming Traffic Study
Map 6: Turning Movement Counts
Newtown
Signalized Intersection
0
0.1
0.2
Miles
Delaware Valley
Regional Planning Commission
May 2005
SKYVIEW WAY
DURHAM ROAD SR
PARK RD
PARKVIEW WAY
CLIVEDEN DR
ICE CREAM DR
MERION DR
WEXLEY DR
DAVIS LA
EVERETT DR
MERIDIAN CIR
EDGEBORO DR
FROST LA
SUMMIT AVE
FEDERAL LA
ELM AVE
ANDREW DR
Goodnoe Elementary
JEFFERSON ST
Council Rock High School
Chancellor Street Elementary
CHERRY LA
EAGLE RD
SYCAMORE ST
GREENE ST
STATE ST
LIBERTY ST
MAPLE AVE
NEWTOWN YARDLEY RD
FRIENDS LA
SWAMP RD
WASHINGTON AVE
TERRY DR
LINDEN AVE
WALNUT AVE
GERMAN AVE
COURT ST
CONGRESS ST
CHANCELLOR ST
NORWOOD AVE
Council Rock - Newtown Intermediate
GREEN RD
CENTER AVE
MERCER ST
RICHBORO RD
PENN ST
PHEASANT RUN
St. Andrew
LAFAYETTE ST
LINCOLN AVE
STERLING ST
BARCLAY CT
TAYLOR AVE
GRANT ST
ARMSTRONG CIR
CALDWELL CIR
DENTON CIR
WALTON CT
BLACKSMITH RD
BUCK RD
BARCLAY ST
KANON CT
532
413
332

turning movement count is recorded for the peak hour within each of these periods (a.m. peak, mid-day peak, and p.m. peak). This is a significant amount of left turns, considering that the number of through cars on Sycamore southbound at Jefferson amounted to 347 in the a.m. peak hour, 324 in the mid-day peak hour, and 522 in the p.m. peak hour, more cars but not significantly more. Following this route, at Lincoln Avenue southbound, 124 cars turned left on to Washington Avenue in the a.m. peak hour, 123 cars in the mid-day peak hour, and 110 cars in the p.m. peak hour. This is more than the number of cars going straight (8 in the a.m. peak, 64 in the mid-day peak and 57 in the p.m. peak), or turning right (7 in the a.m. peak, 14 in the mid-day peak, 7 in the p.m. peak). A more in-depth origin and destination survey (which was beyond the scope of this study) should be conducted to verify this data.

Other cut-through routes include vehicles traveling northbound on State Street in the morning, turning east on to Penn Street to reach the Newtown Industrial Commons, rather than continuing up State to Washington and then eastbound on Washington to the Commons. This traffic in the evening then follows Center westbound over to Richboro Road and then to the Bypass, rather than leaving the Commons via Washington Avenue. Many people don't want to use Sycamore to get to the Bypass, rather they prefer using State Street to get to the Bypass.

Though technically Washington Avenue and State Street are considered arterials, they were not designed for high speeds or large volumes of traffic, and access is not restricted. State Street is the Borough's "Main Street", its retail core and pedestrian center. It is not designed for high speeds or large volumes, and careful consideration should be given to any changes along this road to preserve its vital function as a healthy retail corridor.

The Borough is not wholly opposed to cut-through traffic, since some can be good, indicating that there is a network of roads and key choke points can be avoided. It is hard to change overall volumes of traffic unless the Borough makes cut-throughs more difficult. The focus should be on the *type* of cut-through traffic, and the *behavior* of this traffic. The focus should be on accessibility, not just mobility. The overall road network should be maintained, while taming traffic through town, and negating the need for more costly capital improvements, such as bypasses and the like.

**Improvement Strategy:** The Borough has contemplated changing the direction of streets, such as making Jefferson one-way rather than two-way, to cut down on the volume of cut-

***Jefferson Street is currently a two-way street experiencing cut-through traffic. The Borough has considered converting this to a one-way street.***

through traffic. The introduction of a traffic signal at Jefferson and Sycamore (part of the Sycamore Street reconstruction) might deter some drivers from using Jefferson as a cut-through, or it may lead to more cut-through traffic if this movement is made easier. The traffic signal could be timed to allow longer intervals for traffic continuing on Sycamore, and less time for those turning on to Jefferson (and presuming to be "cutting through"). Another option is to prohibit left turns from Sycamore on to Jefferson, or close Jefferson at Sycamore, eliminating this cut through point, but this could cause even longer backups at Sycamore and Washington and detracts from providing an overall network of streets. Alternately it could do its job and convince more drivers to use the Bypass. Time will tell once the Sycamore reconstruction is completed (this year). At that time the Borough should reevaluate the amount of cut-through traffic and possible solutions.

Another possible solution is to provide another route besides Jefferson or Washington for traffic that wants to travel eastbound through Newtown Borough. "Completing the grid" could relieve congestion elsewhere, particularly downtown. If Frost Lane, located to the north of Jefferson Street, were connected through to Sycamore Street, this could provide a much needed connection from Sycamore. Motorists could use Frost Lane to connect to Lower Dolington Road/Terry Drive, which then connects with Washington Avenue to access I-95, without traveling through downtown Newtown. There is a new housing development slated to go in along Frost Lane near the Goodnoe Elementary School that will produce more traffic in this area. An improved Frost Lane could accommodate it better. While the connection of Frost Lane to Sycamore may have been studied during the planning for the Newtown Bypass, more study is needed given present conditions.

Another possible improvement is to install signage that says "Traffic Calmed Neighborhood" in various portions of the Borough, such as along Jefferson Street, which could subtly remind motorists not to speed or to use the Bypass instead.

From a policy standpoint, the Borough should require developers under the Subdivision and Land Development Ordinance to prepare traffic impact analyses and implement access management. Future development in the Borough and Township must consider impacts on traffic and access. The Borough and Township need to be proactive in managing traffic and access to new developments before the housing gets built, rather than waiting for problems to emerge. Pedestrian connections must also be planned in conjunction with any new residential development.


***Toll Brothers is selling 47 new luxury carriage homes, called Newtown Station, on Lincoln Avenue just south of Washington Avenue in Newtown Borough, as seen in this Toll Brothers graphic.***

***Identified Problem: Newtown Bypass Does Not Capture Enough Through Traffic***

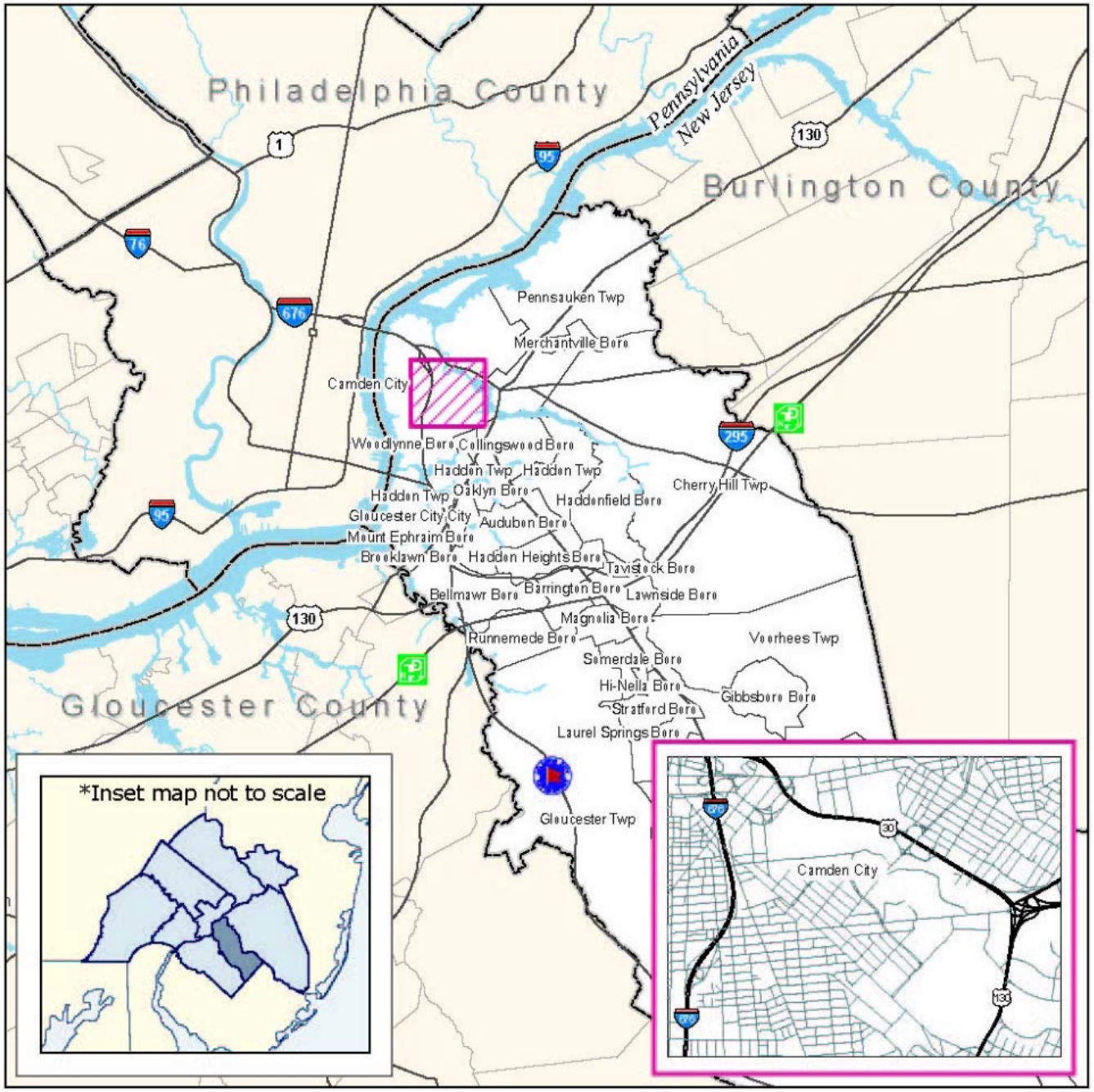
The Newtown Bypass has not been perceived as a faster route around Newtown, due to some early operational problems and local press. The Bypass has seven traffic signals from Newtown-Yardley Road/Washington Avenue to Swamp Road, causing delays, and some people prefer avoiding stopping for lights and turning movements on the Bypass, instead traveling through town. The *Bucks County Courier Times* published an article stating that it is shorter to go through the Borough than take the Bypass.

There is anecdotal evidence that many residents, especially older residents, prefer traveling on local, more familiar, lower-speed roads, because of safety concerns. Trucks on the Bypass can also be intimidating to local drivers.

**Improvement Strategy:** The Pennsylvania Department of Transportation (PennDOT) is in the midst of making improvements to the Bypass, such as adding left turn arrows, dual left turn lanes, a closed loop system ($200,000 allocated in DVRPC's FY 2003 Transportation Improvement Program), cameras to regulate volume and timing of lights, and improved intersections (such as PA 413 and the Bypass).

A signal warrant study could be conducted to see whether all seven signals along the Bypass are warranted and how they are timed. An area traffic study could indicate where traffic is going and how future residential growth will affect travel in and around Newtown. An educational campaign to inform area residents and commuters of the improvements to the Bypass and comparison of drive times through and around the Borough would also be helpful. It is also only fair to give these operational changes time to work and have an impact on overall traffic volumes and patterns. The Bypass has succeeded in removing trucks from traveling through the Borough, and has helped preserve historic homes and the small town character of Newtown Borough.


***A traffic signal has been installed at the intersection of Sycamore and Jefferson as part of the Sycamore Street reconstruction.***




Source: DVRPC, 2005.

# CASE STUDY: PARKSIDE, CITY OF CAMDEN, CAMDEN COUNTY

## Study Area

The Parkside neighborhood in central Camden is one of the city's finest neighborhoods, having developed as an early streetcar suburb. Substantial population loss over the last twenty years, along with urban blight, and other urban ills are cause for concern. Parkside is a predominantly residential neighborhood that is also home to Our Lady of Lourdes Hospital, Martin Luther King Community Center, Farnham Park, and numerous schools, including Camden High School. It is bounded by Park Avenue to the north, the PATCO High-Speed Line to the south, Vesper Boulevard to the east, and Pine and Walnut Streets to the west. Its main commercial corridor is Haddon Avenue. For the purposes of this case study, the intersection of Haddon Avenue and Kaighn Avenue is studied, as the intersection forms the major crossroads of the community.

As a first step, DVRPC assessed the strengths, weaknesses, opportunities, and threats (SWOT) of the study area.

## SWOT Analysis (Strengths, Weaknesses, Opportunities, and Threats)

Strengths

- Strong sense of neighborhood community
- Proximity to transit and major roadways
- Streetscape improvements have been made (brick sidewalks, trees, period lighting, trash cans, tree cages, and curb ramps)
- High pedestrian activity
- Some attractive older commercial buildings, with second story bay windows
- Bus service
- Community institutions committed to housing rehabilitation and neighborhood revitalization (Parkside Community and Business in Partnership)
- Plans for new schools in area, also for Haddon Square development

Weaknesses

- Urban ills, namely trash, vacant stores, lots, and homes, poverty, crime

***The Parkside neighborhood in Camden developed as a streetcar suburb. Haddon Avenue is its main shopping street. Popular eateries include Donkey's Place (for cheesesteaks) and Corrine's Place (for soul food).***


***A 1914 postcard shows the entrance to Forest Hill Park (later renamed Farnham Park) and Park Boulevard in Parkside.***

- Billboards mar the area
- Lack of bus shelters
- Intersection of Haddon and Kaighn very wide
- Walk sign but no pedestrian buttons
- Access points at Donut Queen, cut through traffic
- Limited shopping choices

Opportunities

- Vacant land in neighborhood and near intersection
- Multiple study efforts that have concentrated on the revitalization of Parkside
- Renewal of Camden

Threats

- Streetscape not maintained (i.e. trash cans overflowing)
- Urban ills continue to cause disinvestment in area

## Intergovernmental Coordination

### Neighborhood Institutions

Our Lady of Lourdes Hospital is one of the two largest employers in the area (the other is Campbell Soup Company), and consists of the main hospital building on the east side of Haddon Avenue at Vesper Boulevard, and an ambulatory care center on the west side of Haddon Avenue. Farnham Park is a 70-acre Victorian park created in the early 1900s, along the Cooper River on the eastern edge of the neighborhood. It is a great community asset, but needs to be restored to its original glory to attract more residents to use it. Many residents perceive it to be unsafe due to the lack of maintenance and surveillance of the park.

Parkside is home to several neighborhood schools, including the Early Childhood Development Center, Forest Hill Elementary, Parkside Elementary, Hatch Middle School, and Camden High School. Both Parkside and Hatch will be relocated in the near future to accommodate larger facilities. The proposed location for the new Parkside Elementary School is on Haddon Avenue between Mount Vernon Street and Park Boulevard, within a few blocks of the Haddon and Kaighn intersection. The plans include significant public space at the corner of Park and Haddon, establishing four square corners and an opportunity for retail development at grade. Hatch Middle School's new location is

proposed for the existing Camden High School recreation fields at the corner of Park Boulevard and Vesper Boulevard, near Our Lady of Lourdes Hospital. All of the other schools have planned renovations. The building that once housed the Early Childhood Development Center at Park and Haddon has been demolished to make way for a new building. Easy and safe access to all of these schools is a concern for residents.

## Existing Plans and Studies

The Parkside Business and Community in Partnership (PBCIP) is the community development corporation most active in Parkside's revitalization. The organization was originally established in 1993 to fight illegal drugs in the Parkside neighborhood, but its focus has widened to include the development and rehabilitation of housing. The organization's overall mission is to promote social welfare and combat deterioration in the neighborhood.

### Parkside Redevelopment Plan: Developing the Strategy

*Parkside Redevelopment Plan: Developing the Strategy* was prepared for the City of Camden by Hillier Architecture and the Parkside Business and Community in Partnership in 2003, and sets out redevelopment goals and recommendations for the neighborhood. Recognizing that Parkside has a stable but declining housing stock and high incidence of vacant properties, redevelopment is necessary to attract first time homebuyers to the neighborhood. Primary redevelopment goals identified include: upgrading the existing housing stock and redeveloping vacant or deteriorated homes into functional, modern housing; revitalizing the Haddon and Kaighn Avenue commercial corridors, and promoting evolution of the eastern edge of the neighborhood with Our Lady of Lourdes Hospital; and strengthening existing industries and upgrading industrial properties. Parkside hopes to attract residents of other Camden neighborhoods who are interested in moving to a higher quality neighborhood. The Plan sets forth an acquisition plan to rehabilitate 101 homes, renovate 54 more homes, rehabilitate 16 storefronts, and renovate 16 more storefronts over a five-year period. The plan is in compliance with the goals outlined in the *FutureCamden Master Plan of the City of Camden*, released in 2001.

### Parkside Neighborhood Strategic Plan

*Parkside Neighborhood Strategic Plan*, prepared by Hillier Architecture, Portfolio Associates, and S. Huffman Associates, for PBCIP, November 2004, sets forth five goals for future development in Parkside. These are restoring the historic single-family

***The intersection of Haddon and Kaighn Avenues is the main crossroads of the Parkside community.***

***Parkside Business and Community In Partnership plans to build a mixed-use civic center at the Haddon and Kaighn intersection, either at the southeast corner (foreground), or southwest corner (background, 2 story building).***

residential and neighborhood commercial land use pattern; retaining and attracting diverse residents to Parkside; revitalizing the Haddon Avenue commercial corridor for those who live in, work in, or visit the neighborhood; increasing access to community facilities, such as transit, schools, and libraries; and improving quality of life through increased civic engagement, greater municipal accountability, and investments in human capital. Certainly traffic calming is one piece of the much larger puzzle of making Parkside more livable.

The plan for the Haddon/Kaighn Corridor is to concentrate neighborhood-serving street-level retail activity along Haddon Avenue between mechanic Street and Park Boulevard, and along Kaighn between Haddon Avenue and the PATCO Corridor. Upper floor residential or office space is recommended. A neighborhood business area with ground floor office should be created along Haddon Avenue from Euclid to Mechanic, with residential and office space on upper floors. Multi-family higher density residential (such as for sale or rent condominiums) would be developed along Haddon Avenue from Park Boulevard to Pine Street. The intersection of Haddon and Kaighn is the heart of the community, and attention should be focused on developing the neighborhood commercial uses, such as grocery, clothing, pharmacy, shoes, home furnishings, bakery, appliance, television and radio, variety store, dry cleaner, post office, bank, and insurance agency.

The plan stresses the importance of a clean and safe Haddon Avenue to attract shoppers. The neighborhood is encouraged to form a special services district, business improvement district, or Main Street Program to fund supplemental security, cleaning, and marketing services for the business district. Local institutions such as Cooper Hospital or Our Lady of Lourdes Medical Center could also sponsor such a district. A commercial corridor advocate position could also be funded.

The city plans to build a new fire station on Kaighn Avenue just west of Haddon Avenue, as well as the Haddon Renaissance Adult Day Care Center on Haddon Avenue just north of Our Lady of Lourdes Hospital.

A new mixed-use civic center is proposed for the intersection of Haddon and Kaighn, either on the southwest or southeast corner. The building would anchor the district and provide community offices (for PBCIP), a business incubator, and ground floor retail. The center will change the look and feel of Haddon and Kaighn, particularly as the southwest corner has a drug store next to several vacant lots, and the southeast corner has a Donut Queen and parking lot.

All of these projects will have a significant impact on the quality of life in the neighborhood, as well as on traffic, pedestrian activity, and overall redevelopment of the area.

The plan also calls for increasing available parking along the commercial corridor in small lots behind the businesses. A corridor manager could work with the city to assemble vacant lots for limited-term municipal parking lots for those shopping along Haddon Avenue. An overall parking plan is needed.

The plan also recommends streetscaping on Haddon from Park to Mechanic, though it appears there already is streetscaping in place. It also calls for gateway treatments along Haddon and Kaighn to signal entry into Parkside, through the placement of street trees, banners, and signs, both for cars and pedestrians, directing visitors to institutions, commercial areas, amenities, and parking. The trash cans in the area are not emptied on a regular basis, and are locked with a key. The neighborhood needs a cleaning program that integrates street and sidewalk cleaning and trash removal along major corridors.

### Camden, New Jersey: Revitalization of Haddon Avenue

An Urban Land Institute Advisory Services Panel Report, *Camden, New Jersey: Revitalization of Haddon Avenue* (June 2004) recommends that the area on Haddon Avenue just south of Park Boulevard south to the intersection of Kaighn Avenue be named Haddon Square. Key to this area is revitalizing existing storefront businesses, and creating new small businesses that serve the neighborhood market, and creating a "restaurant row" and boutique businesses that would create a signature destination for a larger regional market.

### Camden Strategic Revitalization Plan

The *Camden Strategic Revitalization Plan*, prepared by Wallace Roberts and Todd for the New Jersey State Economic Recovery Board (ERB), provides a blueprint for the revitalization of all of Camden, both downtown and the neighborhoods. The ERB was formed to manage the revitalization of Camden. The Plan includes a Capital Improvement/Infrastructure Master Plan, along with a List of Priority Projects to be implemented within the next three to five years. The plan recommends which projects should be funded with the $175 million allocated from the ERB for Camden.

***The northwest corner of Haddon and Kaighn Avenues is currently an empty lot, which detracts from the shopping experience and makes the corner and crossing appear even larger than it is.***


***While investments have been made in streetscaping (brick paving, street trees, trash cans) along Haddon Avenue, trash collection is an issue. Some stores, such as the Rexall Drugs, have windows that have been sealed, detracting from the overall aesthetics of the area.***

### Haddon Avenue Corridor Improvement Project

In addition, the City of Camden has recently received a TCDI grant from DVRPC for the *Haddon Avenue Corridor Improvement Project*, which will assess transportation and economic development challenges and opportunities at the Haddon Avenue and Kaighn Avenue intersection. Wallace, Roberts and Todd were chosen for this work, and they will assess transportation and roadway conditions, and identify roadway improvements. While traffic calming is not mentioned specifically in the study scope, most likely the need for calming will be found in the assessment and various pedestrian improvements recommended.

### Haddon Avenue/PATCO High-Speedline Corridor Study

The *Haddon Avenue/PATCO High-Speedline Corridor Study* developed a smart growth strategy for multiple stations along the PATCO line along Haddon Avenue, including the Ferry Avenue Station in Camden.

### Haddon Avenue Streetscape Initiative

The *Haddon Avenue Streetscape Initiative* has received and expended over 1.5 million dollars to install new sidewalks, curb cuts, historic street lighting, street trees, basic façade improvements, and other amenities along Haddon Avenue in Camden to Collingswood.

Other plans include studies prepared for the ERB, as well as a *Central Gateway Redevelopment Plan.*

## Existing Conditions

### Road Network

Haddon Avenue (CR 561) is a 500 series inter-county route that extends for 50 miles through multiple municipalities from Galloway Township, Atlantic County, to Camden City, Camden County. Its functional class within the study area is urban minor arterial, although it varies throughout its length.

Kaighn Avenue (CR 607) is a 2.3 mile-long east-west facility connecting US 130 at the Airport Circle to the Camden Waterfront. Its functional class designation is urban minor arterial. This important facility serves both local and regional traffic, because it traverses neighborhoods and connects to US 130, a principal arterial.

The study area also has convenient access to US 130 and US 30 Admiral Wilson Boulevard. Both highways are multi-lane limited access principal arterials that carry a high volume mix of local and regional traffic. An annual average daily traffic (AADT) volume of 76,483 was recorded in 2003 on US 30. An AADT of 50,210 was recorded on US 130 in 1995.

Interstate 676, located approximately ½ mile from the intersection of Haddon and Kaighn Avenues, can be accessed via Kaighn Avenue. This limited access urban interstate connects with both the Ben Franklin and Walt Whitman Bridges in addition to several arterials within Camden City. An AADT of 64,624 was recorded on I-676 in 2003. Other important facilities in the vicinity of the study area include Baird Boulevard (CR 608), Mount Ephraim Avenue (CR 605), and Broadway (CR 551).

## Crash Analysis

A cursory crash analysis was performed in an effort to identify safety problems related to the operation of the intersection. Crash data from NJDOT's web page for years 2001-2003 was utilized. For the analysis, a roadway section length of approximately one-tenth mile, with the center of the intersection being the mid-point, was utilized. According to the New Jersey Department of Transportation, rear-end and sideswipe collisions involve traffic moving in the same direction, angle crashes involve angular traffic (i.e. north and west), and left turn and head-on crashes involve opposing traffic.

During the three-year period 21 crashes were recorded on Kaighn Avenue with 12 occurring at the intersection. An "at intersection crash" is defined as being within 30 feet of the nexus of the intersecting streets. Same-direction sideswipe was the most frequent collision type accounting for 10 crashes. Rear end crashes were next, accounting for 5 crashes. Combined these two categories represent 70 percent of the 21 crashes. The high percentage of sideswipe collisions may be related to through traffic attempting to by-pass vehicles queuing to turn left at the intersection. There were 17 property damage only crashes, 4 injury crashes, and no fatal crashes.

On Haddon Avenue there were 30 crashes during the three-year period with 19 recorded at the intersection and 11 within the midblock. Regarding collision types, there were 8 rear end crashes, 6 same-direction sideswipes, and 5 angle crashes. Combined, rear end and sideswipe crashes account for 46 percent of the total and may be related to left turn problems and/or congestion at the intersection. Left turns from this intersection are

***Haddon and Kaighn Avenues are both classified as urban minor arterials. Kaighn Avenue is a major east-west route through the City of Camden, and to and from US Route 130.***

***Parkside retains many attractive homes, such as these on Kaighn Avenue.***

permitted, an inherently unsafe movement as vehicles must turn left when gaps appear in oncoming traffic. This is a likely cause of the 5 angle crashes. Regarding severity, there were 25 property damage only crashes, 5 injury crashes, and no fatal crashes. A brief summary of crash data for Haddon and Kaighn Avenues outside of the intersection box is presented on **Map 7: 2001-2003 Crash Locations.**

## Transit

Three NJ Transit bus lines serve the immediate study area: 403, 451 and 452. These can be found on **Map 8: NJ Transit Routes and Stops.** The 403 bus is an interstate route serving many communities between Turnersville, Gloucester County to the southeast, and center city Philadelphia to the northwest. This bus follows Haddon Avenue through the study area. Weekday headways are 30 minutes and service is provided for approximately 21 hours per day. Weekend headways are slightly longer at 45 minutes on average for the same service period. The 403 connects with three rail lines: PATCO High Speed Line, NJ Transit Atlantic City Rail Line, and the NJ Transit River Line. Multiple bus connections can be made at the Walter Rand Transportation Center as well as those available along the route. Typical weekday ridership for March of 2005 was 3,249 passengers.

The 451 bus is an intra-county line that runs between the Lindenwold PATCO station and the Walter Rand Transportation Center in Camden City. This bus also utilizes Haddon Avenue through the study area. Weekday headways are 1 hour with a service span of approximately 14 hours per day between 6 a.m. and 8 p.m. Weekend service is not available. The 451 connects with three rail lines: PATCO High Speed Line, NJ Transit Atlantic City Rail Line, and the NJ Transit River Line. Multiple bus connections can be made at the Walter Rand Transportation Center and at several locations along the route. Typical weekday ridership for March of 2005 was 395 passengers.

The 452 bus follows a loop through Camden City with only one stop outside the city in Pennsauken Township at the 36th Street Station of the NJ Transit River Line. Utilizing several network roads, this route serves neighborhoods in North Camden and Cramer Hill, the Waterfront tourist attractions, the Parkside neighborhood, and Camden High School.

# Taming Traffic Study

## Map 7: 2001-2003 Crash Locations

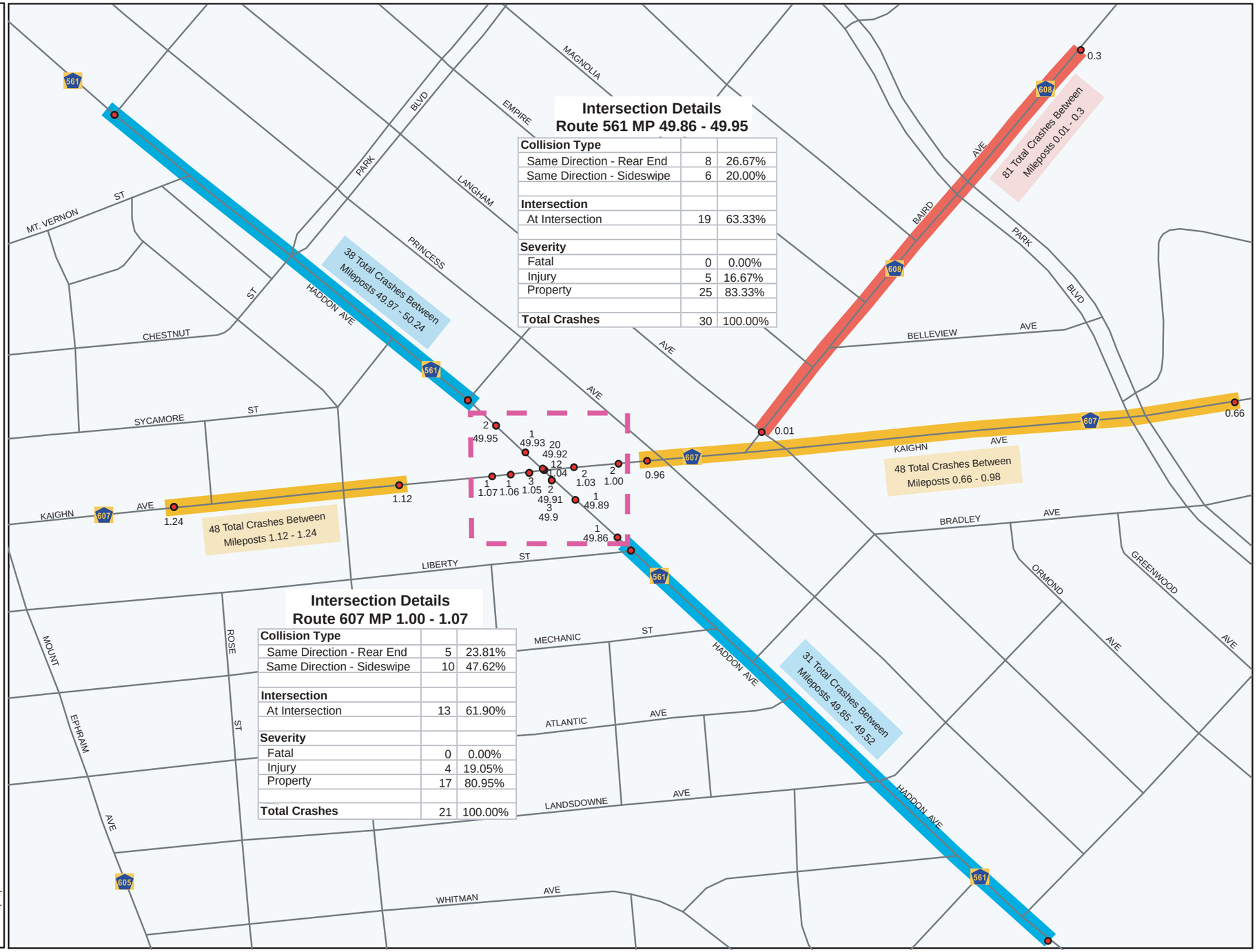
### Camden

NJDOT Crash Data 2001- 2003

- Crash Location
- 2 Crash Count At Location
- 1.00 Milepost Location of Crash

Crash Total By Range of Milepost

0 500 Feet

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# Taming Traffic Study

## Map 8: NJ Transit Routes and Stops

### Camden


Bus Route 400
Bus Route 403
Bus Route 451
Bus Route 452

Bus Stop

0 500
Feet


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The 452 bus passes through the study area on Kaighn Avenue. Weekday headways are approximately 30 minutes with a service span of approximately 18 hours per day between 6 a.m. and 12 midnight. Weekend headways are 45 minutes with 18 hours of service on Saturday and 16 hours on Sunday. The 452 connects with two rail lines: PATCO High Speed Line, and the NJ Transit River Line. Multiple bus connections can be made at the Walter Rand Transportation Center and at several locations along the route. Typical weekday ridership for March of 2005 was 1,797 passengers.

The 400 bus is an inter-county line running from Sicklerville, Gloucester County, through Camden County, and into Philadelphia via the Ben Franklin Bridge. This route predominantly travels NJ 168 Black Horse Pike and its extension, CR 605 Mount Ephraim Avenue. The 400 bus crosses Kaighn Avenue on the southwestern edge of the study area. Two rail line connections can be made at the Walter Rand Transportation Center: PATCO High Speed Line, and the NJ Transit River Line. Headways are the same on both weekdays and weekend at approximately 60 minutes with a service span of approximately 19 hours per day between 4 a.m. and 11:30 p.m. Typical weekday ridership for March of 2005 was 5,021 passengers, the highest ridership of any bus line in NJ Transit's southern division.

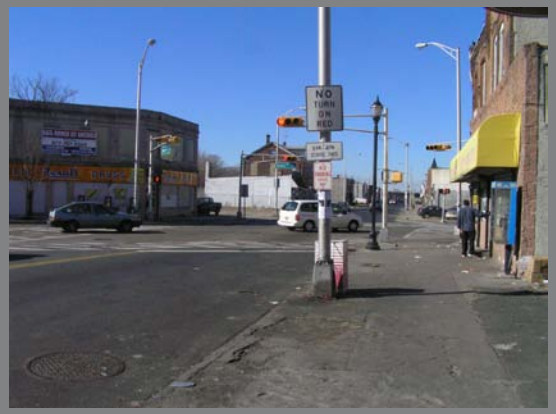
## Parking

Currently both Haddon and Kaighn Avenues provide on-street parallel parking. According to local representatives, parking capacity may become a problem in the future if plans for revitalization of the neighborhood are realized. The reinvention of the Haddon and Kaighn Avenues intersection as the Parkside town center, or Haddon Square as envisioned in the ULI study, would re-create the location as a retail shopping destination aspiring to draw consumers from the City of Camden and beyond. This may require an increase in parking capacity, though a more thorough review of existing capacity should be completed. In particular local representatives expressed the need for a surface lot on a street parallel to Haddon Avenue located within a short walk from the intersection.

## Bicycling

According to the Bicycle Coalition of Greater Philadelphia's Regional Bicycle Map, Kaighn Avenue and Baird Boulevard are both average for bicycling conditions. Average is defined as "moderately suitable for on-road cycling; cyclists of lesser skill and experience riding in traffic may find conditions unfavorable." Haddon Avenue is considered below average, which is "less suitable for on-road cycling; while riding on these roads may not be

***A vacant lot near the intersection of Haddon and Kaighn provides off-street parking.***




***While Haddon Avenue has received streetscape treatments, Kaighn Avenue's sidewalks are in disrepair.***

pleasant, they may be the most direct route between two points." No other roads in the vicinity of the study area have been evaluated on this map. The nearest off-road trails are along the Cooper River in Farnham Park, Camden City, and Cooper River Park in Collingswood, Pennsauken, and Cherry Hill. These cycling conditions' ratings are determined using a combination of traffic volumes, roadway geometry and field observations.

## Pedestrian Environment

The *Haddon Avenue Streetscape Initiative* has received and expended over $1.5 million to install new sidewalks, curb cuts, historic street lighting, street trees, basic façade improvements, and other amenities along Haddon Avenue in Camden to Collingswood. As a result of this investment the pedestrian environment along Haddon Avenue within the study area is functional and useful. These improvements were examined during a field visit to the study area.

Sidewalks exist along Kaighn Avenue, although they are in need of repair at several locations. Field observations revealed damaged sidewalk sections interspersed along the blocks leading up to the intersection of Haddon and Kaighn Avenues, from both directions. In addition, several driveways cross the sidewalk along Kaighn Avenue in the vicinity of the intersection. One example is the frontage of the Donut Queen establishment where the entire frontage on Kaighn Avenue is sloped for vehicle access. This lack of access control compromises the safety of pedestrians.

Pedestrian crossings at this intersection are in excess of 70 feet across each approach, despite a cartway width of only 42 feet on Haddon Avenue and 37 feet on Kaighn Avenue. This is a result of the oblique intersection configuration. Painted crosswalks are striped in crosshatch fashion and are 12.5 feet wide. This striping is in fair condition, still visible and therefore useful, although maintenance is needed.

## Land Use

Parkside is a densely developed urban neighborhood typical of Camden City. Predominantly residential, Parkside is comprised mostly of single and multi-family dwellings that can be accessed by a grid system of residential streets and county facilities. The primary commercial district of the study area is located along Haddon Avenue, and to a much lesser extent along Kaighn Avenue. Retail, service uses, and restaurants account for the majority of businesses in Parkside along Haddon Avenue. Our Lady of Lourdes

Hospital is located just outside of the neighborhood to the east. These and other land uses are shown on **Map 9: Land Use and Schools**. Plans for revitalization should focus on drawing the patrons and employees from the hospital, and other area employment centers, to the neighborhood. This idea was expressed in the *Parkside Neighborhood Strategic Plan*. As mentioned earlier in the study, Camden City has experienced substantial population loss over the last twenty years, along with various urban ills, which presents an uphill battle in reviving this potentially great city neighborhood.

## Focus Area: Intersection of Haddon and Kaighn Avenues

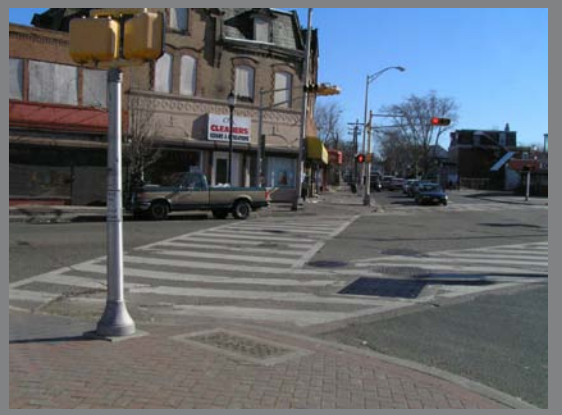
### Existing Conditions

At this location both Haddon Avenue and Kaighn Avenue are two-lane facilities with free on-street parking in each direction. At the intersection, Haddon Avenue has a total cartway width of 42 feet and Kaighn Avenue has a width of 37 feet. The speed limit is posted at 25 mph on both Haddon Avenue and Kaighn Avenue. The two facilities meet at an oblique angle. Both Haddon and Kaighn provide one approach lane at the intersection, although enough pavement width is available for additional lanes. See **Figure 4: Aerial View of Haddon and Kaighn.**

A "No Turn On Red, 8am to 4pm, On School Days" sign is posted on Kaighn regarding turns from Kaighn to Haddon. Despite the sign, cars were observed making the right turn on red during the restricted period.

Local officials have identified this intersection as an important nexus between north and south Camden various neighborhoods. When examining aerial photography of the study area it is apparent that this intersection is a logical connection for cross-town traffic. Kaighn Avenue is a main entry way into Camden from the east for traffic from the Airport Circle. Kaighn also carries traffic to the Haddon Avenue intersection from US 130 via Baird Boulevard.

A turning movement traffic count of the intersection was conducted during the a.m. and p.m. peak periods in March of this year. The data revealed that Kaighn Avenue westbound was the highest volume movement through the intersection with 332 vehicles in the a.m. and 435 in the p.m. The next highest volume leg of the intersection was Haddon Avenue northbound with 292 in the a.m. and 265 in the p.m. Of these two approaches Kaighn Avenue westbound had 37% more vehicles moving through the intersection than Haddon



***Haddon and Kaighn Avenues meet at an oblique angle, making for a lengthy pedestrian crossing.***


**Figure 4: Aerial View of Haddon and Kaighn. Spring 2005. Source: Wallace, Roberts & Todd, LLC.**

# Taming Traffic Study

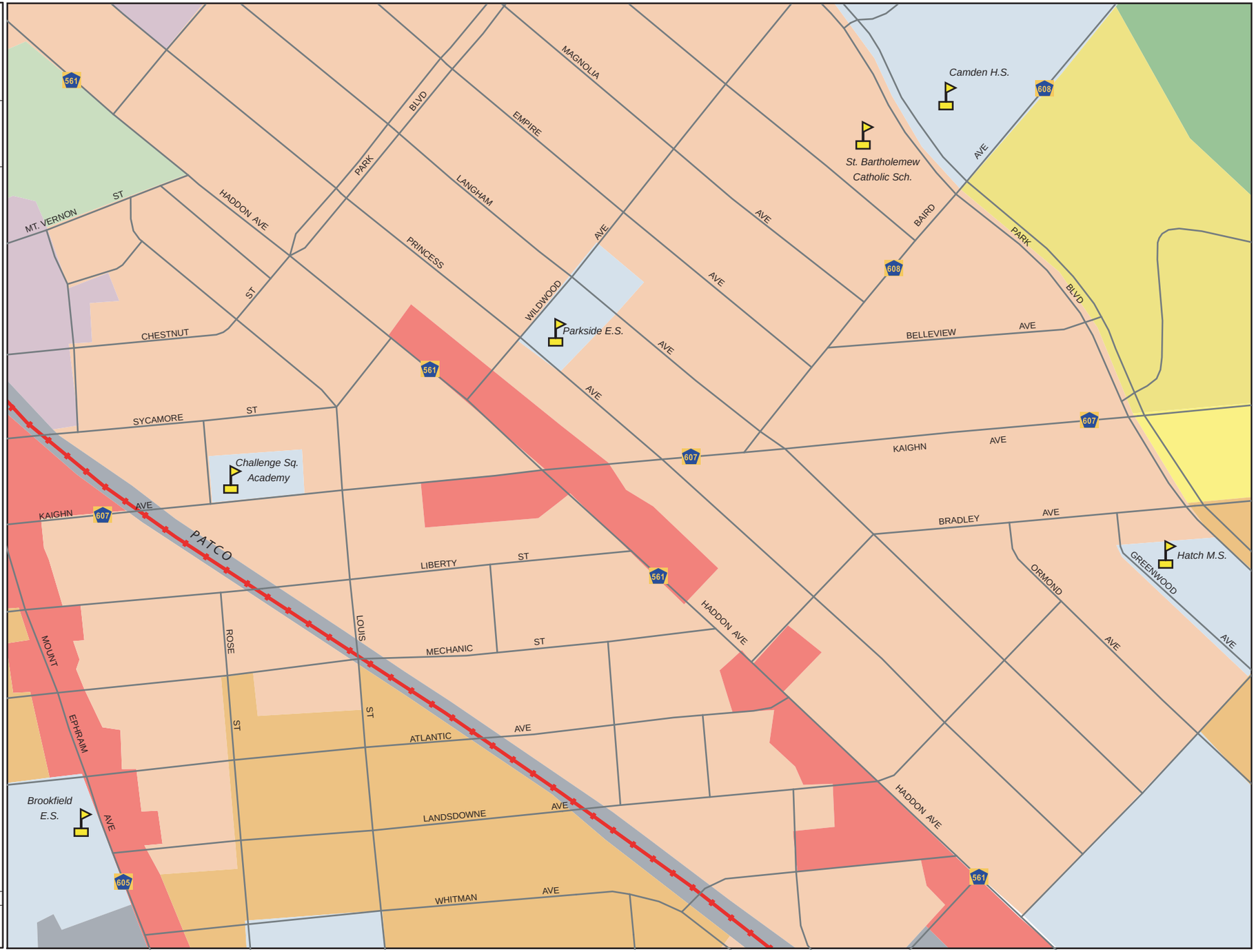
## Map 9: 2000 Land Use and Schools

### Camden

School

- Agriculture
- Commercial
- Community Services
- Manufacturing:Heavy
- Manufacturing:Light
- Military
- Mining
- Transportation/Parking
- Recreation
- Residential:Mobile Home
- Residential:Multi-Family
- Residential:Row Home
- Residential:Single-Family
- Utility
- Vacant
- Wooded

0 500
Feet

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# Taming Traffic Study

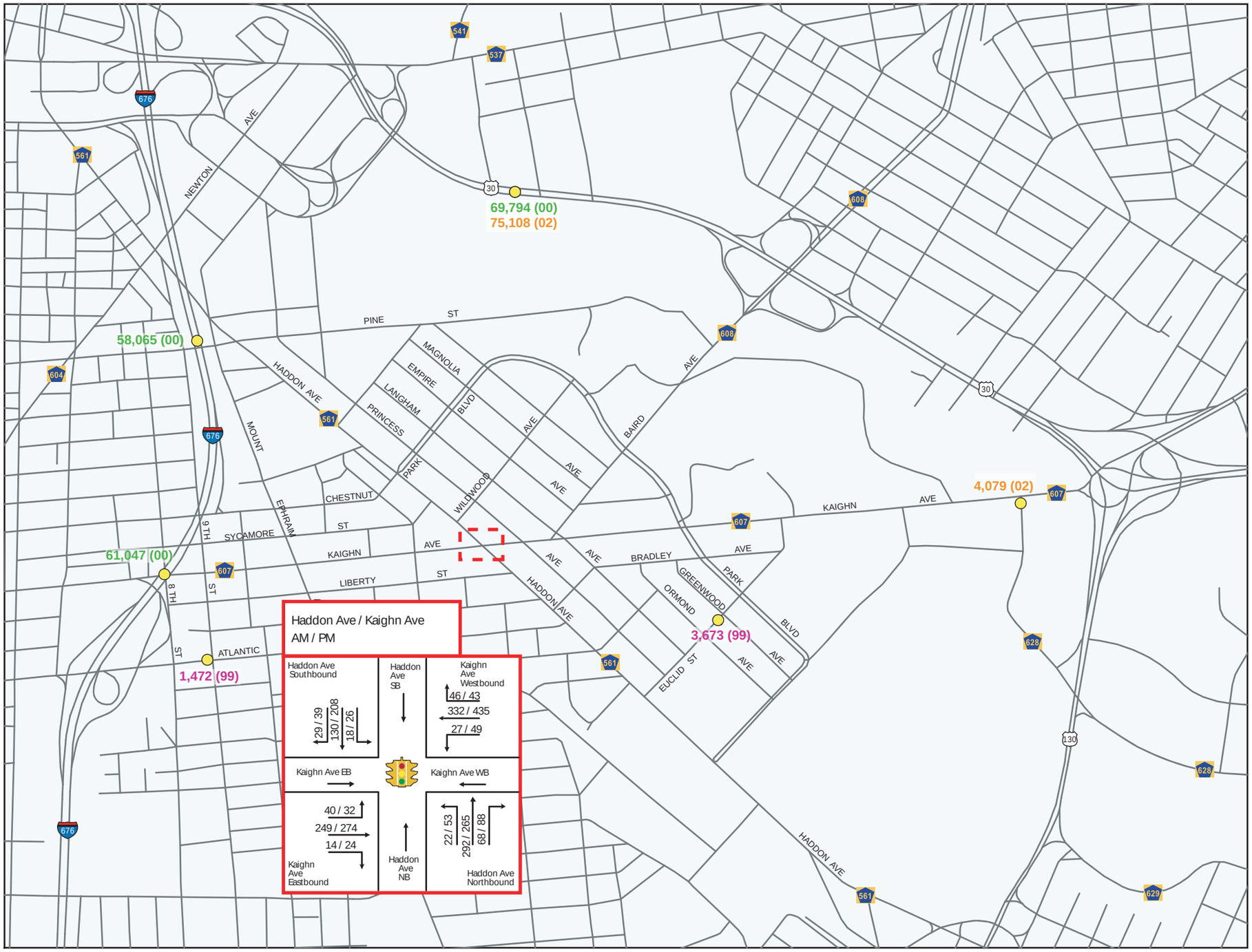
## Map 10: Traffic Counts & Turning Movement Counts

### Camden

NJDOT Traffic Count Location

- 15,254 1999 Traffic Count
- 15,254 2000 Traffic Count
- 15,254 2002 Traffic Count

DVRPC Turning Movement Count Location

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Avenue (a.m. and p.m. peak periods combined). See **Map 10: Traffic and Turning Movement Counts**.

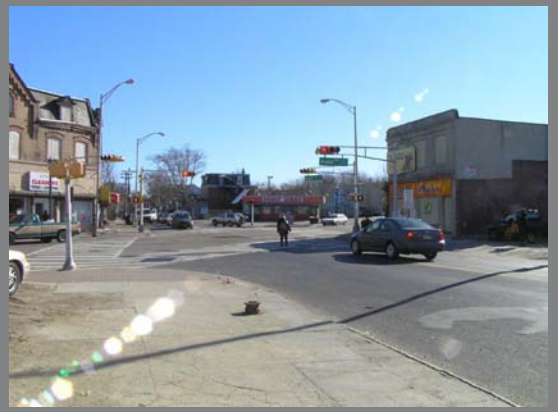
### *Identified Problem: Operational Deficiencies and Insufficient Pedestrian Amenities*

One of the main reasons this location was selected for study was the frequent red light running problem reported by Camden City Police Traffic Division. Further investigation revealed that this problem is largely due to driver frustration resulting from long waits on Kaighn Avenue westbound during the extended p.m. peak period. Because there is no dedicated left turn lane, Kaighn Avenue westbound traffic (through traffic) is often delayed passage through the intersection due to vehicles queuing to turn left onto Haddon Avenue, further exacerbating the congestion problem. According to local representatives, motorists reportedly speed through the intersection at the end of the yellow signal phase and into the red phase. A second resulting problem is the overflow of Kaighn Avenue traffic onto adjacent neighborhood streets in an attempt to circumvent the congestion on a path of lesser resistance. This extra volume is considered cut-through traffic.

The pedestrian crossings at the intersection are longer than the roadway pavement cross-section width due to the oblique angle of the intersection. These crossings are more than 70 feet long on each approach leg. With the long crossings and the significant volume of traffic passing through the intersection, and the somewhat hostile nature of those frustrated motorists, it is imperative that pedestrians are provided a safe and comfortable movement.

In summary, this intersection suffers from operational deficiencies for both automobile traffic and pedestrian traffic. The previously mentioned deficiencies are itemized below, plus associated issues originally identified by local representatives and other issues identified through the study process:

- Recurring congestion on Kaighn Avenue westbound originating at the Haddon Avenue intersection occurring from late afternoon into the P.M. peak period.
- Traffic turning left from Kaighn Avenue often blocks the through traffic further exacerbating the congestion.
- Drivers on Kaighn Avenue, frustrated by the long wait to get through the intersection, are running the red signal.
- Traffic back ups on Kaighn Avenue are causing cut-through traffic on adjacent streets.



***Traffic queues on Kaighn Avenue westbound (in far distance), with many vehicles waiting to turn left, delaying the movement of through traffic.***

***The parking lot for Donut Queen at the intersection of Kaighn and Haddon has such a large curb cut that it invites cut through traffic to avoid the light at the intersection, and detracts from the pedestrian environment. This curb cut should be reduced and sidewalks more clearly delineated.***

- The Haddon and Kaighn intersection is an important cross over point between north and south sides of the city.
- The oblique angle of the intersection presents very long crossings for pedestrians.
- The reportedly hostile nature of the P.M. peak period traffic degrades the pedestrian environment and presents safety issues for vehicular traffic.
- Jaywalking is reportedly common at this location.
- In the vicinity of this intersection the neighborhood suffers from urban ills in the form of blighted buildings, vacant lots, and littered pedestrian pathways especially on Kaighn Avenue.

### *Improvement Strategies*

*Engineering:* This intersection has two predominant needs that can be best met through engineering improvements: improved intersection operations and improved pedestrian crossings. **Figure 5: Aerial Plan View of Haddon and Kaighn** details these improvements. **Figure 6: Existing Conditions at Haddon and Kaighn** shows what the intersection presently looks like. **Figure 7: Photo Simulation of Future Haddon and Kaighn** illustrates what traffic calming treatments might be possible at this intersection, described below.

*Short Term:* Re-stripe the Kaighn Avenue approaches to include a left turn only lane, without a protected left turn signal phase. Cost Range: $2,000-$5,000.
*Long Term:* Install protected left turn signal phase in conjunction with the left turn only lane utilizing microwave area presence detection. Cost Range: $80-$120,000

Currently there is cartway available to add dedicated left turn lanes to Kaighn Avenue. This configuration change would allow vehicles waiting to turn left to queue out of the path of through and right turning traffic, thus improving mobility. Providing a protected signal phase for left turning vehicles is the safest approach, safer than permissive left turns across live travel lanes. Depending on traffic conditions a permissive left turn can greatly compromise safety. A protected left turn signal phase may take time away from the through movements. Implementing an actuated protected left turn signal phase should reduce delays by only activating the left turn arrow when vehicles are in the queue. If the queue is empty, saved time is either added to the through movements or omitted resulting in a shorter cycle length. In addition, the signal should be optimized to ensure the most efficient signal cycle possible with respect to new phasing. An intersection that operates

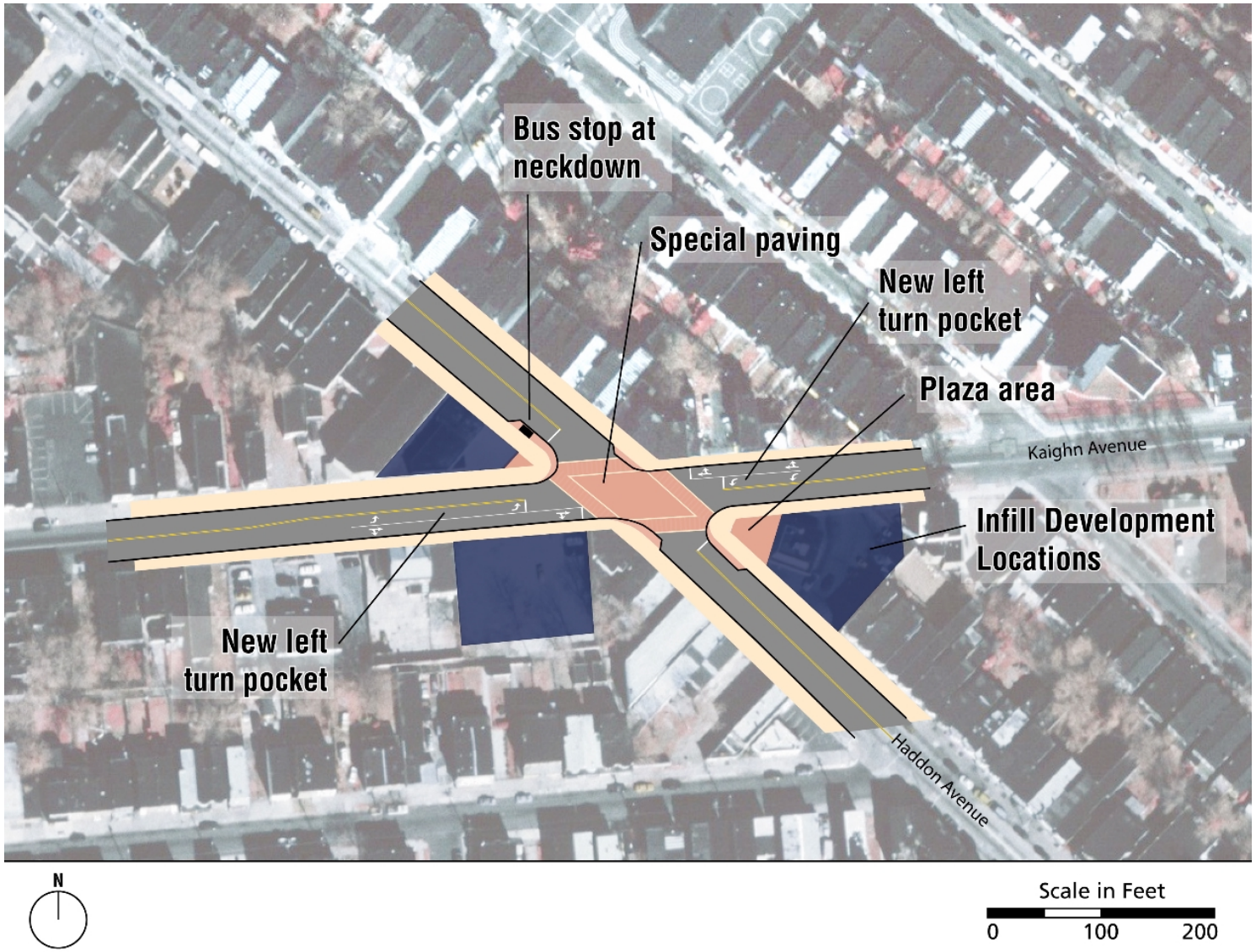



**Figure 5: Aerial Plan View of Haddon and Kaighn. Spring 2005. Source: Wallace, Roberts & Todd, LLC.**


**Figure 6: Existing Conditions at Haddon and Kaighn.  Spring 2005.  Source: DVRPC.**


**Figure 7: Photo Simulation of Future Haddon and Kaighn. Spring 2005. Source: Wallace, Roberts & Todd, LLC.**

***Kaighn Avenue should have a left-turn only lane, which may require taking three or four on-street parking spaces.***

more efficiently may reduce driver frustration resulting in fewer episodes of red light running. A better operating intersection may also reduce the number of motorists cutting through neighborhoods seeking paths of lesser resistance.

In order to add left turn lanes on the Kaighn Avenue approaches, 3 to 4 on-street parking spaces will likely need to be sacrificed. The actual number of spaces needed for the left turn queue will be determined by the demand for left turns which will be considered in the signal optimization. Because this is a densely developed urban location where available land is scarce, the scope of potential infrastructure improvements is constrained. Though in this case these constraints are acceptable because of the desire to preserve the character of the neighborhood by implementing a context sensitive improvement.

Implementing the intersection reconfiguration will provide an opportunity to improve the pedestrian environment as well. First, implementation of pedestrian signal heads with countdown timers help to create a safer crossing. As depicted in the photo simulation this intersection would benefit from a comprehensive tactile treatment. Utilizing brick pavers or stamped concrete for the entire intersection box would formally designate pedestrian crossings and create a sense of place. This approach is consistent with previous studies of the Parkside neighborhood and its environs that stated the need for a town center-like design, which remakes this intersection as the anchor, or center, of the revitalized neighborhood. Part of this strategy also includes way finding and directional signage to further establish this location as a destination. The photo simulation also depicts complementary elements including bus shelters and street furniture, an overall improved pedestrian environment, a vibrant retail environment, second story housing, and infill of vacant lots, all in a comprehensively realized revitalization scenario.

*Complementary Strategy:* The addition of a narrow center island to both of the Haddon Avenue approaches would serve as a complementary traffic calming element to the operational improvements on Kaighn Avenue. These islands can be used as planters and can be enhanced with architectural lighting and gateway signage to formally welcome motorists to the Parkside Neighborhood. These treatments are commonly used to delineate special areas and help to promote a sense of place.

*Other Strategies:* The strategy selected is considered a mid-tier improvement in terms of cost and benefits. This intersection may also be suitable for a modern roundabout in place of the signalized intersection (see discussion of roundabouts in techniques section). More common in Europe, the concept is gaining popularity across the United States. Depending on conditions (traffic volume, safety, available land) this approach is seen as an alternative to the signalized intersection for maintaining traffic flow at an appropriate speed and for increasing safety. Pedestrian movements are accommodated in the modern roundabout, although they are typically moved away from what is considered the "box" at the nexus of a signalized intersection. This is necessary in order to accommodate curved approach angles of the roundabout. A roundabout does not have long-term maintenance costs relative to those of a signalized intersection, but it does require more land, which may make the alternative infeasible.

Education: The Parkside neighborhood is a suitable location for increased awareness of the benefits of traffic calming. An educational campaign that includes the benefits of traffic calming is consistent with the quality of life goals stated in the *Parkside Neighborhood Strategic Plan*. Some communities have instituted a "Drive 25" campaign to encourage motorists to watch their speed limit in an effort to increase safety and increase awareness of pedestrians and bicyclists.

*Policy:* An official map designating roadway functions, pedestrian ways, bicycle ways, truck routes and other featues is a policy statement that lays the foundation for better circulation. The City of Camden and the Parkside Business and Community In Partnership organization could develop this map collaboratively.

*Enforcement:* Currently the Camden City Police Department conducts a campaign at this intersection targeting red light running. The recommended engineering improvements are intended to improve operations, thus resulting in a reduction in driver frustration and subsequently reducing the number of red light running instances.

***While the Parkside neighborhood has many challenges to face beyond traffic calming, it is an important part of a larger strategy to create a safe and attractive main street for the neighborhood.***

# CONCLUSION

Traffic calming is an important tool in creating livable places. More communities and planning agencies are embracing the concept of context-sensitive design, and there are an increasing number of examples in the Philadelphia region to emulate. This is a positive step forward, towards a better balancing of the needs of all roadway users, and more sensitivity to the community context of transportation improvements. Traffic calming programs must be multi-dimensional, as rarely is a problem solved by just one "fix it" measure alone. Engineering, enforcement, and education are important elements to traffic calming, as is policy. This study is intended to introduce the reader to traffic calming techniques, and illustrate their application through urban and suburban case studies. Each community must decide what techniques are the "best fit" for their own situation. The best techniques represent a combination of function and aesthetics, and attractiveness and cost-effectiveness. DVRPC will continue its traffic calming work in Fiscal Year 2006 with two new case studies, as well as an overview of successful traffic calming programs in the region.

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# APPENDIX A: SURVEY ON "TOP THREE AREAS IN NEED OF TRAFFIC CALMING", RESULTS FROM COUNTIES AND CITIES IN DVRPC REGION

A paper survey was mailed to planning departments in the eight counties and four core cities (Philadelphia, Chester, Trenton, and Camden) of the region in April 2005, asking for the "top three areas in need of traffic calming" within their jurisdictions. The responses follow.

## *Pennsylvania*

### Bucks County

**Street Name/Location:** 5th Street from Blooming Glen Road to Park Avenue.
**Municipality:** Perkasie Borough
**Issues:** 5th Street is the main route from Route 313 to Perkasie Borough. Pennridge High School is located on the corner of Fifth Street and Blooming Glen Road. Issues include speeding, pedestrian safety, and school children issues

**Street Name/Location:** Mill Street from Route 212 to Main Street
**Municipality:** Quakertown Borough
**Issues:** Mill Street parallels Route 313 through Quakertown Borough. Several recreational fields are on located on Mill Street, as well as Memorial Park and the county library. Issues include speeding, cut-through traffic, and pedestrian safety.

**Street Name/Location:** Second Street Pike from Tanyard Road to Highland Drive
**Municipality:** Northampton Township
**Issues:** Commercial uses along road need pedestrian access. However, vehicular traffic prevents proper pedestrian access. Issues include truck traffic, congestion and excessive noise.

## Chester County

**Street Name/Location:** PA 162/West Strasburg Road
**Municipality:** Village of Marshallton, West Bradford Township
**Issues:** Heavy through traffic in this historic village has prompted township to begin traffic calming planning.

**Street Name/Location:** Rosedale Avenue from New Street to Franklin Street
**Municipality:** West Chester Borough and West Goshen Township
**Issues:** West Chester Regional Planning Commission recommended Rosedale Avenue for further study. This may be the highest volume of conflicting pedestrians and vehicular traffic in the County (West Chester University).

**Street Name/Location:** Ellis Lane from Paoli Pike to East Strasburg Road
**Municipality:** East Goshen Township
**Issues:** Heavy traffic in area with high school and middle school.

## Delaware County

**Street Name/Location:** Chester Pike at several locations
**Municipality:** Sharon Hill and Norwood Boroughs
**Issues:** Several locations have high incidences of speeding, excessive truck traffic, disregard for traffic laws, issues with pedestrian safety, noise, and congestion that cause cut-through traffic on neighborhood streets. In Sharon Hill, the road is excessively wide allowing space for traffic calming solutions. Action is recommended in Sharon Hill and Norwood Boroughs' comprehensive plans and the Delaware County Renaissance Program Planning Areas 3 and 4 action plans.

**Street Name/Location:** Baltimore Avenue at several locations
**Municipality:** Clifton Heights, Lansdowne, East Lansdowne, Yeadon Boroughs
**Issues:** Several locations have high incidences of speeding, excessive truck traffic, disregard for traffic laws, issues with pedestrian safety, noise, and congestion that cause cut-through traffic on neighborhood streets. This road serves as the main commercial district for several communities along the corridor and traffic calming is considered important for economic revitalization. Traffic calming is recommended in Lansdowne and East Lansdowne Boroughs' comprehensive plans and the Delaware County Renaissance

Program Planning Area 5 action plan. There is a current study in this corridor that will include draft Streetscape, Transit, and Traffic Plans. More information is available in the Baltimore Avenue Corridor Revitalization Plan.

**Street Name/Location:** MacDade Boulevard and Woodlawne Avenue
**Municipality:** Collingdale Borough
**Issues:** Several locations have high incidences of speeding, excessive truck traffic, disregard for traffic laws, issues with pedestrian safety, noise, and congestion that cause cut-through traffic on neighborhood streets. MacDade Boulevard serves as the main street for Collingdale as well as a main route between the City of Philadelphia and points west including I-476. Motorists increase speed on both this road and Woodlawn Avenue, detracting from the pedestrian feel and design of these streets and posing threats to shoppers and school students. Traffic calming is recommended in Collingdale Borough's comprehensive plan and the Delaware County Renaissance Program Planning Area 4 action plan.

## Montgomery County

**Street Name/Location:** Bethlehem Pike, from Stenton Avenue to West Valley Green Road
**Municipality:** Springfield and Whitemarsh Townships
**Issues:** The corridor serves as Flourtown's main commercial center, host to a mix of pedestrian and auto-oriented businesses. Bethlehem Pike is a four-lane undivided road, with no dedicated turning lanes at the many signalized intersections. As a result, many drivers speed excessively, changing lanes to avoid cars making turns. Also, some sections allow on-street parking in the outer lane at certain times of the day, adding to the danger to both cars and pedestrians.

**Street Name/Location:** PA 611/Old York Road from Wyncote Road to Rodman Avenue
**Municipality:** Jenkintown Borough
**Issues:** Old York Road is Jenkintown's main thoroughfare. Its existence as an old town center creates very narrow cartways (with no room for widening) and undersized intersections that do not allow for adequate turning lanes. Being a major state route to and from Philadelphia in an area devoted to highways, this road sees plenty of truck and commuter traffic, particularly through Jenkintown.

**Street Name/Location:** West Main Street, Forest Avenue to Egypt Road
**Municipality:** West Norriton Township
**Issues:** West Main Street carries over 23,000 cars and trucks per day into and out of Norristown. The corridor is a four-lane undivided road with no turning lanes and scant traffic signals. Speeding is a problem and there are many businesses and residences that take access from West Main Street. Left turns are made from the inside lane, and drivers frequently change lanes in an attempt to avoid turning cars while maintaining their speed.

## City of Philadelphia

**Street Name/Location:** Island Avenue and Lindbergh Boulevard
**Municipality:** City of Philadelphia (Eastwick Neighborhood)
**Issues:** There are shopping centers at two corners of the intersection, an apartment complex on the third corner, and a major U.S. Postal Service distribution facility is under construction on the fourth corner. The roadways are wide and complex, with trolley lanes and islands on Island Avenue. Both roads are extremely intimidating for pedestrians, especially transit riders going to and from bus or trolley stops, and for shoppers.

**Street Name/Location:** Cottman Avenue from Roosevelt Boulevard to Castor Avenue
**Municipality:** City of Philadelphia (Northeast Philadelphia Neighborhood)
**Issues:** This section of Cottman Avenue contains one of Northeast Philadelphia's largest concentrations of retail space. Cottman Avenue is a major traffic spine that serves vehicular access to the shopping centers, but makes pedestrian access from the adjacent residential neighborhoods difficult. There are long distances between controlled crossing points, and median islands that allowed pedestrians to cross more safely were removed several years ago. There are nine bus stop locations, but many are located where there is no safe way to cross the street. Furthermore, the sidewalks and bus stops lack amenities. The Philadelphia City Planning Commission did an urban design study of this area and traffic calming was a recommendation of that study.

**Street Name/Location:** Wissahickon Avenue, from Hortter Street to Allens Lane
**Municipality:** City of Philadelphia (West Mount Airy Neighborhood)
**Issues:** This narrow roadway is used as a commuter route and carries a relatively high volume of traffic. Traffic goes faster than 30 mph speed limit despite hills that make visibility poor. There are no sidewalks, paths, or shoulders for most of this section. The lack of accommodation for pedestrians and bicyclists prevents residents on the east side

from safely accessing Fairmount Park and its trails on the west side without a car. Crossing opportunities are limited, and the east-west streets do not continue directly across Wissahickon Avenue. This section was recommended for treatment in the *Mt. Airy Neighborhood Plan* recently completed by a consultant to DVRPC.

### City of Chester

**Street Name/Location:** Chestnut Street between Ridley Creek and 22nd Street
**Municipality:** City of Chester
**Issues:** Highly congested during peak hours and used as a cut through for vehicular traffic from the Brookhaven area to the Blue Route.

**Street Name/Location:** Edgemont Avenue at 22nd Street
**Municipality:** City of Chester
**Issues:** Vehicles cut through Atlantic Transmission and the Sunoco Station to avoid traffic lights.

**Street Name/Location:** Morton Avenue at Route 291
**Municipality:** City of Chester
**Issues:** "No trucks" signs should be posted to eliminate truck traffic from Route 291 getting onto I-95 from Morton Avenue to Chestnut Street. Trucks should stay on main truck route (Route 291) Eastbound to get on I-95.

## *New Jersey*

### Burlington County

**Street Name/Location:** CR 541/Main Street
**Municipality:** Lumberton Township
**Issues:** Speeding through residential and commercial downtown areas, where prevailing speeds to the north are 45 mph and to the south are 50 mph. This corridor is a good candidate for gateway treatments and bumpouts.

**Street Name/Location:** CR 634/Smithville Road
**Municipality:** Eastampton Township

**Issues:** CR 634 has prevailing speeds of 45 mph, but bisects Smithville Park. Hiking and biking trails were recently opened that cross the road.

## Camden County

**Street Name/Location:** CR 658/Bell Road
**Municipality:** Bellmawr Borough
**Issues:** Bell Road connects SR 168/Black Horse Pike with CR 753/Creek Road, which provides access to SR 42, the north-south freeway. Bell Road is part county route (CR 658) and part local street. The path between the Black Horse Pike and SR 42 provides a short-cut allowing SR 42 traffic to bypass the highly problematic and frequently congested I-76/SR 42/I-295 interchange. Bell Road serves neighborhood traffic and provides access to the Bell Oaks Elementary School and the Raymond Kershaw Elementary School. The speed and volume of the cut-through traffic on Bell Road is often incompatible with surrounding land uses. An improvement that addresses the nature of the traffic while retaining access would be appropriate.

**Street Name/Location:** Central Avenue
**Municipality:** Runnemede Borough
**Issues:** Central Avenue is a neighborhood street that parallels SR 168/Black Horse Pike and connects SR 41/Clements Bridge Road with 9th, 10th, and 11th Streets. These three streets intersect the Black Horse Pike. In an effort to bypass congestion on the Black Horse Pike, traffic from Clements Bridge Road southbound reportedly uses Central Avenue as a cut-through and later enters SR 168 via 9th, 10th, or 11th Street further north, where congestion on SR 168 is lighter. In addition to serving local residences ,Central Avenue provides access to the Downing Elementary School.

**Street Name/Location:** CR 727/Atlantic Avenue
**Municipality:** Haddon Heights Borough
**Issues:** CR 727/Atlantic Avenue parallels US 30/White Horse Pike and is predominantly used as a back route through the towns along the White Horse Pike. Because US 30 tends to be congested during the peak periods, Atlantic Avenue is used as a cut-through route. The actual speed of traffic on Atlantic Avenue is reportedly incompatible with surrounding land uses, despite the 25 mph speed limit. The problem is particularly acute in the vicinity of Green Street, which connects Atlantic Avenue to the White Horse Pike. Atlantic Avenue also provides access to Haddon Heights' Atlantic Avenue Elementary School,

located just west of Green Street. Many students have to cross Atlantic Avenue at Green Street to get to school. The combination of heavy pedestrian traffic, high vehicle speeds on Atlantic Avenue, and poor sight distance due to a vertical curve on Atlantic, makes this location suitable for a traffic calming analysis.

## Gloucester County

**Street Name/Location:** Broad Street/State Route 45
**Municipality:** Woodbury
**Issues:** County seat, proposed bus station, hospital, eventual possible train station, congestion, parking issues, pedestrian safety.

**Street Name/Location:** Main Street/State Route 45 and U.S. Route 322
**Municipality:** Mullica Hill, Harrison Township
**Issues:** Major connector roadway on Route 322 from Commodore Barry Bridge to Route 55, Atlantic City Expressway, shore points, conflicting with shopping area, parking issues, congestion, pedestrian safety, truck traffic, and noise.

**Street Name/Location:** King's Highway/CR 551
**Municipality:** Swedesboro, Woolwich Township
**Issues:** Developing area surrounding town (Woolwich Township) connects to Center Square Road, Route 322. Conflicts with shopping area—parking issues, congestion, and pedestrian safety.

## Mercer County

**Street Name/Location:** Spruce Street/CR 613 from Arctic Parkway to Ewingville Road
**Municipality:** Ewing Township
**Issues:** This segment is classified as a local street, striped for two lanes but with a cartway width possible for four lanes. Southeast of the light at Arctic Parkway, Spruce Street widens to four lanes. At issue is the development of a 140,000 square foot WalMart on the site of a car dealership at Spruce and Artic. The footprint is in one municipality (Lawrence Township), but traffic impacts are in Ewing. There is community opposition in both municipalities, but it meets current zoning and traffic impact studies do not warrant roadway capacity increases. Traffic calming may be warranted.

**Street Name/Location:** South Broad Street/CR 672 between SR 130 and the NJ Turnpike
**Municipality:** Hamilton Township
**Issues:** This corridor runs through a residential neighborhood, which has submitted a petition for lower speed limits. New development in eastern Mercer, northern Burlington, and western Monmouth counties has increased traffic volumes on this road.

**Street Name/Location:** Edinburg-Windsor Road (Church Street)/CR 641
**Municipality:** Village of Windsor, Washington Township
**Issues:** This is a two lane rural road used to get from eastern Mercer County to CR 535 (toward Trenton) and CR 526 (toward Princeton) in West Windsor. Residents complain of high speeds through the village, as noted in the County Road "Hot Spot" report. The other end of this road segment is involved in an intersection improvement study.

## City of Camden

**Street Name/Location:** CR561/Haddon Avenue and Mickle Boulevard
**Municipality:** City of Camden
**Issues:** Speeding and pedestrian safety.

**Street Name/Location:** Cooper Road and Seventh Street
**Municipality:** City of Camden
**Issues:** Speeding and pedestrian safety.

**Street Name/Location:** CR630/Collings Avenue and Alabama Avenue
**Municipality:** City of Camden (Fairview Neighborhood)
**Issues:** Speeding and pedestrian safety.

## City of Trenton

**Street Name/Location:** West State Street and Calhoun Street
**Municipality:** City of Trenton
**Issues:** Congestion and pedestrian safety

**Street Name/Location:** Stockton Street and East State Street
**Municipality**: City of Trenton
**Issues:** Pedestrian safety

**Street Name/Location:** Market St. and Stockton St. and ramp to Route 1
**Municipality:** City of Trenton
**Issues:** Excessive truck traffic, disregard of traffic laws, pedestrian safety, excessive noise and congestion during rush hour.

# APPENDIX B: FUNDING FOR TRAFFIC CALMING

Funding for traffic calming related efforts include the following DVRPC programs.

## Transportation and Community Development Initiative (TCDI)

The TCDI program is an annual grant program intended to assist in reversing the trends of disinvestment and decline in many of the region's core cities and first generation suburbs by:

- Supporting local planning projects that will lead to more residential, employment or retail opportunities;
- Improving the overall character and quality of life within these communities to retain and attract business and residents, which will help to reduce the pressure for further sprawl and expansion into the growing suburbs;
- Enhancing and utilizing the existing transportation infrastructure capacity in these areas to reduce the demands on the region's transportation network; and
- Reducing congestion and improving the transportation system's efficiency.

Traffic calming studies are eligible for TCDI funding. Communities that have received funding in the past through TCDI to do traffic calming studies include Pottstown, Jenkintown, and Upper Moreland Township. Similarly, numerous streetscape and pedestrian/bicycle plans have been funded through TCDI as well. For more information on this program, visit http://www.dvrpc.org/planning/tcdi.htm.

## Home Town Streets

The Home Town Streets Program funds a variety of streetscape improvements that are vital to reestablishing downtown and commercial centers. Projects include activities undertaken within a defined "downtown" area that collectively enhance that environment and promote positive interactions with people in the area. Projects may include sidewalk improvements, planters, benches, street lighting, pedestrian crossings, transit bus shelters, traffic calming, bicycle amenities, kiosks, signage and other visual elements. The program will not fund costs related to buildings or their facades or personnel costs related to a Main Street manager. For more information on this program, visit http://www.dvrpc.org/transportation/capital/hts_srs.htm.

## Safe Routes to School

The Safe Routes to School Program is designed to work with both school districts and pedestrian and bicycle safety advocates to make physical improvements that promote safe walking and biking passages to schools. Collectively, these efforts save on school busing costs and promote a healthy lifestyle for children. In addition, some funding may be used for pedestrian education efforts. Examples of these types of improvements include: sidewalks, crosswalks, bike lanes or trails, traffic diversion improvements, curb extensions, traffic circles and raised median islands. For more information on this program, visit http://www.dvrpc.org/transportation/capital/hts_srs.htm.

## Transportation Enhancements (TE)

Transportation Enhancements (TE) is a set-aside of the Federal highway and transit funds, mandated by Congress in the Transportation Equity Act for the 21st Century (TEA-21) for the funding of "non-traditional" projects designed to enhance the transportation experience, to mitigate impacts of transportation facilities on communities and the environment, and to enhance community character through transportation-related improvements. In the DVRPC region, Pennsylvania and New Jersey each has its own procedures for selecting projects. Typical TE projects include bicycle and pedestrian trails, restoration of historic train stations, downtown streetscape improvements, roadside beautification, and preservation of scenic vistas. For more information on TE, visit http://www.dvrpc.org/transportation/capital/te.htm.