SPEED
ENFORCEMENT
PROGRAM GUIDELINES

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

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EXECUTIVE SUMMARY

It is well-established that speeding represents a risk to public safety. Excessive speed increases the likelihood of crashing and the risk of severe injury in a crash. In 2005, more than 13,000 lives were lost in speeding-related crashes (NHTSA, 2006a). Reducing speeding is a high-priority objective and effective speed enforcement is an essential countermeasure to reduce speeding and lowering crash risk. The National Highway Traffic Safety Administration and the Federal Highway Administration have developed ***Speed Enforcement Program Guidelines*** to provide law enforcement personnel and decision makers with detailed information on how to establish and maintain an effective speed enforcement program. The guidelines were developed with input from many of the most successful law enforcement agencies in the United States and include information that can help establish an effective speed enforcement program, including details on:

- Program management,

- Problem identification,

- Enforcement countermeasures,

- Role of engineering,

- Public outreach and communications,

- Legislation, regulation and policy, and

- Program evaluation.

Program management

The success of a speed enforcement program requires careful planning and coordination of many stakeholders including law enforcement officials, policy makers, traffic engineers, judges and prosecutors, and community residents. This chapter provides guidelines on developing program goals and objectives, garnering support of key stakeholders, obtaining program funding, preparing a written plan, and establishing lines of communication with community partners.

Problem identification

Identifying problem locations that have a high rate of speeding-related crashes is at the heart of an effective speed enforcement program. Current and historical crash, speed and citation data, engineering assessments and details of resident complaints provide the information needed to identify problems. This chapter presents examples of crash, speed, and engineering assessments that are essential for planning and implementing a speed enforcement program.

Enforcement countermeasures

A successful speed enforcement program depends on the proper use of effective enforcement countermeasures. This chapter describes the methods, training and equipment and provides guidance on selecting appropriate tactics tailored to the community and to particular speeding problems. Tips are provided on integrating speed enforcement with other law enforcement objectives and encouraging creativity and initiative among enforcement personnel.

Role of engineering

The traffic engineering or public works agency is responsible for roadway design and engineering studies in the community and is an important partner in an effective speed enforcement program. This chapter summarizes the role that engineering can play in helping identify problem sites, conducting speed measurements, and planning appropriate countermeasures.

Communications program

An effective communications program will increase public awareness of the dangers of speeding and increase the deterrence effect of the speed enforcement program. This chapter provides step by step techniques for developing an effective media campaign. Communication program components include designating a point of contact, establishing roles for community participants, selecting the appropriate message and audience, choosing the best modes of communication, engaging enforcement personnel in communications and sustaining a long-term positive image in the media.

Legislation, regulation, and policy

Local policy makers, public officials, judges, and prosecutors have an important role in increasing visibility, acceptance, and support for the speed enforcement program in the community. Policy makers establish the legal bases of a program, authorize funding, and influence community attitudes. The actions of traffic court judges and prosecutors to uphold citations and impose legal sanctions strongly influence the effectiveness of the program. This chapter provides guidance on informing and coordinating with these key stakeholders.

Program evaluation

Ongoing evaluation of the impact of the speed enforcement activities and communications program is essential to sustain an effective speed enforcement program. This chapter describes the steps for program evaluation including conducting periodic crash, speed, and engineering assessments, gathering input from the community, and preparing progress reports.

Additional Resources

The Speed Enforcement Program Guidelines also includes additional resources and key documents presented in the appendices.

CHAPTER 1. INTRODUCTION

Traveling at excessive speeds has been consistently linked to crash risk, with crash rates increasing as speeds increase (Aarts and van Schagen, 2006). Consistent with the laws of physics, the probability of severe injury increases with the impact speed of the colliding vehicle. When the change in speed at impact (delta V) is 30 mph or greater, the risk of moderate or more serious injury increases to more than 50 percent (Bowie and Walz, 1994).

Speed dispersion is also an important factor in the likelihood of a crash; large differences in speeds between vehicles traveling on a roadway are related to a higher crash rate (Aarts and van Schagen, 2006). Crash rates have been found to be lowest for drivers traveling near the mean speed, and the rates increased with deviations above and below the mean (Solomon, 1964; Cirillo, 1968).

Crashes congest the roadways and result in economic losses. The costs of crashes include lost productivity, medical costs, legal and court costs, emergency service costs, insurance administration costs, travel delay, property damage, and workplace losses (Blincoe et al., 2000). According to the Fatality Analyses Reporting System (FARS) for 2005, speeding-related crashes accounted for a total of 13,113 fatalities, which represented 30 percent of all motor vehicle fatalities (NHTSA, 2006a). The monetary cost for crashes attributed to excessive speeding was $40.4 billion, representing 18 percent of total costs of motor vehicle crashes (Blincoe et al., 2000).

The National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) recognize that speeding is a contributing factor in one-third of all fatal crashes and consequently is a high-priority traffic safety issue. Speeding extends the distance necessary to stop a vehicle and increases the distance a vehicle travels while the driver reacts to a dangerous situation.

Speed limits represent a concerted effort to balance safety and travel efficiency and reduce congestion. They are intended to promote public safety by providing drivers with information to help them choose a reasonable and prudent speed that is appropriate for the existing traffic, weather, and roadway conditions. "Providing appropriate speed limits is the first step towards voluntary compliance and the cornerstone for effective speed management" (NHTSA, 2005b). When speed limits are set at levels that are largely self-enforcing, law enforcement officials can concentrate on the worst offenders – the minority of drivers who will only obey traffic regulations if they perceive a credible threat of detection and punishment for noncompliance.

The objective of Speed Enforcement Program Guidelines is to assist law enforcement personnel and decision makers in establishing and maintaining a successful speed enforcement program in their communities. Sustaining speed enforcement activities and focusing on locations identified by crash data are the essential underlying principles. The guidelines presented in this document address program planning, operations, adjudication, marketing and media strategies, and evaluation.

CHAPTER 2. PROGRAM MANAGEMENT

Sustained speed enforcement programs have been recognized by the highway safety community as essential to ensure compliance with speed limits and to maintain traffic movement at safe speeds (NHTSA, 2005a).   Effective management of speeds depends on the interaction of laws and regulations, enforcement programs, prosecutorial and judicial support, and public awareness and attitudes working in concert with common objectives and priorities of each community.

In this chapter, we examine the steps and components for managing an effective speed enforcement program based on the following elements:

- establishing goals, objectives, and performance measures;

- gaining support from key stakeholders;

- determining costs and obtaining funding;

- preparing a written comprehensive plan; and

- maintaining focus on traffic enforcement.

ESTABLISHING GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

A key initial step in establishing a speed enforcement program is to determine the goals, objectives, and performance measures that will address the critical safety issues in the community. These goals and objectives serve as a reference point and basis for future evaluations. Examples of these goals and objectives are:

- Reduce the incidence of speeding (to no more than XX percent of free-flow traffic). A typical objective level may be in the range of 15 to 50 percent and may be revised over time. It is unrealistic to expect that the incidence of exceeding posted speed limits that are based on engineering studies would be less than about 15 percent.

- Reduce the number and rate of speed-related crashes (by XX percent). Modest targets (e.g., 5 to 10 percent each year) may be appropriate. Each year's crash totals should be compared to an average of the previous 3 years' crashes to reduce the error that may occur due to unusually high or low numbers of crashes during a single year.

- Increase public support of speed enforcement efforts. Measurement of public support can be accomplished with surveys and, when applicable, with analysis of Internet Web site hits or comments.

- Conduct speed enforcement operations at XX locations each day/month/year, committing XX hours of law enforcement personnel time.

- Increase the number of officers who have completed basic and advanced traffic speed enforcement training. An agency may set a goal of a certain number of officers each year or to have all officers receive some level of training during the current year, with refresher training scheduled annually. Implementing regularly scheduled briefings and training on speed enforcement at roll call may be included in this objective.

- Raise the awareness of judges and prosecutors of the speed enforcement program objectives and basis. Some successful agencies have implemented periodic information or training sessions with judges.

GAINING SUPPORT FROM KEY STAKEHOLDERS

Gaining buy-in

Responsibility for reducing the speeding problem is rarely placed solely on law enforcement. An effective strategy involves gaining the acceptance, support, and participation of all stakeholders.

These stakeholders generally include:

- **law enforcement officials** within the community, region, or State;

- **government officials** engaged in public safety issues;

- **traffic engineering department,** which can assist in conducting engineering analysis and spot speed studies along target roadways;

- **judges and prosecutors,** who need to support law enforcement's focus on speed management;

- **communications, marketing, and media representatives,** who develop materials to disseminate the program's message throughout the community; and

- **community representatives,** who give feedback on the program's acceptance and success.

Law enforcement personnel assume primary responsibility for the speed enforcement program. However, the success of a program can be enhanced by a clear plan and agreement for continuous and consistent support from key officials in the community. By providing a unique real-world view and sharing experiences regarding the speed enforcement program and its goals and successes, the law enforcement agency can recruit and motivate others within the community to assist in the program.

Efforts to attain buy-in from community advocates and agencies might start with holding meetings to educate them on the goals and strategies for the speed enforcement program. During these meetings the law enforcement agency may provide the participants with the following information:

- program information – when, where, and what the law enforcement agency is doing and what the program hopes to accomplish;

- partners involved in the program and each of their roles;

- funding for the program;

- why the program was initiated and why certain roadways were selected;

- existing conditions on roadways selected for increased enforcement;

- planned strategies for enforcing speeds within the community;

- how the speed enforcement program has lasting value to the overall safety of the community;

- overall traffic safety enforcement issues;

- role of the enforcement agency with respect to the speed enforcement program; and

- anticipated role of the agency being addressed during the current meeting.

Once agencies have expressed an interest in or agreed to support the program, the law enforcement agency representative should continue to include them in the planning process and keep them updated on the progress of the program through periodic meetings, newsletters, emails, and information pages on the law enforcement Web site. The law enforcement agency may also consider sharing ideas for future actions and events. Keeping the partner agencies informed will sustain long-term support for the speed enforcement program.

A variety of venues can be used to educate the public. Officers can start at the grassroots level by attending resident association meetings, PTA meetings, and other community events to speak directly to the residents. In addition to providing information, officers can request the opinions of and assistance from community members. Alternatively, the officer in charge of public information and communications may establish contacts at the local print, radio, or television media outlets to reach a broader range of residents.

Coordinating key participants

It is important to maintain open lines of communication among all stakeholders to effectively trade information and plan activities. Participants need to be regularly informed of project goals, activities, strategies, and emerging issues.

Some communities form a local Transportation Safety Task Force or Traffic Safety Committee, which regularly meets to coordinate the program. The group normally consists of the above mentioned representatives. The task force or committee can work together to develop traffic calming measures, decide on locations for enhanced enforcement, exchange information on areas identified as problematic, schedule locations for spot speed studies, allocate funding and other resources, plan community activities, review the goals and objectives of the committee, examine progress, and develop plans.

Local residents have a personal interest in lowering speeds, raising the level of traffic safety, and improving quality of life within their community. Grassroots activity also attracts the attention of elected government officials. Local stakeholders who may have a role in a traffic safety program include citizen volunteers, parent and teacher associations, Mothers Against Drunk Driving (MADD) and Students Against Destructive Decisions (SADD) groups, local hospitals and clinics, volunteer emergency medical services, and fire and rescue services.

Identifying high-risk areas as a priority to enhance support

A program to reduce travel speeds in certain high-risk areas is likely to be supported by elected officials, the judiciary, and residents if they are aware of those risks and the speed enforcement program's benefits. These high-risk areas include school zones and construction zones. In some communities, speed enforcement programs are initially developed as demonstration programs in high-risk areas; once the results show that reductions in speeds are possible, support for a more widespread speed enforcement

program grows. For example, many automated speed enforcement programs begin in locations where crash and speed data indicate a high-priority speed problem that cannot be readily solved by engineering means.

Another type of high-risk area is where a number of high-profile crashes have occurred. If the program is introduced as a means to control extreme speeders in a known crash zone, it is likely that political leadership and community residents will be more receptive (NHTSA, 2005a).

DETERMINING COSTS AND OBTAINING FUNDING

Speed enforcement programs require adequate funding and resources for command and management personnel, line officers, vehicles and other equipment, operating costs, and maintenance. Although the budget for the speed enforcement operation may or may not appear as a separate line item in the agency's overall budget, it should be viewed as an integral part of the overall law enforcement effort and be supported by the agency's broad-based source of funding. The continuance of the speed enforcement program should not be dependent on grant monies, which are uncertain from year to year, nor should it be expected to support itself through revenue from fines. The speed enforcement plan should be presented as a program to increase safety in the community and not as a tool for revenue collection.

The International Association of Chiefs of Police (IACP) has identified certain costs that should be taken into consideration when establishing a speed enforcement program (IACP, 2004). These include:

- staffing costs, which may have to be borne by overtime where the number of available staff is insufficient;

- procuring speed-measuring equipment – multiple law enforcement agencies may be able to purchase equipment together to take advantage of discounts for large orders;

- equipment servicing by agency staff, the manufacturer, or an independent service or testing laboratory;

- development or improvement of a data-processing system; and

- increased court time, resulting in additional staffing costs.

Strategic deployment of traditional enforcement methods where and when speed-related incidents are most severe or common can help focus resources on potential problems. For some agencies, working traffic enforcement and crime enforcement jointly allows for a larger pool of resources.

One method to increase effectiveness is to use technology to enhance policing, such as speed reminder signs and speed display trailers (Orrick, 2004). Some of these devices also record traffic speeds, which can supplement the agency's data collection effort and support program evaluation.

In addition to funding from local government, it may be possible to obtain federal grant funds via Section 402 of the Highway Safety Act. Each State's Governor's Highway Safety Representative can provide information on the funding for speed enforcement programs. Federal funding is usually granted for a limited period of time or as seed

money to start specific activities. Grant monies may also be suitable for making one-time equipment or technology purchases.

PREPARING A WRITTEN COMPREHENSIVE PLAN

Once a speed enforcement program is developed, a written plan should be produced to establish the program as a priority within the law enforcement agency. The plan may be shared with partner agencies and helps to coordinate and gain support from the stakeholders. Normally, the plan will contain:

- details of the goals and objectives,
- training requirements,
- equipment and countermeasures, and
- partners' roles and responsibilities in the program.

As operational aspects of the program change, the plan should be revised accordingly.

MAINTAINING FOCUS ON TRAFFIC ENFORCEMENT

The program will be sustained over time if the law enforcement agency, partner organizations, and the community maintain the focus on traffic safety and speed enforcement. Within the law enforcement agency, conducting regular reviews at roll calls or special meetings and events will update officers on the program's progress and remind personnel of the strategic plan. These steps will spotlight the program's importance and help make speed enforcement an integral part of the agency's culture.

Periodic analysis and reporting of the impacts of the speed enforcement activity on speeds and crashes should be mandatory. These evaluations should be mandatory and will substantiate that the program is data driven and so will lend further support to sustaining the program. Formal and informal reports should be regularly provided to all stakeholders in the community.

Program managers should also maintain regular contact with local print media or radio and television media stations to make sure that the speed enforcement program and its successes are a regular news story. This will ensure that the program remains a priority in the public eye.

Appendix B presents a list of resources for developing and managing a speed enforcement program, and Appendix C provides a checklist for sustaining a program over the long term.   Appendix D discusses how to overcome obstacles in program implementation. Finally, Appendix E reviews special considerations in program development and management for small and rural communities.

CHAPTER 3. PROBLEM IDENTIFICATION

Identifying and prioritizing the locations where crashes and dangerously high speeds occur are critical steps in implementing a successful traffic speed enforcement program. Basic planning questions include:

- Where are the crash locations that have the highest priority for speed enforcement?

- Where are speed-related crashes occurring during daytime and at night?

- At what locations are speeds dangerously high?

- To what extent can speed enforcement serve as a countermeasure for road design and traffic flow factors that are also associated with crashes?

- At what locations are citizens complaining about speeding and reckless driving?

SITE SELECTION

Responsibility for collecting and analyzing crash and speed data to identify problem locations should be assigned to the traffic safety unit of the enforcement agency or one of its partners, such as the jurisdiction's traffic engineering unit. Once the various data sources are analyzed, a list of potential enforcement sites is compiled. These road segments should clearly exhibit a higher rate of excessive speeds and or speed-related crashes. These sites or "hot spots" are normally targeted for enhanced enforcement on a periodic basis. The schedule of deployments at each site should be focused on the times of day when crash risk is elevated, randomly assigned across the calendar, and frequent enough to remind drivers that their likelihood of being cited is high if they speed. The number of visits and duration of enforcement activity at each of the locations may be further adjusted as evaluation data are collected.

The site selection method may be basic such as creating lists and manually preparing "pin maps," or technologically sophisticated such as using Geographic Information System (GIS) applications. Common to all approaches is the requirement to organize data according to the location and date of occurrence, with other data elements such as day/night, crash severity, or road surface condition added as appropriate. The data should be updated regularly.

For speed enforcement programs that encompass several communities within a region or State, it is important to use consistent record-keeping and data collection methods across all of the communities. Consistency helps expedite multi-agency planning, comparison of programs, issues and problems, and evaluation.

Law enforcement agencies can make effective use of several types of data to identify and evaluate the locations and extent of speed-related problems. The various data elements may be obtained from existing data sources, but in some cases the jurisdiction may need to implement its own data collection and management program. Primary sources of information are crash data, speed data, engineering studies, citation records, and resident complaints.

ACCESSING HISTORICAL AND OTHER PRE-EXISTING DATA

Existing records systems may contain information on speeds, motor vehicle crashes, citizen complaints, and enforcement activity. Identifying speed-related problem locations can be supported by reviewing a number of historical or preexisting data sources, including:

- Traffic speed and volume studies, which are usually conducted by State, county, or local traffic engineering agencies, or by consultants engaged by the community.

- Other engineering studies focusing on road design and traffic operations issues that may be related to the cause or effects of excessive speed.

- Traffic accident files, usually maintained by the local law enforcement agency as well as by one or more agencies in State government. Most States and many local government agencies maintain computerized crash records systems that support a broad spectrum of analyses.

- Traffic citation records, also maintained at both the local and State levels.

- Citizen complaints obtained through telephone, Internet, and in-person contacts with residents and drivers familiar with problem locations.

Many communities maintain their own data as routine components of their traffic engineering, public works, or public safety operations. Public works or traffic engineering agencies normally maintain traffic speed and volume studies for planning traffic operations and road improvements. The local law enforcement agency typically maintains at least two to three years of crash and citation records that are readily available, but older crash and citation records may not be as readily accessible. In local communities where comprehensive traffic data and driver records systems are not available, the required data may be accessible from regional or State agencies such as the State Department of Transportation (DOT), the Governor's Highway Safety Office, the county DOT, or the local Department of Public Works. Acquiring data from those sources involves establishing a routine contact procedure and requesting specific information, such as the most recent data concerning:

- 24-hour spot speed and volume data at the road location nearest the location in question,

- 3 years of crash data for the road segment between intersections A and B, or

- citations written by all agencies at the road segment in question.

When a jurisdiction encounters difficulties or delays in acquiring relevant speed and crash data, it may focus on resident complaints and officer knowledge until speed and crash data become available. Whenever possible, it is advisable to follow up using measured speed data and crash records. The local law enforcement agency may have to collect its own speed data rather than access data from other sources.

To efficiently use any of these data sources, the challenge is to organize the data in a manner that can answer the basic questions regarding location and priority. Sorting by location, organizing by priority, showing the locations on a map, and preparing an action plan are the basic steps.

CRASH ASSESSMENTS

Crash data are available from police accident reports and from supplemental investigations conducted for fatal and other severe crashes. Crash data may be used to help identify high-crash locations, to aid in the choice of safety programs or counter-measures, and to assist in evaluations of enforcement effectiveness. Crash data can be combined with traffic volume data to compute crash rates (e.g., the number of crashes at a location divided by the average annual daily traffic). Crash reports contain much information that would be useful in planning speed enforcement and other crash countermeasure programs, including:

- date,
- location,
- time and light condition,
- speed limit,
- weather and road surface condition,
- injury and property damage extent,
- speed as a factor,
- crash type, and
- direction of movement.

The local law enforcement agency often has the most up-to-date information on crashes that occur within the community. Crash reports prepared by the local agency's officers are sometimes supplemented by reports prepared by higher level agencies for the most severe crashes. Although the crash report is directly useful to count, locate, and describe well-defined crash characteristics such as time of day and weather, it is difficult to interpret crash causes and whether speed was a factor in each crash.

An agency typically evaluates the effectiveness of its speed enforcement program by analyzing the year-to-year changes in the number and characteristics of crashes overall and at each priority site in relation to the amount of enforcement activity overall and at each site. Examples of effective use of crash data for program design and evaluation include:

- Use of GIS mapping to identify sites for enforcement. Public dissemination of enforcement site information raises public awareness and cooperation.

- Focusing resources on those areas with the highest fatality rates or serious injury crash rates.

- Providing access to the information via a Web site presenting information on fatalities, crashes, and overall speeds on sections of roadway.

Some local communities find that statewide electronic data are not sufficiently detailed to pinpoint the causes or locations of certain types of crashes. In these cases, it may be more productive for local traffic officers or other experts who are experienced in crash forensics and familiar with local conditions to conduct reviews of hard-copy crash reports. Their knowledge and experience is a valuable resource for examining crash causation factors, indicating locations where speed appears to be a crash factor and developing appropriate countermeasures.

SPEED ASSESSMENTS

Traffic speed data may be used to determine where additional speed enforcement activities are needed to control excessive speeds, to evaluate the effectiveness of speeding countermeasures, and to help determine the amount of tolerance that would normally be considered when conducting speed enforcement at a particular location. Although speed data are often available from centralized sources, excessive speed problems can occur at locations where no previous speed data have been collected; in this case the local community must collect its own data.

Traffic speed and volume studies are periodically conducted by State, county, or local traffic engineering and planning agencies for key roads as a routine component of transportation planning and analysis. Spot speed studies often use road tubes or other devices to count and measure the speed of each vehicle that passes a location. Methods for conducting spot speed studies are provided in many traffic engineering handbooks (e.g., Smith et al., 2002). Spot speeds are normally measured for at least 24 hours and are often measured in each lane in each flow direction. To ensure that the results are unbiased the measurement days should be chosen to represent the types of traffic flow of interest. For enforcement program planning, speed data should ideally be limited to free-flowing vehicles, which have substantial separation (at least 3 to 5 seconds) from the vehicle ahead of them and whose speeds are therefore not constrained by surrounding traffic or congestion; when the data are analyzed the constrained vehicles need to be separated out. A report is prepared that provides average daily and hourly traffic volume counts and measures of traffic speed, including the average, the 85th percentile, range and dispersion of speeds, percentage of vehicles exceeding the speed limit by various amounts, and other measures for the free-flowing vehicles.

Other types of speed studies measure "average" or "pace" speeds over a distance of roadway. They are conducted either from a moving vehicle with a calibrated speedometer or from a stationary or moving vehicle. The most common brand of average-speed computer technology is VASCAR. It is generally more difficult to obtain a large, representative sample of speeds using these techniques.

When data from centralized sources are not available for a specific location, the local law enforcement agency needs to arrange for its own data collection. The most common speed measurement methods involve either manual measurement using radar or laser or automated roadside devices that use a roadway recorder. These recorders may be self-contained and placed in the roadway or placed at the roadside and connected to pneumatic tubes, tape switches, or other sensors placed on the roadway.

Manual methods may be useful to conduct a preliminary assessment but are the least desirable for evaluation of program effectiveness because their results may be biased due to several factors:

- Persons operating radar or laser are likely to be conspicuous and thus may have a lowering influence on speeds.

- Radar may be detected by vehicles equipped with radar detectors, which would influence speeds downward. However, LIDAR is not easily detected in time to reduce speeds.

- Personnel need to be trained to systematically measure a random sample of vehicles from the traffic stream in each lane and direction. Bias occurs without a random sample.

- It would be difficult to deploy officers for the length of time needed to collect an adequate number of measurements over the full measurement period (24-hour minimum). If the sample period is too short it may result in a biased estimate of speeds.

Roadside devices, which are commonly used by traffic engineering agencies, are often set up to provide "bin" data reports, in which vehicles are grouped into speed classes or bins (e.g., 0 to 5 mph, 5 to 10 mph, 10 to 15 mph) but individual vehicle measurements are not stored. Bin data are useful but preclude separating free-flowing vehicles from those that are constrained by adjacent vehicles. Some measurement devices do permit recording individual vehicle speeds. They can be programmed to start and end data collection at the desired dates and times, and they can be left unattended.

Speedometers in patrol vehicles are an effective and inexpensive way to measure speeds, but the speedometer needs to be accurately calibrated and certified and the officer needs to be proficient at speedometer clocking. A number of large law enforcement agencies use VASCAR with fixed-wing aircraft using markings along specific roadways; the aircraft work together with vehicular teams on the ground to apprehend speeders.

Many communities use "stealth" devices to measure speeds along the roadways and determine suitable locations for increased speed enforcement. The stealth devices are able to record natural driver behavior because they are undetected by the motorist. Many of these devices produce reports identifying the times of day with higher speeds, 85th percentile speeds, and volumes of vehicles. There are also various visible speed measurement devices that are used to raise public awareness and reduce speeds and that may also record speeds. These include Speed Monitoring and Recording Trailer (SMART) units and radar boards.

ENGINEERING ASSESSMENTS

When engineering studies are performed to examine safety problems or to establish speed limits, they include a formal engineering review that examines the speeds of free-flowing traffic combined with information on roadway geometry, crash characteristics, land use, and access. The results of such studies are usually presented in a report that provides details concerning:

- average annual and hourly vehicular, bicycle, and pedestrian traffic volume;

- traffic speeds for each flow direction by hour of day;

- road design elements that may be crash factors such as horizontal and vertical curvature, drainage, pavement condition, sight distance restrictions, roadside objects, signage, markings and delineation, etc.;

- road lighting and traffic control devices, including signals, signal timing, and stop signs;

- summary of crashes and crash causes over a multiyear period;

- plans for expected new development that may change the traffic flow characteristics in the future; and

- recommendations for the speed limit.

The most effective speed enforcement programs have well-established liaisons with the traffic engineering function to share such information and collaborate when devising speed-related safety problem solutions. In situations where speed limits have been established by legislative authority rather than by administrative action resulting from engineering studies, the speed studies are particularly valuable to the law enforcement agency to:

- evaluate what a safe and reasonable travel speed is for a particular road segment;

- make recommendations for speed limit adjustment; and

- determine guidelines for the speed above which a speeding citation would normally be considered.

CITATION ANALYSIS

A review of the locations, cited speeds, and frequency of speeding citations can provide useful information to help determine problem locations and to measure the effectiveness of enforcement and/or media programs. A high number of citations along a particular road segment may indicate an excessive speed problem, while a change over time in the number of citations may suggest that the incidence of excessive speeding has changed. When using citation data, the officers' knowledge of the locations and situations where citations have been issued will help interpret the findings. Care should be taken to properly interpret the number of citations at any location, as in the following examples:

- Some road segments where many citations have been issued may actually have an excessive speed problem, whereas at other locations it may just be easier to conduct enforcement.

- The difference between the cited speed and the speed limit can provide a measure of the degree to which speeds are excessive at a location but in some cases the cited speed may have been reduced from the actual speed of the vehicle.

- Changes in the number of citations over time may represent a change in speeding behavior or may be due to changes in speed enforcement program resources or priorities.

RESIDENT COMPLAINTS

Another method for selecting sites for speed enforcement is on the basis of complaints by residents within the community. Most residents are concerned about speeders on their streets endangering other drivers, walkers, joggers, bicyclists, and children. They are often aware of incidents such as near-misses or fender benders that are not reported to the local law enforcement agency. The traffic enforcement agency should establish and publicize the means to receive and compile citizen complaints according to date, time, location, and nature of complaint so that problem locations can be investigated and

prioritized according to the frequency of complaints or the severity of the speeding problem. Citizen complaints may be reported by telephone hotline, by Internet Web sites, and during regularly scheduled community meetings.

The enforcement agency should respond to complaints following specific procedures. For example, where complaints suggest an ongoing problem, the agency may schedule a speed study and follow up with directed patrols or other appropriate countermeasures, consistent with the principles of community and problem-oriented policing. An effective response to a complaint includes:

- logging the complaint in the records system;

- assigning an officer to investigate;

- investigating the complaint by visiting the problem site, interviewing the complainant, observing traffic, and measuring speeds; and

- documenting the findings.

CHAPTER 4. ENFORCEMENT COUNTERMEASURES

SPEED ENFORCEMENT STRATEGIES

There are several tactical approaches adopted by most law enforcement agencies to increase motorist compliance with speed limits:

- **Stationary patrols** use marked or unmarked vehicles stopped at roadside to monitor traffic speeds.

- **Mobile patrols** use marked or unmarked vehicles traveling with traffic to detect specific violators in the immediate vicinity of a moving patrol car.

- **Highly visible enforcement strategies** use multiple stationary or mobile marked patrol cars to remind the public that enforcement is present and to increase the actual and perceived risk of detection among the driving public.

- **Stealth methods** use unmarked, unconventional, or hidden vehicles to monitor speeds and apprehend speeders.

- **Automated speed enforcement (ASE)** uses equipment that monitors speeds and photographs offenders to produce a citation that is later mailed to the registered owner of the offending vehicle.

- **Aerial speed enforcement** from aircraft measures vehicle speeds based on the time it takes a vehicle to travel between two or more pavement markings spaced a known distance apart. Identifying information regarding a violator's car type, location, and cited speed is transmitted to officers on the ground, who issue citations.

- **Corridor safety program** is often a joint operation involving multiple law enforcement agencies. Data on crashes and speeds are used to identify traffic corridors where speeding is contributing to unsafe conditions. These corridors are designated for enhanced speed enforcement.

- **Neighborhood speed watch** is a public awareness program that gives citizens a role in solving speeding problems in their neighborhood. Local residents monitor the speed of vehicles traveling through their neighborhood, using speed reader boards or radar units provided by the local law enforcement agency or transportation department. Participants record the date, time, location, and license plate numbers of motorists driving in excess of the posted speed limit. The information may be used in a variety of ways, including sending letters to the vehicle owners regarding the speeding incident and designating the location for enhanced enforcement.

There is no single best method for enforcing speeds. Each jurisdiction needs to customize a combination of technologies and tactical methods to enforce speeds that works best for its community. In addition, print or broadcast media and other means of communications may be used to increase deterrence and voluntary compliance. Educating the driving public on the basis for speed limits and the community's speed enforcement policy may also work to reduce speeds.

IDENTIFYING APPROPRIATE COUNTERMEASURES

Speed enforcement countermeasures need to be tailored to the particular problems identified in the community and local circumstances. The selected enforcement methods should be based on analysis of data on speeds and crashes and on citizen reports. Other types of countermeasures may be considered to supplement enforcement, including engineering responses and communications efforts.

TRADITIONAL ENFORCEMENT

Traditional speed enforcement works when the level of enforcement is sufficient to convince most drivers of the strong likelihood of detection and sanctions if they exceed the speed limit. To achieve sustained deterrence, the level of enforcement must be maintained on a schedule that is either continuous or frequent enough to keep speeds down, which is difficult for most law enforcement agencies. However, there are alternative methods for increasing enforcement effectiveness. Enhanced effects can be achieved by planning patrols to enforce speed regulation where risk-taking is most evident and traffic volumes are sufficient, such as varied deployment on commuter routes. Selective deployment may also single out particular behaviors. Deployment at localities and times when speeding is most likely to occur, made highly visible to the public, and maintained for more than a year is likely to successfully deter speeding (TRB, 1998). Enforcement conducted at low to medium intensity in a random pattern and sustained over a long period of time at various speed enforcement sites can also be effective (Newstead et al., 2001).

Highly visible enforcement strategies help to deter speeding by reminding the public that enforcement is present, which increases the actual and perceived risk of detection. Enforcement blitzes, where many units are deployed at high-priority locations and are widespread for a defined period of time (e.g., Click It or Ticket), have high visibility and achieve results for a time. However, unless they are sustained over the long term, their benefit will eventually be reduced.

There are jurisdictions in which traffic speed enforcement is emphasized as a component of a more comprehensive approach to law enforcement. This approach is known as Looking Beyond the Traffic Ticket (NHTSA, 1992). Traffic enforcement and crime enforcement should be organized to work hand in hand to increase safety in the community, with the understanding that routine traffic stops result in reductions in local criminal activity.

MOBILE PATROL

Mobile and stationary speed enforcement methods differ in their levels of effectiveness, with stationary speed enforcement somewhat more effective in reducing casualties and fatal crashes than mobile enforcement (Elvik, 2001). A low to moderate level of enforcement from a stationary vehicle over a long period of time is effective in deterring speeding at a specific location and may have a halo effect around the enforcement site (Newstead et al., 2001). Randomized selection of speed enforcement sites also increases the deterrent effects.

Mobile patrols, which are generally used on more open and rural roads, can reduce speeding over long sections of road. Research on the effects of mobile enforcement shows mixed results (Delaney et al., 2003; Elvik, 2001). Mobile speed enforcement

should be a component in a broader program of speed enforcement that includes stationary enforcement and media components. For most communities with both local and higher-speed roads, a combination of stationary and moving methods may be appropriate.

A number of jurisdictions have had success using nontraditional speed enforcement platforms, including unmarked and unconventional vehicles equipped with mobile video cameras to detect aggressive drivers and stationary speed enforcement using bucket trucks, pickups, and other maintenance-type vehicles from which the speed measurement equipment was operated. Stealth methods of detection often reflect how seriously a community or law enforcement agency views speeding. These methods increase uncertainty about the location and timing of enforcement and may result in a greater general deterrent effect among drivers who are aware of this enforcement technique. However, they may have a lesser effect on unfamiliar drivers than visible enforcement. Unmarked vehicles are often used to enforce aggressive driving, especially on very high speed roads. They are used to unobtrusively observe traffic and measure speeds. In some cases the unmarked vehicle makes the stop, and in other cases the stops and citations are completed by a marked vehicle. Agencies should prepare special guidelines on how to approach the public for officers conducting enforcement in unmarked and nontraditional vehicles.

AUTOMATED SPEED ENFORCEMENT

Automated Speed Enforcement (ASE) has been successfully deployed in many urban and suburban settings in the United States and abroad and may be a cost-effective way to reduce speeds and crashes. This method is particularly effective where roadway geometry or traffic volume make it difficult to use more traditional methods.   ASE is best used to supplement traditional enforcement and should not replace the traffic unit's role in the jurisdiction. The amount of revenue resulting from ASE operations should never be used to help justify it. In fact, the costs of establishing an ASE program are high and in most communities the revenue from ASE is just enough to maintain the ASE program.

In some jurisdictions, specific types of locations are designated for enhanced speed enforcement, such as school zones and construction zones. Speed enforcement at these locations is often more broadly supported by the public due to the widespread recognition of dangers to children and workers. ASE has been used to supplement traditional speed enforcement in these areas.

PERSONNEL

Regardless of whether the speed enforcement program is organized as a specialized unit or broadly integrated within the routine operations of a law enforcement agency, key traffic enforcement roles must be clearly identified and assigned to specific individuals. For large police agencies, separate individuals may be assigned to each role, while in smaller agencies one individual may have multiple roles. These key roles include:

- Primary command and program management – The officer in charge of the speed enforcement program should be clearly designated. This person may be the chief of the agency, the officer responsible for a traffic enforcement unit, or an individual designated especially for this program. The officer who has primary charge of the unit is responsible for planning and managing the speed enforce-

ment operations and conducting higher level coordination with public officials such as the mayor, town council, public safety commissioner, judges and prosecutors, and other commands within the police department, as well as with engineers and community representatives.

A dedicated program manager will heighten the success of the program and strengthen support from the community and other stakeholders. Visible commitment from a program manager will serve as a strong role model for other law enforcement personnel, who will look toward the program manager for guidance and support.

The program manager may assign responsibility to garner support and coordinate the various agencies to one law enforcement representative, who will serve as point of contact with partners in the community.

- Public information and communications – Often called the public information officer, the individual in charge of public information and communications is the primary point of contact with the public and media. Contact may be through press conferences, press releases, newsletters, Web site, community meetings and annual reports.

- Equipment and technology management – This function includes planning, specification, procurement, testing, and calibration of speed enforcement equipment either in house or with outside facilities or manufacturers. Many law enforcement agencies assign an officer who is trained on calibrating and certifying speed measuring equipment. In other situations the agency maintains a working relationship with the manufacturers of the speed measuring devices.

- Training – An individual should be assigned to identify, organize, and schedule all levels of training for traffic enforcement personnel, including coordinating training at the police academy level, at the local level, by outside experts from other law enforcement agencies or equipment manufacturers, and at roll call.

- Liaison with other governmental agencies, including transportation engineering and planning agency, public works, regional planning organization, and other partners in the community.

- Primary enforcement/patrol – These are the officers with day-to-day speed enforcement duties.

EQUIPMENT AND TECHNOLOGY

Traffic law enforcement personnel need accurate and reliable equipment to monitor traffic speeds and provide evidence that meets the standards of proof needed to uphold a speed limit citation. Selection of speed enforcement equipment should relate to the road type where it is used. Hand-held radar is sufficient for residential areas and other relatively low-volume locations. Laser devices are often more useful for arterial roads where speeds and volume may be higher and pinpointing an individual vehicle is more difficult. Mobile radar devices, including single and dual antenna units, are effective for use on higher speed roads in rural areas. ASE has been found to be effective on local and arterial roads in urban and suburban areas.

Radar, is the most common method of speed enforcement in the United States. It directs an electromagnetic signal at a moving vehicle and measures the frequency of the

reflected signal to determine the speed of the target vehicle. Radar units may be used in either a stationary or moving vehicle mode. Hand-held radar units have the transmitter, receiver, processor, and antenna in a single unit and are used in a stationary mode by officers who aim the radar gun at approaching or receding vehicles. Console radar units are installed in a vehicle and can be used in either a stationary or moving mode. They have one or two antennas mounted on the enforcement vehicle and, depending on the model and configuration, measure speeds of traffic moving toward or away from the patrol vehicle from either the front or back.

Although not used to gather evidence to support speeding citations, some communities use drone radar units in patrol vehicles or other enclosures on the side of roadways to continuously transmit signals on the same frequencies as speed enforcement radar. Drone radar triggers radar detectors to display a warning causing drivers to believe that speed enforcement is being operated in the vicinity and to slow down.

Laser (LIDAR) devices use an infrared laser light wave emitted at frequencies that allow the beam to be focused on a narrow target area. LIDAR devices are usually hand held, similar to hand-held radar. When using LIDAR, the officer focuses on one vehicle at a time, producing evidence that can be more precisely associated with a specific vehicle than with radar. LIDAR is not vulnerable to radio interference, is not detectable by radar detectors, and is not easily detected by LIDAR detectors.

Calibrated speedometers in patrol vehicles are often used to measure speeds and pace vehicles. The method involves pacing a suspected speeder over a certain time or distance while observing the speedometer reading.

Average-speed computers determine speed by timing how long it takes a vehicle to travel between two fixed objects or markings a known distance apart along a road. The method can be used in both moving and stationary modes.

Digital video equipment is used in enforcement vehicles in many jurisdictions to assist in pacing suspected speeders and to provide supporting evidence if a case goes to court. While this tool has proved to be very useful, agencies should consider the requirements and costs for equipment, computer support, and substantial data storage capacity.

ASE, also known as speed cameras or photo radar, is used in many communities in the United States and abroad to supplement more traditional speed enforcement operations. ASE uses a narrow-beam radar or LIDAR to measure speeds and a film or digital camera to photograph only vehicles that exceed a speed that is set by the operator at the start of each deployment. The photograph is stamped with date, time, location, and speed, and provides evidence of the vehicle make, model, and license tag number to identify the registered owner, who is sent a citation via mail. Depending on State and local ordinances governing ASE, either the registered owner or the driver may be held responsible for the citation, and the offender's driving record may or may not be assigned points. ASE is most often deployed using marked mobile police vehicles with a speed display board on the back, although some communities use marked or unmarked patrol-type vehicles and some agencies have ASE units mounted on poles at locations where speeds are a consistent problem. Communities typically lease the photo radar equipment from a vendor that is also responsible for processing the images, identifying registered owners from the Department of Motor Vehicles (DMV) records, and printing citations on behalf of the law enforcement agency.

Police and other public safety officials should consider the costs for the equipment, operations, staff training, service, and maintenance needs in comparison to the expected

benefits and the community's interests prior to purchasing such equipment
(Orrick 2004).

KEEPING CURRENT WITH METHODS AND TECHNOLOGY

Keeping current with the latest techniques and relevant equipment will increase the
effectiveness of a long-term speed enforcement program. Program managers who
become members of the International Association of Chiefs of Police, the National
Sheriffs' Association, the National Center for Rural Law Enforcement or other relevant
organizations will have access to material on strategies, equipment, and funding options.
Officers can also find the most current information on different policing methods and
technologies on the Web sites of NHTSA, the Center for Problem-Oriented Policing, the
National Traffic Law Center, and the IACP Technology Clearinghouse. These
organizations also publish reports, journal articles, and newsletters with information
regarding speeding, speed enforcement techniques, and critiques of equipment.
Appendix B provides a more complete list of resources.

Contacting other communities and law enforcement agencies can help to identify new
and alternative policing techniques. Other agencies can share their experiences with
various types of equipment that are under consideration for purchase in your community.
Listening to "lessons learned" from other communities might help identify what might or
might not work in your community.

An agency should develop a long-term budget that will allow for replacement of outdated
equipment and the purchase of new equipment in stages.

TRAINING

Officers participating in a speed enforcement program need to be well trained in speed enforcement techniques, measurement devices, and the goals and objectives of the speed enforcement plan. Personnel may be assigned duties as specialized traffic enforcement officers or more generally as patrol officers who conduct traffic enforcement alongside their other duties. Training and certification on the use of radar, LIDAR, or other evidentiary speed measurement devices is normally required by law enforcement agencies in the United States, and in many cases such training is required by State statute. Proper training helps ensure that the officer's testimony and the measurement device's readings meet the standards of evidence and thus are sufficient proof of speeding to sustain a conviction for the offense.

Comprehensive training on speed enforcement includes background on the relationship between excessive speeds and crashes, procedures for deployment, use of speed measurement equipment, apprehension of speed limit violators, interaction with the driver and other occupants, examination and investigation of license and registration documents, citation preparation, and court testimony. Training on the use of speed measurement equipment includes the theory of how the instrument works, operating procedures, legal considerations, and field exercises. In most jurisdictions recertification is required and conducted on an annual or biennial basis. Training on equipment may be conducted by law enforcement, civilian, or manufacturer's personnel. The Speed Measuring Device Operator Training Program has been developed by NHTSA for law enforcement agencies to use for this training need.

Specialized training, course materials, and other resources are available from:

- State police academies,
- IACP,
- National Sheriffs' Association,
- International Association of Directors of Law Enforcement Standards and Training – courses institutionalized in the States as Police Officer Standards and Training (P.O.S.T.), and
- NHTSA Enforcement and Justice Services Division.

The amount of training for speed enforcement varies considerably among agencies; 40 hours or more each on radar or LIDAR is not uncommon. In some States, training documentation must be available for presentation in court and formal reevaluation is conducted on an annual basis for each type of equipment.

Although most of the formal training has been standardized at the State level, there are methods used by individual law enforcement agencies to supplement the basic training. Many agencies use roll call training or periodic updates to review best practices for conducting speed enforcement. Some agencies have developed online training that may be accessed by staff to enhance in-person training sessions.

IDENTIFYING AN ENFORCEMENT THRESHOLD

The Governors Highway Safety Association (GHSA) Survey of the States on speeding found that in most States the public perceives that there is a cushion or threshold above the speed limit in which officers will not cite offenders. In many of the States this is the

enforcement practice, usually allowing for a threshold between 5-10 mph above the speed limit (GHSA, 2005).

While speed limits are legally binding, some tolerance is often applied in order to focus enforcement on the most dangerous vehicles. An officer is usually provided some discretion in whether or not to issue a ticket for a speed that is just a small amount over the speed limit. Because it is difficult to cite drivers who are operating a vehicle within a couple of miles per hour of the limit, most jurisdictions adopt an enforcement threshold either officially or unofficially.

Law enforcement personnel, the courts, and the public should have a clear understanding of the enforcement threshold. Since absolute "zero tolerance" enforcement is generally not feasible but a very tight threshold is acceptable under limited circumstances, it may be more suitable to use "the equipment manufacturer's specification for measurement precision" as a definition of the enforcement threshold (NHTSA, 2005a).

A tighter enforcement threshold is appropriate for speed zones where the speed limit has been set using the engineering or rational methods. When speed limits are based on the 85th percentile speed of free-flowing traffic in combination with a review of crashes and roadway design factors, the threshold may be just a couple of miles per hour and should be based on review of speed data.

Enforcement thresholds may be adjusted over time as the speed enforcement program in a community grows and becomes more widely known, especially when done in combination with a review of speed limits. When a rational limit is first implemented, the threshold may begin at a higher level such as the 90th or 95th percentile speed and after a short time be reduced to near the 85th percentile, close to a "no tolerance" policy for those locations.

Once an enforcement threshold policy is decided, a consistent approach is important to maintain public confidence in the enforcement program. It may be useful to prepare written enforcement guidelines or a table breaking down enforcement threshold recommendations by road, speed limit type, and speed limits.

HOURS AND DAYS OF OPERATION

The hours and days of operation should be directed on the basis of the speed and crash data collected at each of the sites. The distribution of speeds should help determine the appropriate times to conduct speed enforcement.

Although maximizing the number of hours conducting speed enforcement is important, the decision on the number of hours must take into account the staff and funds available. The initial enforcement effort may be more vigorous (e.g., every day or every few days), followed by less frequent visits, with the followup schedule determined on the basis of speed data analysis. Three to six months of enhanced and concentrated enforcement in a selected speed zone followed by periodic visits every 45 to 60 days is suggested as a starting point.

CITATION PROCESSING AND RECORDS

Maintaining up-to-date records of citations allows a law enforcement agency to track ongoing activities and plan future enforcement actions. Tracking the activities within a

speed enforcement program may require modifications to the agency's record-keeping system so that all arrests made as a consequence of traffic enforcement stops are available for analysis (NHTSA, 2000). Details about the types of citations issued and other arrests that occur during speed enforcement activities, including criminal arrests, may be used in reports and presentations to bolster support of the program.

Many departments use computerized systems to track citations. Some departments have electronic citation systems that record each citation on a laptop or pocket personal computer as it is issued, while others manually enter citation information after the fact. Adjudication of citations is often tracked within the court system's computers, although citation information may only be available in the court records system after the charge has been adjudicated. If a computerized tracking system is not available, the officers may manually track their traffic citations on an activity log.

RESOURCE MANAGEMENT

A law enforcement agency needs to plan and manage the budget and allocation of personnel and equipment for day-to-day operations of the speed enforcement program. Budget constraints should be considered when deciding on the types of services and equipment to be employed. Reporting the program's accomplishments to higher levels of command within the law enforcement agency, to the local governing body, and to the public in terms of the number and types of actions and speed and crash reduction can help sustain or increase the program's budget.

If funding is cut it is important to remain committed to the program. If resources are diminished, the effort may be concentrated on a smaller set of the highest priority sites, based on speed and crash data and citizen complaints. Delivering a prioritized set of speed enforcement services to the extent possible consistent with the stated program objectives will improve the likelihood of acquiring funding in the next budgetary cycle.

INTEGRATING WITH OTHER LAW ENFORCEMENT OBJECTIVES

A law enforcement agency can sustain a long-term speed enforcement program by integrating the program with other law enforcement objectives. The motor vehicle is a primary tool used by criminals while engaging in illegal activities, including armed robbery, drive-by shootings, drug deals, and carjacking. Vehicles are used to reach the scene of a crime and to elude the police. Increasing vigilance in traffic safety in the community can also have an effect on local criminal activity. During routine traffic stops, officers frequently identify individuals with outstanding warrants or who are suspects in various illicit activities.

Some law enforcement agencies have a dedicated traffic division as well as a general patrol division. Within these agencies it is a common misconception that the traffic division is solely responsible for enforcing traffic laws, while officers from other divisions are responsible for enforcing all other violations and crimes. Program managers will need to stress to all officers the need to recognize that traffic enforcement is part of their duties and responsibilities in the community.

Law enforcement agencies may track the results of routine traffic stops and use their findings to promote the speed enforcement program. Officers can report how often routine traffic stops in their community have revealed greater violations or illegal activities. Information on the number of criminal stops made in the course of traffic

enforcement activities may be used to garner further recognition and appreciation of the speed enforcement program.

ENCOURAGING CREATIVITY AND INITIATIVE AMONG ENFORCEMENT PERSONNEL

Sustaining an effective speed enforcement program requires motivation to remain dedicated to the objectives of the program. One of the most important ways to motivate and focus officers on speed enforcement is to ensure that the agency's commitment starts at the top of the chain of command. Successful programs have demonstrated that when the leadership of the law enforcement agency supports and is engaged in the speed enforcement program, the line officers will follow. For example, one large State highway patrol deploys all of its personnel, including the higher ranking officers from headquarters, to the field to participate in traffic law enforcement during high-profile events such as holiday weekends. Their motto is that everyone who wears the uniform is a traffic officer. When the line officers see the Commissioner on the side of the road enforcing traffic, it inspires them and reinforces the importance of their work.

Another approach to encourage staff support for the speed enforcement program is to permit the officers to use their own experience and discretion. For example, during the early stages of the program officers may be encouraged to participate in the decision making process and take the initiative in planning and conducting operations. Officers soon realize that "little stops result in big stops," that their traffic enforcement actions reduce crime, and that they create a safer environment for residents. Line officers may also be encouraged to present innovative ideas to reduce high speeds on the roadways as part of a speed enforcement campaign. When their recommendations are incorporated into the program, the officers will see that the program reflects their input and will become more highly motivated.

In some cases officers may feel that speed enforcement is disconnected from their work in criminal law enforcement or even in traffic enforcement. Some steps to prevent resistance within the law enforcement agency are to avoid setting quotas, rotate personnel, schedule speed enforcement in such a manner that it is not monotonous, and combine speed enforcement with other enforcement activities so that the efforts are diversified (IACP, 2004). Applying the principles of community policing and problem solving to traffic safety issues may also reconnect speed enforcement activities to the broader law enforcement objectives of officers.

AWARDS FOR OUTSTANDING PERFORMANCE

Recognition of officers' efforts and accomplishments can be used to motivate participants and strengthen the speed enforcement program. This recognition demonstrates the value of traffic enforcement within the agency.

Recognition of a job well done can take a variety of forms, including:

- a letter of recognition prepared by a supervisor for the officer's permanent file, which is important to the officers on both a personal and professional level;

- a wall plaque that is updated annually to recognize officers who were successful in speed enforcement as well as other areas of traffic enforcement;

- presentation of the "Chief's Coin" to officers who perform above expectations;

- annual ceremonies to recognize officers with excellent performance records, such as an "Officer of the Year" recognition ceremony; or

- provision of new equipment to top-performing officers.

CHAPTER 5. ROLE OF ENGINEERING

Traffic engineers are responsible for decisions regarding design features of roads and for measuring vehicle travel along roadways.

WORKING TOGETHER TO IDENTIFY ROAD SAFETY ISSUES

Traffic engineering and law enforcement have a common goal of moving traffic efficiently and safely. Roadway design is a key factor in determining travel speeds and may influence crash risk. Traffic engineering has the responsibility for designing and maintaining roadways. This role often extends into establishing speed limits and collecting information on prevailing speeds on those roadways.

There needs to be an established protocol for communication between the law enforcement agency and the traffic engineering department. The agency representatives should meet regularly to review data and should work together to develop solutions to the traffic safety problems.

Many communities depend on a State agency to collect speed data and conduct engineering studies. Program managers may also seek assistance from other sources, such as a regional council of governments or a private engineering firm. Although law enforcement agencies can complete the speed studies themselves, any assistance with data collection or analysis will allow officers to focus additional enforcement hours in the field.

COORDINATING SPEED MEASUREMENTS TO IDENTIFY PROBLEMS AND EVALUATE PROGRAM

Regular speed data collection along selected roadways is important for both problem identification and program evaluation. Initially, officers can identify potential problem sites using crash and citation statistics and resident complaints and follow up with speed studies when warranted. Once increased enforcement begins on the selected roadways, the sites should be revisited regularly to assess any changes in the roadway conditions and driving behavior.

SETTING SPEED LIMITS

Speed limits are intended to promote public safety by providing information that will help drivers choose a reasonable and prudent speed for prevailing conditions. Posted speed limits seek to confine speeds beneath an upper bound and to produce relatively uniform speed that is not too fast for ideal conditions.

Setting speed limits should be conducted as a formal process that uses information on travel speeds, crashes, road design, and land use to achieve a balance of safety and efficiency. The practice should depend to a great extent on the function of the roadway (e.g., providing safe access to abutting properties on local roads at the expense of travel speed, or minimizing travel time without compromising safety on limited access roads).

Speed limits may be set according to one or more of the following approaches:

- **Engineering study** is most commonly used for speed zones on certain classes of roads where the speed limit needs to be varied depending on geometry and other road conditions.

- **Variable speed limits** are speed limits that are sensitive to changing traffic and roadway conditions.

- **Computerized expert systems** are used to set speed limits for speed zones and are based on a more comprehensive set of decision and judgment rules than basic engineering study.

- **Special situations** often require special consideration and methods for establishing speed limits. *Advisory speed limits* help drivers select safe speeds at hazardous locations. *Nighttime speed limits* are used to reduce the risk of crashing at night due to reduced visibility and driver fatigue. *School speed limits* are established in the vicinity of schools during certain hours. *Work zone speed limits* are intended to reduce speed in areas where sudden slowing and stops are likely to occur.

- **Basic law limit** leaves the decision of what is careful or reasonable and prudent entirely up to the driver.

- **Statutory limits** represent tradeoffs between safety and travel time, and they are established through the political process. These speed limits are arbitrary, not depending on specific road design features or operating characteristics.

CHAPTER 6. COMMUNICATIONS PROGRAM

If the public does not understand the basis for speed limits and the consequences of speeding they are less likely to comply with speed limits. Appropriate media and communications campaigns can fill this gap in knowledge and effectively promote safer speeds. Educating the public on speed enforcement programs helps drivers understand what they may expect from the program, and makes them aware of the full implication of their actions (ACPO, 2004).

ESTABLISHING A POINT OF CONTACT

Residents in the community should be provided with a point of contact, or representative, responsible for responding to queries on the speed enforcement program. The designated representative may be from within the law enforcement agency, such as a public information officer or community liaison, or from one of the other key organizations coordinating the speed enforcement program. The representative should be well-informed about the program objectives, goals, and activities so he or she can easily address any questions or concerns from the community. Contact information including a telephone number, mailing address, and email address should be provided with any information distributed to the public and should be easily found on the community Web site. The representative may present information on the program at community board meetings, school functions, or other public events. Residents should understand that they can approach the representative to voice complaints, volunteer, offer ideas, and get information about the program.

ENCOURAGING COMMUNITY AWARENESS AND INVOLVEMENT

In many communities the law enforcement agency does not have the staff necessary to develop a large-scale media campaign single-handedly. However, most communities have concerned citizens or civic leaders who may be interested and willing to get involved in the speed enforcement program.

Establishing a local Traffic Safety Committee is an effective way to get residents involved in the speed enforcement program. Communities can include grassroots components in their speed enforcement program by coordinating with local organizations, the schools, and various youth programs. For example, in one effective community program, the program manager developed an education program using NHTSA brochures and fact sheets on speeding and crashes and presents the curriculum at local drivers' education courses, in high school prior to drivers' education, and to parents.

Speed enforcement programs can encourage resident participation by conducting unique local programs that capture the community's attention. For example, the program could organize a contest to develop a program slogan or message to be included on all marketing and media publications. Alternatively, the speed enforcement program could develop signs, window clings, balloons, etc., that can be used by residents who are interested in lowering speeds in the community. One slogan that is widely used in many jurisdictions is "Keep Kids Alive… Drive 25"; this campaign was designed by residents of Nebraska and is currently used in 700 communities throughout the United States. The goal of this safety campaign is to raise the compliance of drivers to drive at the posted speed limits.

SMART trailers and speed reader boards are speed measurement devices that are used to raise community awareness of speeding and the enforcement program. Program managers can recruit resident volunteers to operate speed reader boards and monitor speeds in the community. The volunteers pick up the equipment from the police department or meet with an officer in the field to receive the equipment on site and then record license tags of vehicles traveling in excess of the speed limit. A formal letter from the law enforcement agency, including the date, location, speed, and vehicle information, may be mailed to the vehicle owner.

Residents should be informed about the speeding problem in their community and given details regarding the speed enforcement plan and sites through community meetings, the department Web site, or local newsletters. By providing information on how sites are selected and showing that enforcement is driven by data rather than by revenue, the agency is likely to increase public support.

ROLE OF MARKETING AND MEDIA

An effective media campaign can increase voluntary compliance as well as increase the deterrent effect of the enforcement program. The major objectives of the media campaign are to:

- make traffic safety an integral part of the public agenda;

- enhance the deterrent effect by increasing perceived risk of detection and of crashes due to speeding;

- provide support for law enforcement activity by correlating enforcement with the reduction of crashes and injuries; and

- provide information that will support decision-making processes regarding safety programs and policies (Cameron et al., 2003).

An effective publicity campaign must be supported by the government, community, and law enforcement. Global Road Safety Partnership (GRSP) has provided guidelines on how to develop a strong media campaign (GRSP, 2002). These guidelines include:

- **Define the problem** – Identify the types of behavior to be modified (in this case speeding) and the target group.

- **Consider the relevant information and data sources to be shared with the audience** – The agency may publicize high speeds measured on specific roadways in the community or the numbers of crashes in the past year that were related to speeds.

- **Identify specific venues to be used for the campaign** – Include plans for a mass media campaign, community events, or other types of activities.

- **Determine objectives** – Prepare a list of media campaign objectives. The objectives should be specific and measurable. To illustrate, reducing speeds on a neighborhood road may be measured by conducting speed studies prior to, during, and following the media campaign. Increased public awareness of speeding on community roads can be measured via surveys.

- **Agree on supporting activities** – The supporting activities may include elements such as high-profile enforcement, community meetings, events organized by voluntary organizations, or publicity on local radios and

newspapers. Key activities that support the goals of the media campaign must be planned in advance. Partner agencies including law enforcement and other community organizations should work together to develop activities.

- **Select a lead agency** – To maximize the efficiency and effectiveness of the media campaign, a lead agency should be appointed to work in consultation with the other partner organizations. The lead may be the law enforcement agency, using a communications officer or other contact within the agency. Other potential lead agencies include the government communications department or transportation department. In some communities the media and communications program is developed by volunteers from among the residents.

- **Use the right skills** – Media campaigns to promote traffic safety require individuals with the following skills:
    - a project manager with the skills to coordinate and deliver the campaign on time and according to the available budget,
    - experienced staff with knowledge in behavioral or social sciences that will work on the content of the campaign and identify the target audience, and
    - media and marketing staff to assist in delivering the message according to a well-designed marketing and advertising program.

  Individuals with these skills may be found in local government agencies, business partners, colleges or universities, or volunteer organizations.

- **Create a communications brief** – The communications brief summarizes the goals and objectives of the media campaign, the target audience, planned activities, and potential methods to measure the effects of the campaign. This brief can be made available to partners in the community and the public at meetings or via a Web site or newsletter.

- **Develop the campaign** – During the development phase creative ideas should be designed and tested on a focus group made up of individuals similar to the target audience. Make revisions to the product based on these events. Include suggestions from partner agencies.

- **Deliver the campaign** – Attempt to launch the media campaign with fanfare, including press releases, paid media, and extensive advertising. Reinforce the media message regularly at community events and during any press time. Encourage other stakeholders to use the key messages from the media campaign in any relevant forums in which they participate.

- **Evaluate the impact** – An effective media campaign includes an evaluation piece, similar to the speed enforcement program as a whole. A pre- and post-campaign survey of the target audience can be used to measure exposure as well as effects of the campaign on knowledge, attitudes, and behavior. Behavioral changes may also be measured via speed studies.

Publicity campaigns alone may have a mild impact on attitudes and behavior but work best when combined with enforcement (GRSP, 2002). Ultimately, the greater risk of being stopped and penalized is a stronger motive for reducing speeds than the risk of being in a crash. The use of publicity and media enhances the effects of an enforcement campaign if the announcements on enforcement activities are realistic (Elvik, 2001).

SELECTING THE TARGET AUDIENCE

Specific audiences that may be targeted include residents in the community, residents from neighboring communities, young drivers, and/or repeat offenders. Messages may be tailored for each audience according to its characteristics, such as age group, knowledge, and attitudes. Focus groups can be helpful to learn about the types of messaging suitable for a specific target audience, such as radio stations that attract teens, foreign-language radio stations, or billboards at the entrance to the community to inform neighboring residents about the speed enforcement program.

SELECTING THE RIGHT MESSAGE

An effective message regarding the dangers of speeding and a speed enforcement program is emotive, attention grabbing, and informational; includes an enforcement slant; and provides information on the consequences of speeding. Delivering a strong message requires marketing, social advocacy, and advertising expertise (GRSP, 2002). Stakeholder meetings should be held in the planning and development stages to discuss the objective of the campaign and the type of messaging, activities, and materials that will be developed. It is important to keep the stakeholders involved while the program is running and to get their assistance in presenting the key message of the media campaign in various forums during the course of the program.

It is important to focus on both the content and the style of the message. Where multiple messages are used there should be a consistent slogan or tag line that ties them together. Message content should be realistic and credible. It is more interesting if the message contains new information. The message should be presented in novel ways to gain and maintain attention, especially in a long-term speed enforcement program. Methods to revise and refresh media messaging include meeting with your partners to devise new creative approaches, evaluating the success of the current message and media campaign, and conducting focus groups with representatives from your target audience to assess possibilities for new message content.

OPPORTUNITIES FOR COMMUNICATION

Various modes of communication can be used for informing the public of enforcement activities and the program's goals and progress, as well as for receiving comments and concerns from the residents of the community. Selection of a specific method should be tailored to the characteristics and needs of each community. Opportunities for communication can include the following:

- **Traffic Safety Committee** – The formation of a local Traffic Safety Committee can increase community support for speed enforcement efforts.

- **Committee meetings and local government assemblies** – Participation may be as a speaker, a participant in a question-and-answer session, or an expert to support governmental activities.

- **Local radio, including public service announcements, traffic reporting, and paid media** – Use this platform to establish a recognized presence, answer residents' questions, and relate recent or upcoming activities. For example, officers may participate in the morning traffic report on various local radio shows, giving residents an opportunity to speak directly with law enforcement and relate issues that are important to them.

- **Local newspapers and newsletters** – Provide press releases on activities and outcomes of the program on a regular basis. Raise the reporters' interest by encouraging them to ride along and witness the speed enforcement activity in action.

- **A prominent spokesperson** – Recruiting a local sports figure or media icon to present the speed enforcement message on the various media outlets may provide an effective boost to the campaign.

- **Fliers and brochures** – These may be used to relate factual information and data, describe activities, and detail the goals and objectives of the program. Fliers and brochures may be handed out in various public venues or mailed to community residents.

- **Informational handouts provided by law enforcement personnel** – Handouts such as a ticket enclosure with information about the risks of speeding and the speed enforcement program may serve as educational material and be distributed while conducting speed enforcement activities.

- **Web sites** – The community and the law enforcement agency Web sites are useful venues to announce program activities, present answers to frequently asked questions, present findings and report program progress, and provide contact information.

- **Fixed billboards, variable message signs (VMS), and speed reader boards** – These may be used to publicize speed-related messages and eye-catching slogans. They may be located in construction zones and school zones, along highways and arterial roadways, and in residential communities.

- **School activities and local grassroots events** – These venues are helpful for face-to-face meetings with community residents. For example, a booth on the speed enforcement program might be set up at a community health fair or on back-to-school night at the local high school.

- **National or statewide slogans and events** – Capitalize on large-scale special enforcement activities and tailor messaging for your community.

- **Annual evaluations and reports** – Furnish partner agencies and members of the community with the program evaluation results in a periodic or annual report. This report may be a short leaflet or a more comprehensive report detailing activities, speed and crash data, and public opinion regarding the program.

ROLE OF ENFORCEMENT PERSONNEL

In addition to their enforcement role, officers may play a part in the media and communications plan. High-profile policing and inclusion of law enforcement in the media campaign send a powerful deterrent message (GRSP, 2002).

Many larger State, county, and city law enforcement agencies have a full-time public affairs unit that deals with public education and outreach. In some smaller organizations the traffic unit takes responsibility for keeping the public informed.

Public awareness of the speed enforcement program can be amplified through the methods of enforcement. For example, all of the jurisdictions participating in a centrally coordinated statewide program may use the same type of vehicle – dark sedans with the agency's name on the side and the statewide logo emblazoned in fiery letters – which enhances the impact by presenting a large unified force throughout the State. Some traffic enforcement units conduct enforcement in groups (sometimes known as a wolf pack) in order to raise visibility and enhance the effects of traffic enforcement.

The message that an officer presents when conducting a traffic stop, possibly including a handout on the risks of speeding, can effectively communicate the goals and objectives of the speed enforcement program and have a lasting impact on driver behavior.

DEFLECTING A NEGATIVE IMAGE IN THE MEDIA

Often a law enforcement agency will receive a negative response from the community regarding speed enforcement, especially if speed enforcement is viewed as a source of revenue. Any media campaign regarding speed enforcement should include an explanation of the rationale for setting speed limits, the risks of speeding, and the importance of increasing public safety. The message should be clear that speed enforcement is not conducted to generate revenue but rather to balance safety and mobility. In fact, the goal is not to detect and punish speeders but to deter speeding in the first place (NHTSA, 2005a).

Maintaining a constructive relationship with the local media outlets is another method to raise the level of positive messaging. Successful speed enforcement programs invite the press to learn more about the program, involve them in plans for future campaigns, and are receptive to traffic reporters and other media representatives about ideas for a media campaign.

MAINTAINING A MEDIA AND COMMUNICATION PROGRAM

A community may maintain the media campaign by publicizing evaluations of the program and releasing new information and statistics on a periodic basis. Information can be updated on a weekly, monthly, or annual basis via press releases, newsletters,

emails, Web sites, and school campaigns. It is important to make contact with the press on a regular basis and keep them focused on the topic.

CHAPTER 7. LEGISLATION, REGULATION AND POLICY

An effective speed enforcement program depends on the support of local policy makers, elected officials, judges, and prosecutors. Speed enforcement needs to be an integral part of the public policy agenda.

COORDINATING WITH POLICY MAKERS AND ELECTED OFFICIALS

The leadership and support of policy makers are critical to establishing the program's direction and emphasis, establishing a legal basis for the program, obtaining funding, and gaining support within the community.

The local city council or civic association often has input regarding the speed enforcement program. Council committees or civic organizations should include representatives from law enforcement, judiciary and prosecutors, the transportation department, schools, traffic safety engineers, healthcare, and the community. Regular meetings of statewide or local traffic safety organizations or committees are the best way for the various stakeholders to learn about the program successes and share ideas and information.

Policy makers and elected officials often feel a need to respond to complaints made by residents. One way to encourage policy makers to support the speed enforcement program is to invite them to local resident or community board meetings where community members will openly discuss their concerns regarding traffic safety in their neighborhood.

Local, regional, and statewide decision makers should be educated about the importance of enforcing speeds and the role of traffic safety in the realm of public health. The media officer or liaison might use public meetings of elected officials to brief them on the benefits traffic safety will have on the overall safety and welfare of the community.

ESTABLISHING A LEGAL BASIS FOR SPEED ENFORCEMENT PROGRAM

Some communities have enacted resolutions or ordinances that establish a legal basis for the speed enforcement program. When the program is established by resolution or statute in the local laws and ordinances of the community, it provides a solid foundation for the program and legitimizes it to the stakeholders. The resolution represents a clear statement that the governmental leaders recognize the seriousness of the speed-related safety problem and the need to address it by means of a speed enforcement program. It underscores the need for cooperation within the community and among agencies to accomplish the program's objectives. The governing body resolution or statutory basis is likely to include the following components:

- title,
- statements recognizing the problem and its characteristics,
- statements of the approach to countermeasures,
- statements of the desire to establish a program and guidelines for its management,
- resolution incorporating and approving the speed enforcement program, and

- an attachment containing the detailed speed enforcement operation plan.

An example of a model resolution and a list of key elements for a program plan are shown in Appendix F.

COORDINATING WITH JUDGES AND PROSECUTORS

Speeding violations need to be dealt with seriously and expediently to support law enforcement's focus on speed management. The judiciary and the prosecutorial branch in a community are responsible for adjudicating the citations issued by law enforcement. When establishing an enhanced speed enforcement program it is important to inform local judges and prosecutors regarding the potential for a temporary increase in number of citations issued and to educate them on the value of the program as well as the need to uphold the citations in the courts. Program managers can use the following approaches with judges and other court officials to ensure their buy-in and support:

- Invite the local hearing officer to join the officers in the field to see firsthand that the enforcement principles are sound and the citations are handled correctly.

- Provide the chief judge with an annual informational report that reviews various traffic enforcement issues, including fatalities, crashes, top 10 intersections, etc.

- Meet with local judges on a regular basis and provide them with measurable results of the traffic enforcement program.

- Meet with any newly assigned judges and prosecutors to educate them on the goals and progress of the program, stressing the importance of judiciary and prosecutorial participation in future success.

ESTABLISHING A PENALTY STRUCTURE FOR SPEEDING VIOLATIONS

The penalty structure may be established via the local legislature or within the courts; however, maintaining a consistent penalty structure for speeding violations enhances the validity of a speed enforcement program. Residents of the community should be well-informed regarding the penalties for different levels of violations. Licensing point demerit systems with graduated penalties for speeding, excessive speeding, and aggressive driving have helped reduce inconsistencies in treatment of violators (TRB, 1998). In some States the types of charges and penalties are structured on the basis of the level of speeding over the posted speed limit, with lower speeds resulting in civil charges and fines and higher speeds charged as criminal offenses.

Unlike traditional speed enforcement, ASE programs often treat speeding violations as civil infractions, like parking tickets, and this allows for more efficient administrative processing of the violations. In some jurisdictions the owner of the vehicle is held responsible, while in others the driver must be identified.

CHAPTER 8. PROGRAM EVALUATION

Program evaluation requires effort and commitment. Results identify successes and limitations of the program and can direct future actions.

The effectiveness of any speed enforcement program can be appraised by examining changes in driving behavior and speeding-related crash rates. The evaluation should review all aspects of the program (engineering, enforcement, and marketing and media) and address questions such as:

- To what extent were crashes reduced overall and at the high-priority locations?

- To what extent have speeds been reduced at high-priority locations and in general?

- Was staffing sufficient?

- Were the various agencies cooperative and responsive to the needs of the program?

- Was the choice of speed measurement equipment appropriate?

- Were the strategies for outreach and enforcement countermeasures effective?

- What changes are needed for current strategies and approaches?

REGULAR MONITORING OF SPEEDS, CRASHES, AND OTHER MEASURES

Speeds

Speed data collection should be ongoing throughout the course of the program. If possible, speed data should be collected seasonally and for complete 24-hour periods to account for variations in traffic patterns due to changes in weather patterns and by time of day. Measuring speeds at enforcement sites on a regular basis will assist the speed management team in recognizing whether enforcement needs to revisit a location periodically in order to maintain safe speeds. Of particular interest would be measured changes in the mean and 85th percentile speeds as well as dispersion of speeds along the enforced roadways throughout the course of the program. Collecting speed data will also allow program managers to calculate the percentages of vehicles traveling a certain speed over the speed limit. That is, program managers might be able to identify the percentage of vehicles exceeding various thresholds (e.g., 5, 10, or 15 mph over the posted speed limits). Tracking changes in these percentages will allow an assessment of how the program is reaching the most aggressive drivers and whether different strategies need to be adopted.

In addition to measuring speeds along the enforced roadways, program managers may periodically measure speeds along other roadways in the community to identify the presence of halo effects throughout the jurisdiction. Analysis of all these speed measures over time will provide law enforcement agencies with the information needed to make decisions regarding where to enforce and the level of enforcement required.

Crashes

Program managers may track crash and fatality rates for the selected roadways in the community to determine the percentage of increase or decrease in crashes at the enforcement sites prior to, during, and following enforcement activity. Tracking fatal crash rates (i.e., crashes per hundred or thousand daily vehicles at each site) might provide program managers with the tangible evidence needed to show policy makers and other interested stakeholders that enforcing speeds saves lives.

Citations

Although changes in speeds and crashes are the most objective measures of the effectiveness of a speed enforcement program, citation data could be used to support the statistical findings from the crash and speed analyses. At the onset of a speed enforcement program, speeding citations might increase on selected roadways or throughout the entire jurisdiction. As the program takes hold and the driving public becomes more aware of the program's objectives, it is expected that drivers will slow down and the need to write speeding citations will decrease. However, care should be taken when interpreting this change in the number of citations written over time. This change may reflect changes in program resources or priorities.

Crime Rates

If the budget allows, program managers may track the level of crime in the community prior to, during, and after an extended period of traffic and speed enforcement. The conspicuous presence of law enforcement within the community for speed enforcement might indirectly affect the overall crime rate. This type of information might play a key role in outlining the overall benefits of the program when communicating with policy makers and other stakeholders.

Although much of the statistics required for the speed and crash analyses is rudimentary, more advanced analyses of the data might require the use of special computer programs that calculate traffic statistics or require the services of a professional statistician or analyst. Agencies lacking in-house analysts may be able to get assistance from State or county police agencies, the Governor's Highway Safety Office, a local college or university, or a consultant.

GATHERING INPUT FROM THE COMMUNITY

Public perception of the speed enforcement program is crucial to its success, thus it is important to be aware of residents' knowledge, attitudes, beliefs, and concerns and to address them in the design and evaluation of the program. Residents should be able to convey their comments and concerns to speed enforcement program managers and believe that their opinions are being heard. Conversely, program managers might be able to use information and suggestions gleaned from the public to modify the program and increase its effectiveness.

There are a variety of ways to seek out the public's knowledge and opinion of the program. At the most rudimentary level, officers can knock on doors to speak with residents and gather feedback from the community. Program managers might also establish telephone hotlines for residents. Comments and concerns may also be expressed at public meetings, by email, or by postal mail.

Program managers or representatives from the law enforcement agency are encouraged to attend community events, and law enforcement agencies may also hold an open

house, allowing the public to interact with program managers, line officers, and various other agencies involved. Neighborhood association meetings can be used to give the program managers a chance to meet with and educate the public, assess their opinion of the program, and address questions. At these events a brief questionnaire can be distributed addressing the key evaluation issues associated with the public's perception of the program.

Conducting public attitude and awareness surveys is a more formal approach to assessing the effects of the speed enforcement program in the community and the public's opinion of the program. The surveys should be carefully designed to collect information regarding the effectiveness of the enforcement activity and the media campaign in terms of changes in knowledge, attitudes, and behavior of the driving public.

The number of respondents will vary depending on how the survey is administered. For example, an online multiple-choice questionnaire can be periodically posted on the law enforcement's Web site so that residents can use the link at their leisure. Alternatively, random phone surveys can periodically engage residents of the community, or one-page printed surveys can be distributed to residents at the local DMV customer service centers. Questions should focus on:

- the frequency of the respondent's travel throughout the jurisdiction;

- awareness of speed enforcement throughout the jurisdiction;

- opinion regarding the fairness of the enforcement level;

- awareness of the marketing and media campaign focusing on the speed enforcement program (knowledge of slogan, media spots, news print ads, etc.); and

- changes in the respondent's own driving behavior.

By distributing a survey of this type periodically, program managers can continually assess the success and limitations of the program in terms of public awareness.

If the budget allows, program managers may contract out to a market research firm or local university to conduct surveys on behalf of the speed management program. In this situation the topics are chosen by program management but the actual phrasing of the questions, methodology, administration, and analyses are performed by the contractor.

Finally, a focus group can provide a structured method to delve deeply into people's opinions and knowledge regarding the program. This method is labor intensive and, because it can only be conducted with up to 10 individuals per session, does not provide a broad representative sample of the community.

ANALYZING AND REPORTING PROGRESS

Periodic progress reports allow program managers another way to communicate with participating agencies and disseminate information to the residents of the community. Depending on its intended audience, a progress report can vary in length and level of detail but might include the following elements:

- **Introduction** – Identify program objectives and describe the program.

- **Procedures** – Describe the program procedures and identify responsibilities of agencies and key stakeholders.

- **Findings** – Present descriptive statistics of the findings regarding speeds, crashes, citations, citizen complaints, public attitudes and opinions, and feedback from any of the key stakeholders.

- **Lessons Learned** – Include details on any approaches that were not deemed successful and any information that can be used to improve the program or help to interpret findings.

Program managers might also want to include information regarding media hits, numbers of officers actively involved in the enforcement effort, and hours spent on enforcement for the period of time reflected in the report. Although objective statistics are important, it is important to note that raw numbers are not always a clear indication of the success of the program. For example, a rise in the number of crashes may be the result of changes in traffic patterns (increased vehicle miles of travel) or growth in the community. In reporting progress it is important to assess performance on the basis of the objectives and goals initially identified in the enforcement plan. If objectives are not met, a clear explanation of why the goals were not achieved should be included in any report documentation. It is important to include information on those activities that were attempted but did not succeed so that the same actions will not be repeated. A well-organized progress report will not only provide statistical evidence of the program's progress but will also provide a basis for decisions regarding future changes to the speed management strategies or marketing and media campaigns.

PROVIDING FEEDBACK TO PARTNER AGENCIES AND PARTICIPANTS

To effectively provide feedback to program team members as well as the residents of the community, a variety of outlets should be used in order to reach the greatest numbers.

The simplest approach is to occasionally call an individual or one of the cooperative agencies to recognize their contribution to the program and provide the agency with some results. In addition, regular team meetings can be used to provide team members and agencies with program information. Meetings with cooperating agencies might be the best way to review the various components of the program, disseminate findings, trade information, and plan strategies and events. Program managers can also make presentations regarding the program at community, neighborhood association, or other public meetings.

Progress reports can also be a very effective device for providing feedback. Law enforcement agencies can post the entire report on their Web sites, but it may also be useful for program managers to develop a one-page fact sheet highlighting key aspects of the program. This fact sheet can also be posted on the cooperating agencies' Web sites or distributed to the residents of the community as a brochure, in a community paper, or through the postal service.

Information regarding the status of the program can periodically be published via a media packet distributed to the local TV/radio stations and print media. This is an effective tool for distributing information at the beginning of any program as well as reviving interest later.

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Appendix A

Acknowledgments

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Appendix B

Resources

RESOURCES

Literature:

Beyond the Limits: A Law Enforcement Guide to Speed Enforcement - This National Highway Traffic Safety Administration publication provides information on speed enforcement techniques and program guidelines. Report DOT HS 807 802, 1992.

Guidelines for Developing a Municipal Speed Enforcement Program - The National Highway Traffic Safety Administration developed a short how to guide on developing a municipal speed enforcement program.
http://www.nhtsa.dot.gov/people/injury/enforce/program.htm

Handbook of Simplified Practice for Traffic Studies - Developed by the Center for Transportation Research and Education (CTRE) at Iowa State University this handbook describes simplified step-by-step procedures for conducting traffic studies including: Spot Speed, Traffic Volume Counts, Sight Distance, Crash Analysis, and School Zone Program. http://www.ctre.iastate.edu/pubs/traffichandbook/

Managing speed: Review of current practice for setting and enforcing speed limits - This Transportation Research Board Special Report Number 254 reviews practices for setting and enforcing speed limits on all types of roads and provides guidance to State and local governments on appropriate methods of setting speed limits and related enforcement strategies. http://onlinepubs.trb.org/onlinepubs/sr/sr254.pdf

Manual on Uniform Traffic Control Devices - The MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. http://mutcd.fhwa.dot.gov/

Web sites:

Center for Problem-Oriented Policing - A private nonprofit corporation established to advance the practice of problem-oriented policing and supported by the Office of Community Oriented Policing Services, U.S. Department of Justice**.** http://www.popcenter.org/

Community Policing Consortium - A partnership of police organizations funded by the U.S. Department of Justice to deliver community policing training and technical assistance to police departments and sheriff's offices. http://www.communitypolicing.org/

Federal Highway Administration - FHWA, an agency in the U.S. Department of Transportation, coordinates highway transportation programs in cooperation with States and other partners to enhance the country's safety, economic vitality, quality of life, and the environment. http://www.fhwa.dot.gov/

Insurance Institute for Highway Safety - The Insurance Institute for Highway Safety is a nonprofit research and communications organization funded by auto insurers. http://www.iihs.org/

International Association of Chiefs of Police - The IACP is a nonprofit organization of police executives and serves as a source for exchange of information among police administrators. http://www.iacp.org/

IACP Technology Clearinghouse - Source for technology related information that addresses all aspects of public safety. http://www.iacptechnology.org/

National Organization of Black Law Enforcement Executives - NOBLE represents State, local and federal law enforcement executives and provides training, research and consultation on criminal justice issues. http://www.noblenational.org/

National Center for Rural Law Enforcement - A division of the Criminal Justice Institute, University of Arkansas System provides many services to law enforcement, and primarily to the rural law enforcement community. One of the services provided to rural law enforcement is no cost Internet access and e-mail. http://www.ncrle.net/

National Highway Traffic Safety Administration - NHTSA, an agency in the U.S. Department of Transportation, sets and enforces safety performance standards for motor vehicles and equipment, provides grants to State and local governments as well as other partners to enable them to conduct effective local highway safety programs, and conducts research on traffic safety issues. http://www.nhtsa.dot.gov/

National Sheriffs' Association - A nonprofit organization dedicated to raising the level of professionalism among law enforcement leaders across the Nation. http://www.sheriffs.org/

National Traffic Law Center - Designed by the American Prosecutors Research Institute this site is a resource for legal and technical information and training and reference services on highway safety issues. http://www.ndaa-apri.org/apri/programs/traffic/ntlc_home.html

Office of Community Oriented Policing Services - A Federal office in the U.S. Department of Justice dedicated to advancing community policing. Information on grants, technical assistance, and numerous publications on problem-solving policing are available. http://www.cops.usdoj.gov/

Police Foundation - Conducts research on police behavior, policy, and procedure, and works to transfer to local agencies the best new information about practices for dealing effectively with a range of important police operational and administrative concerns. http://www.policefoundation.org/

NHTSA's Marketing and Communications Web Site – The Web site contains a toolkit with up-to-date information on the latest communications news, materials, and marketing techniques. The resources available to you can be used in several capacities and are built on two message platforms:

- Social-Norming - ***Stop Speeding Before It Stops You***
- Enforcement - ***Obey the Sign or Pay the Fine***

These messages were developed by a major marketing and research firm and target audience demographics of men and women ages 21 – 49. The toolkit was developed through the use of focus groups and state-of-the-art marketing research.

The NHTSA Communications Toolkit seeks to address speeding on two fronts. The enforcement message communicates the need to comply with posted speed limits and the real and appropriate penalties exist for non-compliance. Social-norming messages communicate the consequences that can occur in speeding-related collisions.   The two messages work together to reduce the incidents of speeding and speeding-related crashes. The toolkit is available at: *http://trafficsafetymarketing.gov*

Appendix C

Checklist for Sustaining a

Long-Term Speed Enforcement Program

CHECKLIST FOR SUSTAINING A

LONG-TERM SPEED ENFORCEMENT PROGRAM

Deterrence based on a single enforcement campaign will diminish over time. Enforcement alone will change short-term behavior but will not change underlying attitudes of the driving public. Maintaining the deterrent effect and making permanent changes to driver behavior requires long term and sustained enforcement activity which needs to be driven by hard evidence (speed and crash data) and educating the public on the dangers associated with speeding.

Communities that have succeeded in establishing and maintaining effective speed enforcement programs have indicated a number of key elements that contribute to the success:

☐ Emphasize the importance of traffic enforcement starting at the top of the chain of command. The head of the law enforcement agency must demonstrate to the line officers the importance of the traffic safety and the speed enforcement program within the agency's agenda and the surrounding community.

☐ Develop a strategic plan in writing that engages all levels of your law enforcement agency. A comprehensive plan includes clearly stated goals. Program results are evaluated on the basis of the terms stated in the strategic plan.

☐ Integrate the speed enforcement program goals and objectives with other law enforcement initiatives within the agency.

☐ Use speed and crash data to help assign resources to target locations in need of increased law enforcement.

☐ Bolster the foundations of the speed enforcement program by gaining the buy-in and cooperation of all constituents, including your local government, judges and prosecutors, legislature, and community stakeholders. Consider starting with popular issues such as school zones or construction zones and at locations where the safety risks are well documented.

☐ Coordinate with other agencies to enhance the effectiveness and reach of the speed enforcement program.

☐ Encourage the initiative and participation of line officers while planning and executing the speed enforcement program. The most effective campaigns involve input from line officers.

☐ Recognize individuals who contribute to the speed enforcement program. Evaluate the actions of your personnel and award those who excel.

☐ Encourage voluntary compliance within your community. Engage residents, keep the public informed, and educate the community to drive safely.

☐ Sustain the speed enforcement program by making it innovative, creative, and engaging for your staff and the community. Change the program's approach to reflect the changes within the community.

☐ Stay committed and focused. Once a program is in place, follow through on reaching your goals.

☐ Continuously evaluate your speed enforcement program using crash and speed data, review the results of the program in terms of your action plan, and determine what did and did not succeed.

☐ Agencies that are interested in establishing a speed enforcement program need not reinvent the wheel. Use the lessons learned from other communities.

Appendix D

Overcoming Obstacles to Implementing
An Effective Program

OVERCOMING OBSTACLES TO IMPLEMENTING

AN EFFECTIVE PROGRAM

ESTABLISHING A PROGRAM

A variety of obstacles may arise during the planning, coordination, and implementation phases of a speed enforcement program. Some of the difficulties an agency may encounter include obstacles to establishing a program, resistance from key participants, difficulties developing and sustaining an effective media and marketing program, issues with day to day field operations, and obstacles to program evaluation. Examples of common obstacles to establishing a program include:

- **Insufficient funding to purchase equipment** – An effective speed enforcement program requires a steady amount of funding for equipment and manpower. Often resources are set aside at the start of the program; however, the levels of funding do not always suffice. There are various methods by which a community could save on equipment purchases.

  - Consider carefully the types of equipment that will be useful for your agency and community. Consult with other experienced agencies and make purchases based on informed decisions.

  - The budgetary plan can be designed so that purchases are made in phases on an annual basis.

  - Equipment can be purchased in partnership with nearby communities to take advantage of volume discounts resulting in lower prices.

  - There are a variety of funding sources, including grant monies, for equipment purchases.

- **Trouble getting buy-in from local elected officials –** Engaging and educating local decision makers on the importance of the speed enforcement program to the community early and often can encourage support from elected officials.

  - Include local policy makers in the planning process.

  - Keep elected officials informed of the plan's progress.

  - Provide detailed information, preferably in writing, supported by data on speeds and crashes, on the benefits of the program.

  - Leverage the support of partner organizations and residents in the community on behalf of the speed enforcement program. Policy makers and elected officials often feel a need to respond to complaints made by residents.

- **Patrol officers think that traffic enforcement is not important** – Make traffic enforcement part of your agency's culture. Traffic enforcement is recognized as an important law enforcement component to prevent crime and promote safety in the community.

  - Obtain the support of the head of the law enforcement agency. If the Chief, Sheriff, or Commissioner recognizes the importance of traffic safety

in the community, other officers will be inspired to place the same value on the speed enforcement program.

- Remind your officers that small stops lead to big stops. Program managers should to stress to all officers the need to recognize that traffic enforcement is part of their duties and responsibilities in the community. Small traffic stops often reveal greater problems, violations or crimes, and the crime rate will generally drop in a community when a law enforcement agency intensifies its traffic enforcement campaign.

- Enlist the support of your personnel by keeping them informed about the plans for the speed enforcement program.

- Encourage officers' input while developing strategies and activities on behalf of the program.

COORDINATING KEY PARTICIPANTS

- **New judge comes to town and begins to overturn speeding citations** – Contact the new judge personally to request support on behalf of the speed enforcement program.

    - If there are other judges in the community who are supportive of the program, enlist their assistance in approaching the new judge to gain support.

    - Provide the judge with the background that led to the establishment of the program.

    - Indicate that the program is supported by objective speed, crash, and citation measures and that enforcement locations are selected on the basis of well-documented safety risks.

    - Present the results of previous program evaluations.

    - Keep the judge informed of the results of the enforcement program on a regular basis.

- **Community does not have a local traffic engineering office** – Traffic engineers provide an essential service to a speed enforcement program because of their work conducting speed measurements and analysis of safety problems. If there is no local traffic engineering office, it is essential that you find an alternative method to collect this data.

    - There may be alternative partners in nearby communities or consultants at the State or regional level that can also provide these services to the local government.

    - Recruit and coordinate with citizens interested in volunteering to conduct speed measurements on behalf of the community.

    - Train officers to conduct spot speed studies.

OPERATIONAL COMPONENTS OF THE PROGRAM

- **Law enforcement officers are diverted to other assignments** – Make traffic enforcement a priority within the law enforcement agency.

  - Use data on speeds and crashes in your community to prepare reports and disseminate information that emphasize the importance of the speed enforcement program and attest to the need for sufficient personnel and enforcement hours.

  - Make it clear to supervisors that traffic enforcement will increase safety and raise approval ratings in the community.

  - If there is a cut in resources try to integrate speed enforcement with other law enforcement initiatives. Develop different strategies that may be used to combat crime and increase traffic safety at the same time. For example, in some community road segments identified with both high levels of crime and high numbers of crashes can be the focus for increased enforcement. The visibility of law enforcement on those roadways results in lower rates of speeding and crashes as well as lower levels of criminal activity, which draws favorable attention to the speed enforcement program.

DEVELOPING A COMMUNICATIONS PROGRAM

- **Local newspaper states that the latest speed enforcement activities were developed in order to generate revenue** – The response to this type of accusation is to clarify that the exclusive focus of this law enforcement effort is on saving lives and improving safety in the community. Demonstrate that the enforcement sites are located where excessive speeds are of concern, using information from the analysis of both crash and speed data. Responses to queries regarding revenue will only degrade the status of the speed enforcement program.

- **Limited budget for marketing and media** – In some communities there will not be a large budget set aside for the media and marketing component of the speed enforcement program. Nonetheless this is an important element of the program, and there are different methods by which a community might implement a comprehensive media plan in spite of a limited budget.

  - Provide the local media with contact information for the individual assigned as the representative for the speed enforcement program. Information on the program objectives, results, and successes can serve as filler on occasions when local news is thin.

  - Issue press releases using your law enforcement personnel.

  - Request PSA time from local radio stations.

  - Use the local government or law enforcement agency Web site to present the goals and objectives of the program. Submit periodic updates on the results of the program.

  - Attend local council, civic association, and other organizational meetings to present information on the program.

- Get local residents involved in grassroots activities as a method to increase awareness of the program in the community.

- Hold local contests or public debates on the topic to get the community involved.

- Develop low-budget brochures and flyers.

- Work with schools to increase public awareness among teen drivers about the dangers of speeding.

- Enlist students at local high schools, colleges, or universities to work on the program as part of community service or related classes.

- Work with local businesses to gain support for the program.

- Use law enforcement officers' routine contact with the public as a media tool. Contacts with the public should emphasize the message of the program.

PROGRAM EVALUATION

- **Difficulties in accessing data to monitor crashes on a regular basis** – Access to data requires an organized records system. Ideally, data is filed appropriately with cross-references to a number of key pieces of information including, for example, crash date, location, patrol officer, crash type, and crash severity. If an agency's records system is not filed in an organized manner, assign resources to classify the data from a certain date forward.

  - Electronic data storage should be considered.

  - There may be additional sources for crash data outside of the community, including county or statewide databases. However, access to these sources might depend on coordination with the relevant agencies.

- **Difficulty reporting on progress** – The primary goal of a program evaluation is to identify changes due to the program, identify the program successes and failures, and report on progress to the community.

  - The evaluation process requires staff time; however, the report on program progress does not have to be voluminous. A comprehensive periodic evaluation includes location-by-location speed measurements prior to and during the program, crash data prior to and during the program, and an assessment of community awareness and public opinion.

  - The report may be as short as a page or two depending on the size of the program and the community. Agencies may obtain examples of evaluation reports from other law enforcement agencies or use these guidelines as a model.

  - Distribute the report to partner organizations and stakeholders to raise awareness in the community and ensure future support for the speed enforcement program.

Appendix E

Special Considerations for
Small or Rural Communities

SPECIAL CONSIDERATIONS FOR SMALL OR RURAL COMMUNITIES

Small and rural communities face a number of obstacles when establishing and sustaining a strong speed enforcement program. Assigning personnel solely to speed enforcement duties is a sizable step in developing a successful program. However, in some communities the establishment of a specialized traffic unit will require additional personnel and may not be feasible with existing funds and resources. In these instances, including speed enforcement within routine patrol duties may be enhanced by demonstrating a correlation between traffic safety and other enforcement activities. All officers within the agency must understand that part of their daily duties and responsibilities should be to enforce traffic laws.

BUDGETARY CONCERNS

Although some enforcement agencies might not have the budget or the means to enlist the aid of agencies to assist with the engineering and speed studies, marketing and media development, or public opinion surveys, they still can develop and sustain a strong speed enforcement program. The program managers might enlist the aid from other officers within the department as well as community volunteers. If funds are limited, program managers may use a grassroots approach to implement the program. Community events where large numbers of residents might gather may be used to distribute information regarding the program, educate the driving public, and promote support for the program. Officers can develop fliers or brochures to distribute to the community at county or health fairs, or via the local newspaper. Program managers can use local print, radio, and television media to reach a broader range of residents at one time. Local reporters often seek an interesting story that has community impact.

STAFFING CONCERNS

Where separate traffic engineering functions are not available, in-house staff can be trained to conduct spot speed studies along the targeted roadways to gather speed data for problem identification of sites in the community and to track the progress of the programs efforts. Basic computer programs such as Excel can be set up to calculate means, medians, and 85th percentile speeds and to record and track crashes. Alternatively, officers might be able to retrieve existing data from a State or county Department of Transportation (DOT). Staff at the State DOT can run queries based on instruction from the local agency, pulling data that would reflect crash rates in their specific community, or along targeted roads.

INTERJURISDICTIONAL CONCERNS

Smaller communities can team up with nearby jurisdictions to develop a collective approach to speeding problems on some roadways and to conduct speed enforcement along the same corridor. Using this approach, departments share the responsibility of enforcing speeds on selected roadways and can leverage the amount of speed enforcement. This working relationship involves communication on a regular basis to select target roadways and exchange information regarding the effectiveness of this approach.

Coordination may take place between State, county, and local agencies. Many States' approach to traffic safety is that the various State, county, and city jurisdictions work interdependently. However, some State law enforcement agencies work closely with many local communities, especially small jurisdictions that are trying to establish traffic safety programs. Often, State law enforcement agencies hold meetings with the more local agencies to publicize what officers are doing and exchange information. These meetings encourage cross-jurisdictional partnerships by showing how larger agencies can work with smaller agencies.

VOLUNTEERS

Once the program is developed and implemented, officers or program managers may recruit members of the community and various agencies by educating them on the program, its goals, most recent results, and ideas to expand it efforts. Community volunteers can be recruited and trained on how to conduct spot speed studies, conduct neighborhood speed watch programs, or assist in the marketing and media campaign by distributing information or developing brochures or Web site pages.

Appendix F

Example of Local Government Resolution To Establish a Residential Speeding Control Program

EXAMPLE OF LOCAL GOVERNMENT RESOLUTION TO ESTABLISH A RESIDENTIAL SPEEDING ENFORCEMENT PROGRAM

A RESOLUTION APPROVING A POLICY PERTAINING TO A RESIDENTIAL SPEEDING ENFORCEMENT PROGRAM.

WHEREAS, speeding in residential neighborhoods and through school zones is a concern of residents and [Local Government]; and

WHEREAS, the [Local Government] has established a number of programs designed to address residential speeding through a variety of physical measures, speed reminder devices, and police traffic enforcement; and

WHEREAS, while these programs have been shown to temporarily reduce speeding in residential neighborhoods, they are expensive, sometimes controversial within the neighborhoods, and often only change behavior for a short period of time; and

WHEREAS, the [Local Government] recognizes that since most speeding in neighborhoods is a direct result of the driving behavior of its residents, the best way to slow traffic down is for the residents to take responsibility for the driving behavior within their neighborhood; and

WHEREAS, the [Local Government] program policy and guidelines includes a program that provides a way for residents to work with the [Local Government] to address residential speeding in their own neighborhoods; and

WHEREAS, the [Local Government] desires to establish a program policy and guidelines that outlines how the [Local Government] will respond and what resources will be used to address residential speeding based upon that nature and extent of the speeding concern.

NOW, THEREFORE, BE IT RESOLVED BY THE [LOCAL GOVERNMENT], AS FOLLOWS:

That the Residential Speeding Enforcement Program and Policy, attached hereto and incorporated herein, is hereby approved.

PASSED AND ADOPTED at a regular meeting of the [Local Government], this DATE.

A detailed and comprehensive Residential Speeding Enforcement Program and Policy for the Local Government Resolution should follow the Resolution and include the following elements:

- An overview and policy statement detailing the background for developing the program as well as goals and objectives.

- Plans for a media and marketing campaign.

- Details on the expected contribution of community residents to the program.

- Precise description of the basis for allocations of resources by the local government.

- Details on the allocation of traffic engineering hours to conduct spot speed studies.

- Details on the allocation of law enforcement patrol hours.
- Details on the basis for installation of traffic calming devices.
- Details on the basis for installation of other speed zone signs and equipment.

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