OFFICE OF LEGISLATIVE OVERSIGHT

MEMORANDUM REPORT 2008-7

May 13, 2008

TO: County Council

FROM: Richard Romer, Legislative Analyst
Office of Legislative Oversight

SUBJECT: **Planning for the FY10 Evaluation of the County's Safe Speed Program**

State law (Chapter 15, 2006 Laws of Maryland), enacted in January 2006, authorizes the use of "speed monitoring systems" in Montgomery County. The law also mandates that the County Council report back to the General Assembly on the "effectiveness of speed monitoring systems in Montgomery County" on or before December 31, 2009.

The Council assigned the Office of Legislative Oversight (OLO) the task of conducting a study that will form the basis for the Council's report back to the General Assembly. This memorandum provides the Council with background information and OLO's proposed approach to reviewing the County's speed camera program.

PART A: INTRODUCTION

Authority. Council Resolution 16-260, *FY 2008 Work Program of the Office of Legislative Oversight,* adopted July 31, 2007.

Scope of Assignment. In 2006, the Maryland General Assembly enacted legislation (Chapter 15, 2006 Laws of Maryland) that authorizes the use of "speed monitoring systems" in Montgomery County. The law defines a speed monitoring system as technology that identifies and produces recorded images of vehicles traveling above a set threshold of miles per hour above the posted speed limit. The law enacted in 2006 sets forth criteria for the use of speed monitoring systems in the County and authorizes the issuance of citations to owners of vehicles exceeding the speed limit by more than 10 miles per hour.

The law includes a requirement that the Montgomery County Council report back to the General Assembly on the "effectiveness of the speed monitoring systems in Montgomery County" on or before December 31, 2009. The Council assigned the Office of Legislative Oversight (OLO) the task of conducting a study of the speed monitoring program that will form the basis for the Council's report back to the General Assembly.

This memorandum responds to the Council's request for background information and a proposed approach to reviewing the speed monitoring system. Specifically, it provides the Council with:

- A description of the authorizing legislation;
- An overview of the published research on the effectiveness of automated speed enforcement and a list of jurisdictions that currently use speed cameras;
- A brief status report on implementation of the County's Safe Speed program, as of February 2008; and
- OLO's recommended approach for conducting a study of the Safe Speed program, and a time line for completion of the Council's report back to the General Assembly.

Methodology. OLO gathered information for this memorandum report through document reviews, site visits, and interviews with staff from the Montgomery County Police Department (MCPD) and Office of Management and Budget, Chevy Chase Village, the City of Gaithersburg, and the City of Rockville. OLO also met with a representative from the Insurance Institute for Highway Safety and Affiliated Computer Services, Inc. (the County Government's speed camera vendor). Before finalizing this memorandum report, OLO circulated a draft to Executive Branch staff for technical review.

Acknowledgements. OLO received a high level of cooperation from everyone consulted during the course of preparing this memorandum report.

In particular, OLO greatly appreciates the information and insights provided by Biodun Ayo-Durojaiye, Captain John Damskey, Assistant Chief of Police Betsy Davis, Captain Thomas Didone, William German, Dory Hackey, Richard Harrison, Maurice Nelson, Alessandro Nuzzo, Neil Shorb, Arnold Silverman, Lieutenant Ron Smith, and Joseph Venuto from the Montgomery County Police Department; Alex Espinosa, Ed Piesen, and Alexandria Shabelski from the Office of Management and Budget; Chief of Police Terry Treschuk from the City of Rockville; Chief of Police John King from the City of Gaithersburg; and Chief of Police Roy Gordon from Chevy Chase Village.

In addition, OLO acknowledges the valuable information and assistance provided by Richard Retting from the Insurance Institute for Highway Safety; and Daniel Seid and Debbie Walker from Affiliated Computer Services, Inc. OLO would also like to thank the members of the Citizens Advisory Board for Transportation Issues (CABTI).

PART B: STATE LAW AUTHORIZING AUTOMATED SPEED LIMIT ENFORCEMENT

This section provides an overview of the State law that authorizes the use of automated speed monitoring systems in Montgomery County. It begins with a brief legislative history, followed by an overview of the provisions of the law, including:

- Definition and applicability;
- Enforcement;
- Program revenue; and
- Reporting requirements.

Legislative History. During the 2005 session, the General Assembly passed legislation (House Bill 443) authorizing Montgomery County's use of automated speed monitoring systems. In May of 2005, Maryland Governor Robert Ehrlich vetoed HB 443. Governor Ehrlich's letter informing the General Assembly of the veto is attached at ©1; the Governor's objections included that the law:

- Classified speeding as a civil instead of a criminal offense;
- Represented a movement towards the "...pervasive use of cameras by the government to monitor and regulate the conduct of its people;"
- Would negatively impact the District Court's workload; and
- Authorized use of automated speed monitoring without complete evidence of its safety benefits.[1]

When the General Assembly reconvened in early 2006, the General Assembly overrode the Governor's veto and the bill became law. The law went into effect on February 24, 2006. Table 1 (page 5) summarizes the time line for enactment of the authorizing legislation.

[1] Ehrlich, Robert L, Jr. "Governor's Veto Message." May 20, 2005. (http://mlis.state.md.us/2005rs/veto_letters/hb0443.htm)

Table 1: Time Line for Enactment of State Law Authorizing the Use of Speed Monitoring Systems in Montgomery County

Event	Date
2005	
House Bill 443 introduced	February 2005
House Bill 443 passed by Maryland General Assembly	April 8, 2005
Governor Ehrlich vetoes HB 443	May 20, 2005
2006	
General Assembly overrides the 2005 gubernatorial veto	January 25, 2006
Law took effect[2]	February 24, 2006

Source: Maryland Department of Legislative Services

Definition and Applicability. As enacted in early 2006, State law defines a "speed monitoring system" as a device with one or more sensors producing recorded images of motor vehicles exceeding the posted speed limit by at least ten miles per hour (§ 21-809(A)(5)). The recorded image is a photograph showing the rear of the motor vehicle, the license plate, and at least two time-stamped images of the vehicle passing a stationary object (§ 21-809(A)(4)).

The law allows for automated speed enforcement on roads in school zones or in residential districts with a maximum speed limit of 35 miles per hour or less (§ 21-809(B)(1)). The Transportation Article of the State Code defines residential areas as:

> ...an area that: (1) is not a business district; and (2) adjoins and includes a highway where the property along the highway for a distance of at least 300 feet is improved mainly with residences or residences and buildings used for business (§ 21-101(s)).

According to the State Department of Transportation, several four- and six-lane highways in the County would qualify as "residential areas" under the speed camera law, including Connecticut Avenue, Massachusetts Avenue, and Viers Mill Road.

The State law also authorizes local police departments in the County to implement automated speed enforcement programs. The law defines a "local police department" as the County Police Department, or any municipal police department in Montgomery County (§ 21-809(A)(2)(II)).

[2] Maryland Department of Legislative Services. "Effective Dates: 2005 Overridden Vetoed Legislation." http://mlis.state.md.us/other/EffectiveDates/2006_misc.pdf#override

Enforcement. State law authorizes a maximum fine of $40 for a speed camera citation issued to owners of those vehicles exceeding the speed limit (§ 21-809(C)(2)). The citation is a civil penalty and is treated as a non-moving violation. The civil penalty is not recorded on the owner's driving record by the State Motor Vehicle Administration (MVA), no license "points" are assigned, and insurance providers are not notified (§ 21-809(H)). However, if the penalty is not contested or paid, the law authorizes the MVA to refuse to register, refuse to transfer the registration, or suspend the registration of the owner's vehicle.

The law requires the County to mail citations to owners no later than two weeks (14 calendar days) after the alleged violation. If the vehicle is registered in another state, the County must mail the citation within 30 days. The County must mail the citation to the registered owner (or lessee of six months or more) of the motor vehicle (§ 21-809(A)(3)). This citation must include:

- Name and address of the registered owner;
- Registration number of the motor vehicle involved;
- Location of the violation;
- Date and time of the violation;
- Copy of the recorded image of the violation;
- Type of violation charged and the civil penalty imposed;
- Date the civil penalty must be paid; and
- Statements regarding the appeal process (§ 21-809(D)(1)).

The administration of the issuance, trial, and payment of citations is delegated by law to the Chief Judge of the District Court, in coordination with the Department of Finance and local police departments (§ 21-809(I)).

A person who receives a citation may pay the citation directly to the Montgomery County Department of Finance or choose to stand trial in District Court. By law, the "recorded image" or photo from a speed monitoring system is admissible in court, along with the speed monitoring system operator's training certificate and the proof of the automated enforcement system's calibration (§ 10-311(B)). In defense, the alleged violator may file an affidavit with the District Court certifying that he/she was not the driver of the photographed vehicle at the time of the violation or that the vehicle was stolen (§ 21-809(F)(1)).

Program Revenue. State law restricts the revenues generated from the speed camera program to "local expenditures for related public safety purposes, including pedestrian safety programs" (§ 26-401(1)). By law, the revenues from speed camera citations can only be used to supplement, not replace existing public safety expenditures. The law also states that if a contractor operates a speed camera, the contractor's fee may not be contingent on the number of citations issued or paid (§ 21-809(J)).

Revenue from uncontested citations goes directly to Montgomery County. Court-contested citations are paid directly to the District Court instead of the County (§ 7-302(e)(2)). Revenue collected by the District Court is remitted to the Comptroller and distributed into transportation-related funds (§ 7-302(e)(3)).

Requirement for Report from the Montgomery County Council. The reporting requirement outlined at the end of the State law reads as follows:

> SECTION 5. AND BE IT FURTHER ENACTED, That the Montgomery County Council shall report to the General Assembly on or before December 31, 2009, in accordance with § 2-1246 of the State Government Article, on the effectiveness of speed monitoring systems in Montgomery County.[3]

The State Government Article section referenced above (§ 2-1246) outlines the process for submitting and distributing reports to the General Assembly.

PART C: RESEARCH ON THE USE OF SPEED CAMERAS IN OTHER PLACES

This part of the report provides an overview of automated speed enforcement, including a summary of the research on its implementation and effectiveness.

- **Section 1** provides an introduction to automated speed enforcement technology;
- **Section 2** contains jurisdictions identified by the Insurance Institute for Highway Safety as using some form of automated speed enforcement program;
- **Section 3** reviews highlights from the published research on the "effectiveness" of speed cameras and two studies on the administration of automated speed enforcement programs;
- **Section 4** presents the results of surveys on public awareness and support of speed cameras; and
- **Section 5** summarizes policy issues in implementing automated speed enforcement programs.

1. Introduction to Automated Speed Enforcement Technology

According to the National Highway Traffic Safety Administration (NHTSA), speeding was a contributing factor in 31 percent of all fatal crashes in the United States during 2006. Of the 13,543 fatalities from speeding-related crashes in 2006, approximately 87 percent occurred on roads that were not interstate highways.[4]

[3] Section 5, Chapter 15, 2006 Laws of Maryland.
[4] National Highway Traffic Safety Administration. "Traffic Safety Facts: 2006 Data." Department of Transportation. 2007.

Local governments across the country use three general approaches to reducing vehicle speeds, automobile collisions, and speed-related injuries and fatalities:

- **Education** – informing the public of the dangers of excessive speed and/or the likely presence of police enforcement;
- **Engineering** – designing and altering roadways and intersections to encourage or require drivers to reduce their speeds and/or increase safety for non-motorists; and
- **Enforcement** – policing roadways and issuing warnings and/or citations to motorists that violate traffic laws.[5]

Automated Enforcement. Automated enforcement is the use of technology to enforce traffic laws. To date, the most common form of automated enforcement implemented in the United States is red light cameras, which detect and photograph vehicles that commit red light violations. According to the Insurance Institute for Highway Safety (IIHS), about 300 communities in the United States use red light cameras (as of January 2008).[6] Montgomery County began automated enforcement of red light laws in 1997.

Automated speed enforcement (speed cameras) is a less commonly used form of automated enforcement used to address vehicle speeds, automobile collisions, and speed-related injuries. Speed cameras detect the speed of motor vehicles and photographs vehicles exceeding a preset speed threshold. Jurisdictions use speed cameras to supplement traditional speed enforcement programs, such as the use of radar or laser by police officers.[7]

The use of automated speed enforcement does not eliminate the need for personnel. In particular, automated speed enforcement technology requires the hiring of trained personnel to set up, maintain, and monitor the equipment.[8] In addition, personnel are required for the issuance of citations and the collection of revenue.

Mobile vs. Fixed Speed Monitoring Systems. There are two forms of speed monitoring systems: mobile and fixed.

Mobile and fixed speed camera systems both consist of a radar and camera system. A mobile system is equipped to a marked van, which can be moved around to different pre-determined enforcement sites. Fixed cameras operate around the clock from a single location. Mobile camera systems require shift staffing by an on-site operator, while fixed cameras require staff visits for purpose of equipment monitoring and data downloads.

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[5] National Highway Traffic Safety Administration. "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries." U. S. Department of Transportation. October 1999.

[6] Insurance Institute for Highway Safety. "Communities Using Red Light and/or Speed Cameras." January 2008.

[7] Insurance Institute for Highway Safety. "Automated Enforcement Laws." January 2008.

[8] Delaney, Amanda, Heather Ward and Max Cameron. "The History and Development of Speed Camera Use." Monash University. September 2005.

2. Jurisdictions with Automated Speed Enforcement Programs

While automated speed enforcement has been used in the United States for about 20 years, the number of jurisdictions using speed cameras has remained relatively limited.

According to the Insurance Institute for Highway Safety (IIHS), approximately 40 communities in over a dozen states and the District of Columbia currently use speed cameras.[9] Table 2 (page 10) lists the jurisdictions identified by IIHS as using some form of automated speed enforcement, as of January 2008.

Most of the jurisdictions identified implemented automated enforcement programs in the past decade. The Town of Paradise Valley, Arizona began its program in 1987, and is the oldest program in the United States. As of April 2008, Montgomery County is the only jurisdiction in Maryland and one of only a handful of East Coast jurisdictions currently using the technology.

[9]Insurance Institute for Highway Safety, January 2008.
(http://www.iihs.org/research/topics/auto_enforce_list.html)

Table 2: Jurisdictions with Speed Camera Programs, January 2008

State	Jurisdiction	Date Began	Responsible for Citation	Fine	Points on Driver's License
Arizona	City of Chandler	2007	Driver	$190-495	Yes
	City of Mesa	1996	Driver	$150-490	Yes
	Town of Paradise Valley	1987	Driver	$195-225+	Yes
	City of Phoenix	2004	Driver	$171-239	Yes
	Pinal County	2007	Driver	$135-285	Yes
	Town of Prescott Valley	2006	Driver	$155-460	Yes
	City of Scottsdale	1997	Driver	$145-210	Yes
	Town of Star Valley	2007	Driver	$122-510	Yes
	City of Tempe	2007	Driver	$161	Yes
	City of Tucson	2007	Driver	$191-366	Yes
California	City of San Jose	1996	Owner	$99-350	No
Colorado	City of Boulder	1998	Owner	$40-80	Yes*
	City of Denver	1998	Owner	$40-80	Yes*
	City of Fort Collins	1996	Owner	$40-80	Yes*
District of Columbia		2001	Owner	$30-200	No
Illinois	Statewide (work zones)	2006	Driver	$375	No
Iowa	City of Davenport	2006	Owner	$45-150	No
Louisiana	Town of Broussard	2007	Owner	Implementing	No
	City of Lafayette	2007	Owner	$25-200	No
Maryland	**Montgomery County**	**2006**	**Owner**	**$40**	**No**
Massachusetts	Town of Blackstone	2007	Driver	**$100-450	Yes
New Mexico	City of Albuquerque	2004	Owner	$100-400	No
North Carolina	City of Charlotte	2003	Owner	$50	No
Ohio	City of Akron	2005	Owner	$150-250	No
	City of East Cleveland	2006	Owner	$95	No
	City of Northwood	2005	Owner	$90-150	No
	City of Toledo	2001	Owner	$95	No
Oregon	City of Beaverton	1996	Owner	$125-823	No
	City of Medford	2002	Owner	$145-427	No
	City of Portland	1996	Owner	$97-427	No
Tennessee	City of Chattanooga	2006	Owner	$50	No
	City of Jackson	2008	Owner	Implementing	No
	City of Selmer	2007	Owner	$50	No
Washington	City of Bremerton	2007	Owner	$189	No
	City of Burien	2007	Owner	$101	No
	City of Monroe	2007	Owner	Implementing	No
	City of Tacoma	2007	Owner	$101	No

Source: Insurance Institute for Highway Safety; county or municipal interviews and/or websites

* According to the Colorado law, six points are given if the vehicle's speed is 25 mph over the speed limit.

**The Town's minimum fine is $100.00 for first 10 miles per hour over the posted speed limit, and increases $10 for each additional mile.

A review of the jurisdictions identified show some variations in how the automated speed enforcement technology is implemented, including:

- The locations where speed cameras are deployed;
- The person to whom the citation is issued; and
- The type and severity of penalty.

Location. Most of the jurisdictions identified focus speed camera use on enforcement of the posted speed limit in school zones and on residential streets with speeds limits of 30-50 miles per hour.[10] However, a few jurisdictions use speed cameras on roads with higher speeds. For example:

- The District of Columbia deploys speed cameras in about six dozen sites on residential streets, major arteries, and highways.[11]
- In 2006, Scottsdale, Arizona conducted a nine-month pilot program using fixed speed cameras on a portion of the 65 miles per hour Loop 101 Freeway, which has since transferred to the Arizona Department of Public Safety.[12]
- Illinois uses speed cameras statewide in highway work zones.

Party Responsible for Citation. Automated speed enforcement programs differ in terms of who is responsible for the citation when a motor vehicle exceeds the posted speed limit. Jurisdictions that take the photograph of the back of the vehicle issue a citation to the registered owner of the vehicle, whereas jurisdictions that take a frontal photo have the option of sending a citation to the driver of the vehicle. Jurisdictions, such as City of Tucson, report using driver's license photos to aid in the issuance of citations to drivers of violating vehicles for their program.

Penalty. The level of the penalty for the citation also varies by jurisdiction. Most jurisdictions use a graduated system of fines that increase with the number of miles per hour in excess of the posted speed limit. Montgomery County is among the minority of places that issue a flat fine for a citation.

Almost all of the jurisdictions identified also treat speed camera citations similar to a non-moving violation, meaning that no points are assigned to the license of the owner of the vehicle cited. As of January 2008, only the interviewed jurisdictions in Arizona, Colorado, and Massachusetts assign license points to speed camera citations.

[10] Rodier, Caroline, Susan Shaheen, and Ellen Cavanagh. "Automated Speed Enforcement in the US: A Review of the Literature on Benefits and Barriers to Implementation." Transportation Research Board. July 2007.
[11] Metropolitan Police Department. "Automated Speed Enforcement." District of Columbia. website.
[12] Washington, Simon, Kangwon Shin and Ida Van Shalkwyk. "Evaluation of the City of Scottsdale Loop 101 Photo Enforcement Demonstration Program." Arizona State University. January 11, 2007.

3. Highlights of Research on the "Effectiveness" of Speed Cameras

Research studies evaluating automated enforcement programs focus on changes in speed and collisions as measures of effectiveness. While the methods of assessing the effectiveness of these programs on vehicle speeds and collisions vary, the most common types of approaches are:

- **Analyses of speed and collision statistics over time** evaluate changes in data such as average and median speeds, speed-related collisions involving injuries or death, and numbers of violations;
- **Before and after comparisons** compare speed and collision data at enforcement sites before the automated enforcement program began and after a set period of implementation; and
- **Enforcement vs. non-enforcement site studies** compare speed and collision data between enforcement sites and control sites.

In addition, there are a handful of published studies that examined the administration of speed camera programs and/or surveyed public awareness and opinions about automated speed enforcement.

NHTSA Research. The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) reviewed about 90 English language studies of automated enforcement programs from 16 different countries. From this review, NHTSA selected the 13 highest quality empirical studies and analyzed the findings.[13] Table 3 lists the locations, researchers, and type of automated speed enforcement deployment used in these 13 programs.

Table 3: Studies of Automated Speed Enforcement Programs Analyzed by NHTSA

Location of Intervention	Study Year	Type of Deployment
New South Wales, Australia	2005	Fixed
Charlotte, North Carolina, USA	2005	Mobile
Friesland Province, the Netherlands	2005	Mobile
United Kingdom	2004	Fixed and Mobile
Cambridgeshire, United Kingdom	2004	Fixed
Great Britain, United Kingdom	2004	Fixed
South Wales, United Kingdom	2003	Mobile
Queensland, Australia	2003	Mobile
British Columbia, Canada	2002	Mobile
British Columbia, Canada	2000	Mobile
Christchurch, New Zealand	2000	Mobile
Norway	1997	Fixed
Victoria, Australia	1992	Mobile

Source: National Highway Traffic Safety Administration

[13] The study selection was based on a two-phase process, which can be found on ©4.

In sum, NHTSA found that all 13 studies found significant reductions in estimated crashes following the implementation of automated speed enforcement programs.[14] In addition, about half of the studies also documented reductions in speeds.

NHTSA found a 20-25% reported reduction in crashes resulting in injuries at fixed camera sites.[15] The reported reductions for mobile enforcement programs were more variable, with about 9-18% reductions in all crashes, and a 21-51% reduction in crashes resulting in injuries. NHTSA concluded that this variability is possibly a reflection of the variable nature of mobile enforcement itself. While the studies did not indicate there was evidence of sudden braking or speed changes resulting in collision increases due to automated speed enforcement, there was a measured shifting of traffic to other routes.[16]

Sample Case Studies on the Impact of Speed Cameras. Case studies on the impact of automated speed enforcement on driver behavior show reductions in speed, collisions, and injuries on roadways and/or intersections targeted for enforcement. Tables 4 and 5, which begin on the next page, summarize the key outcomes on 11 evaluations of speed camera programs in the United States and other countries. The tables organize the studies by country, and further by what type of speed camera program was implemented.

[14] NHTSA notes that all of the studies examined attempted to control for outside factors that may affect study results. According to NHTSA, if these outside factors of "natural experiments, such as an automated speed enforcement program, are not accounted for they may introduce inaccuracies in estimates of safety improvements from the program.

[15] NHTSA examined 13 out of a potential 90 studies from 16 countries, after controlling for study quality.

[16] Decina, Lawrence, Libby Thomas, Raghavan Srinivasan, and Loren Staplin. National Highway Traffic Safety Administration. "Automated Enforcement: A Compendium of Worldwide Evaluations of Results." September 2007.

Table 4: Key Findings of United States Speed Camera Case Studies

Study Completed	Year Published	Key Findings
Residential Streets and School Zones		
Portland, OR[17]	1997	• Reduction of 9% in average speeds of vehicles • Reduction of 27% of vehicles exceeding the posted speed limit by more than 10 miles per hour
Beaverton, OR[18]	1997	• Reduction of 2% in average speeds • Average speeds on the streets with photo radar were 5% lower than on streets without photo radar after two weeks
Streets and Highways		
Washington, DC[19]	2002	• Reduction of 14% in average speeds • Reduction of 82% in the proportion of drivers traveling more than 10 miles per hour above the speed limit
Charlotte, NC[20]	2005	• Reduction of 55% in the percentage of vehicles exceeding the speed limit by 10 miles per hour • Reduction of 12% in total collisions on the enforced roadways
Highways		
Scottsdale, AZ[21] (IIHS Study)	2008	• Reduction of 7 miles per hour in average speed • Reduction in the percent of drivers exceeding the speed limit by 11 mph or more (76 mph+) during the enforcement period • Reductions in average speeds 25 miles away in Glendale, Arizona
Scottsdale, AZ[22] (ASU Study)	2007	• Reduction in total number and severity of collisions • Increase by 33% in rear-end collisions

[17] Cities of Beaverton and Portland. "*Photo Radar: Demonstration Project Evaluation*, Beaverton and Portland, OR." 1997.
[18] Ibid.
[19] Retting, Richard and Charles Farmer. "Evaluation of Speed Camera Enforcement in the District of Columbia." Insurance Institute for Highway Safety. November 12, 2002.
[20] Cunningham, Christopher, Joseph Hummer and Jae-Pil Moon. "An Evaluation of the Safety Affects of Speed Enforcement Cameras in Charlotte, NC." North Carolina State University. October 2005.
[21] Retting, Richard, Sergey Kyrychenko, and Anne McCartt. "Evaluation of Automated Speed Enforcement on Loop 101 Freeway in Scottsdale, Arizona." Insurance Institute for Highway Safety. January 2008.
[22] Washington, Simon, Kangwon Shin and Ida Van Shalkwyk. "Evaluation of the City of Scottsdale Loop 101 Photo Enforcement Demonstration Program." Arizona State University. January 11, 2007.

Table 5: Key Findings of Speed Camera Case Studies from Other Countries

Study Completed	Year Published	Key Findings
Fixed Cameras		
France[23]	2008	• Reduction of 5 kph (3 mph) in average speed during the study period and 6-11% on all roads since 2002 • Reduction of 15% of the percent of drivers exceeding the speed limit by 10 kph (6 mph) from 2003-2005 • Reduction of 80% of the percent of drivers exceeding the speed limit by 30 kph (18 mph) from 2003-2005 • Reduction of 31% in highway fatalities decreased by 31%, with an estimated 75% of this decline credited to automated enforcement from 2003-2005
New South Wales, Australia[24]	2005	• Reduction of 2-6% reduction in average speeds • Reduction of 5-21% in the number of vehicles exceeding the speed limit • Reduction of 86-88% in vehicles exceeding the speed limit by 10 kph or more • Reduction of 19.7% in reported collisions • Reduction of 22.8% in injury/fatal collisions
Norway[25]	1997	• Reduction of 20% reduction in "injury accidents" • No statistically significant decrease in "property damage only" accidents
Mobile Cameras		
Friesland Province, Netherlands[26]	2005	• No statistically significant decrease in average speed • Reduction of 21% in collisions with injury
Queensland, Australia[27]	2003	• Reduction of 18% in total collisions • Reduction of 22% in hospitalization crashes • Reduction of 11-15% reduction in collisions among spillover sites

[23] Insurance Institute for Highway Safety. "Special Issue: Speed." *Status Report*. Vol. 43, No.1. January 31, 2008.
[24] ARRB Group. "Evaluation of the Fixed Digital Speed Camera Program in NSW." Roads and Traffic Authority. New South Wales, Australia. 2005.
[25] Elvik, Rune. "Effects on Accidents of Automatic Speed Enforcement in Norway." Transportation Research Record. Vol. 1595. 1997.
[26] Goldenbeld, C. and I. van Schagen. "The effects of speed enforcement with mobile radar on speed and accidents: An evaluation study on rural roads in the Dutch province of Friesland." *Accident Analysis and Prevention*. No. 37. 2005.
[27] Newstead, S.V. and M.H. Cameron. "Evaluation of Crash Effects of the Queensland Speed Camera Program." Report No. 204. Accident Research Center, Monash University. 2003.

In sum, the various studies evidence that automated speed enforcement programs led to reductions in vehicle speed, reduction in the number of drivers exceeding the speed limit, and reductions in the number of collisions. Some highlights include:

Reduction in Speed. Six of the seven studies that evaluated whether the use of speed cameras affected average vehicle speed documented a reduction in the enforcement zones. The percent reduction in average vehicle speed ranged from 2-14%.

Reduction in Vehicles Exceeding the Speed Limit. All six studies that evaluated whether the use of speed cameras affected the number of vehicles exceeding the speed limit document a reduction in enforcement zones. The data showed a 27-88% percent reduction in vehicles exceeding the speed limit by more than 10 mph.

Reduction in Collisions. All seven studies that evaluated whether the use of speed cameras affected the number/percent of collisions found an overall reduction in the number of collisions. However, the ASU study of Scottsdale's highway cameras showed a 33% increase in rear-end collisions.

Studies on Administration of Speed Camera Programs

The findings of two studies that reviewed the administration or cost of automated enforcement programs are summarized below.

City of Albuquerque, NM. The City of Albuquerque's Office of Internal Audit and Investigations examined the operational and financial aspects of the City's Safe Traffic Operations Program (STOP) from FY 2005-07, which encompasses both the red light and speed camera programs. This examination reviewed the location of speed cameras; reports to the Mayor and City Council; staffing; approved budgets; program policies and procedures; and ongoing revenues and expenditures. Key study findings include:

- As of July 2007, the program is staffed by three full-time and six part-time sworn police officers, which are shared between the red light and speed camera facets of the program;
- From October 2004 to August 2007, the City issued 62,476 fixed speed citations (19 locations) and 18,120 speed vans citations (3 speed vans); and
- From FY 2005-07, the program generated $10.6 million in total revenue, and $5.8 million in net revenue.[28]

[28] City of Albuquerque. "Special Audit Report of Safe Traffic Operations Program." Office of Internal Audit and Investigations. Report 07-112. September 2007.

City of Beaverton, OR. The City of Beaverton's February 2007 state-mandated report to the Oregon legislature reviewed the speed camera program's administration and impact on traffic safety. The report also discusses the deployment of speed cameras and the procedure for processing citations. Key findings include:

- In 2005, 67% of Beaverton residents surveyed supported speed cameras on residential streets and neighborhoods;
- In 2006, the City captured 12,542 violations and issued 7,176 citations;
- Since the program began in 1996, 78% of speeders detected by the City's speed camera vans are not Beaverton residents; and
- From January 2003 to December 2006, about 4% (1,195) of speed camera citations were dismissed in court.[29]

4. Public Awareness and Support

Public opinion surveys can be used to assess driver beliefs about automated speed enforcement. While surveys are not a direct measure of speed camera programs, they do measure changes in driver attitudes, and are relevant to assessing "effectiveness" In fact, researchers cite favorable public opinion and public acceptance as the aspect that can "make or break" an automated enforcement program.[30]

A 2002 National Highway Traffic Safety Administration nationwide study examined the public's awareness and perceptions of automated enforcement. This study of 4,000 drivers over the age of 16 found:

- 78% believed that automated enforcement is a good idea to identify vehicles speeding in a school zone;
- 68% supported the identification of vehicles going more than 20 miles per hour over the speed limit;
- 84% felt it would be very acceptable to use photo enforcement in locations where there have been many accidents;
- 56% felt speed camera programs should take a picture of the front of the vehicle so the specific driver can be identified, whereas 32% drivers thought photos should be taken of the rear license plate only;
- 41% felt that violators should be fined; and
- 41% felt that violators should receive both a fine and points.

[29] Adlard, Linda and Holly Thompson. "Photo Radar Speed Enforcement Report to the Legislature Process and Outcome Evaluation." City of Beaverton. February 2007.
[30] Turner, Shawn and Amy Polk. "Overview in Automated Enforcement in Transportation." ITE Journal. June 1998.

Public Opinion in Maryland. In the fall of 2006, the American Automobile Association (AAA) Mid-Atlantic conducted a telephone survey of 1,000 licensed drivers in the region, including 250 in Maryland.[31] The poll results of drivers in Maryland showed that:

- 74% believe police should use speed cameras on neighborhood streets and in school zones;
- 71% believe that all counties in Maryland should be allowed to use speed cameras; and
- 58% would like to "...see speed cameras used on highways and major roads in Maryland."[32]

Case Studies on the Public Opinion of Speed Cameras. Public opinion surveys of automated speed enforcement programs show a majority of those polled view speeding as a problem and support the use of automated enforcement. Table 6 (on page 19) summarizes the results of three surveys of speed camera programs in the United States.

[31] AAA Mid-Atlantic. "Legislative Issue Polls: Maryland." 2007.
[32] AAA Mid-Atlantic. "Montgomery County's Automated Speed Camera Program Wins Support of Motorists and AAA Mid-Atlantic." March 12, 2007.

Table 6: Case Studies of Speed Camera Public Opinion

Scottsdale, Arizona	A 2006 survey by Behavior Research Center Inc. interviewed 407 residents of Scottsdale. The survey found that 75% of Scottsdale residents support automated enforcement, and 70% support Scottsdale's freeway speed camera program. A majority of respondents agreed that speeding is a serious problem.[33] A 2006 IIHS telephone survey of 300 Scottsdale drivers showed that 77% of drivers supported the use of speed cameras on Loop 101 during the enforcement period.[34]
Washington, DC	A 2002 IIHS telephone survey of 500 DC residents found that 51% of drivers favored speed cameras The survey also found that support was higher among those who had not received a citation (64%) than those who had (44%). Support was also higher among drivers who said speeding was a problem (59%) than among those who said it was not (35%).[35]
Charlotte, North Carolina	A 2004 University of North Carolina at Charlotte poll found a 67% acceptance rate of the speed camera program. The poll also found that 70% of respondents believed speeding was a "major problem contributing to collisions along roadways."[36]

[33] City of Scottsdale, Arizona. "Loop 101 Photo Enforcement." Behavior Research Center Inc. City Council Report. January 16, 2007.
[34] Retting, Richard, Sergey Kyrychenko, and Anne McCartt. "Evaluation of Automated Speed Enforcement on Loop 101 Freeway in Scottsdale, Arizona." Insurance Institute for Highway Safety. January 2008.
[35] Retting, Richard and Charles Farmer. "Evaluation of Speed Camera Enforcement in the District of Columbia." Insurance Institute for Highway Safety. November 12, 2002.
[36] Cunningham, Christopher, Joseph Hummer and Jae-Pil Moon. "An Evaluation of the Safety Affects of Speed Enforcement Cameras in Charlotte, NC." North Carolina State University. October 2005.

5. Issues in Implementation

A theme in the literature on automated speed enforcement is that the overall "success" of these programs depends on the details of program implementation and whether residents perceive speeding as an important community problem.[37] Jurisdictions that implement automated enforcement programs generally need to address four policy issues:

- Collection of revenue from automated enforcement;
- Location of the speed cameras;
- Legality of speed cameras; and
- Public opinion and attitudes.

Collection of Revenue from Automated Enforcement Programs. Automated enforcement programs have the potential to raise a significant amount of revenue through the collection of fines. A 2005 study of speed camera programs in the *Journal of Public Health Policy* concluded that the primary controversy over speed cameras is the claim that the goal of speed cameras is to raise revenue rather than increase safety.[38]

According to a 2006 Texas A&M University study of automated enforcement programs, jurisdictions can promote the implementation of an automated enforcement program on public safety improvement grounds by:

- Locating enforcement sites where there is a history of speed-related crashes or excessive speeding, and on roads where the speed limit has been recently engineered;
- Using the revenue generated from the program to cover the program's costs;
- Tying the surplus revenue to a special revenue fund for transportation or safety programs;
- Sending citations promptly to violators; and
- Setting the penalty high enough to have a deterrent effect, but low enough to not erode public acceptance of the program.[39]

[37] Turner, Shawn and Amy Polk. "Overview in Automated Enforcement in Transportation." ITE Journal. June 1998.
[38] Delaney, Amanda, Heather Ward, Max Cameron, and Allan Williams. "Controversies and Speed Cameras: Lessons Learnt Internationally." *Journal of Public Health Policy.* Vol. 26, No. 4. 2005.
[39] Willis, David. "An Effectiveness and Policy Review." Center for Transportation Safety. Texas A&M University. May 2006.

Location of the Speed Cameras. Jurisdictions decide the number and location of speed cameras. The authorizing legislation for use of automated speed enforcement typically limit the use of cameras to specific roadways, such as residential streets and/or school zones. Controversy surrounding the location of automated enforcement includes:

- The use of speed cameras on major arteries or downhill slopes;
- Little or no warning of the presence of a speed camera;
- Locations with low volumes of traffic and no history of speed-related crashes; and
- Locations where the speed limit is set too low or the speed limit changes suddenly.

The 2006 Texas A&M University study stated that using speed cameras in these instances generates public skepticism about the motives for their use and leads to accusations that the cameras are being used to generate revenue, not to improve road safety.[40]

Legality of Speed Cameras. The legality of automated speed enforcement and the perception of infringement upon individual rights is another frequently raised concern. Many opponents of photo enforcement state that the technology allows the police to act like "Big Brother," and argue that speed cameras invade personal privacy. For example, the Oregon State legislature's concerns over adopting automated enforcement laws focused on civil liberty issues, including constituent sentiments of an invasion of privacy and a perceived "guilty until proven innocent" approach to law enforcement.[41]

Even though courts have ruled that neither individuals in motor vehicles on public roads nor the license plates on those vehicles deserve privacy protections, these privacy concerns can generate public pressure.[42] According to a 1998 study by the Transportation Research Board, jurisdictions can address privacy concerns by taking rear photographs of vehicles in violation, and stressing that only violators are photographed.[43]

A study of Charlotte's automated enforcement program listed other legal issues, which include:

- Admissibility of photographic evidence in court;
- Accidental mailing of a citation to someone who is not the offender;
- Usage of speed camera photographs as evidence for other crimes; and
- Reliability of speed camera technology.[44]

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[40] Willis, David. "An Effectiveness and Policy Review." Center for Transportation Safety. Texas A&M University. May 2006.
[41] Adkins, Janet. "Photo Radar and Photo Red Light Enforcement Programs in Oregon." Legislative Committee Services, State of Oregon. January 2001.
[42] Kendall, S. "Is Automated Enforcement Constitutional?" Insurance Institute for Highway Safety, May 2004.
[43] Glauz, William. "Managing Speed: Review of Automated Technologies for Speed Management and Enforcement." Transportation Research Board. Midwest Research Institute. National Academy Press. 1998.
[44] Cunningham, Christopher, Joseph Hummer and Jae-Pil Moon. "An Evaluation of the Safety Affects of Speed Enforcement Cameras in Charlotte, NC." North Carolina State University. October 2005.

Public Opinion and Attitudes. Public education and awareness of automated speed enforcement is important to the success of the program. A study in the *Journal of Public Health Policy* found, based on experience from around the world, that speed cameras are viewed as controversial where speeding is not perceived as a safety problem, and that "moderate" speeding is not necessarily associated with an increased risk of collisions.[45]

According to a 2007 study by the Transportation Research Board, the type and extent of public outreach necessary to build public support for automated speed enforcement can include traditional public education and outreach methods at the beginning of the program, such as public service announcements and press releases. Other automated enforcement programs use websites, citizen advisory groups, and the media to maintain a dialogue with the community about the benefits of the program.[46]

Suspended or Discontinued Programs. During the course of research, three jurisdictions were found that have either altered or suspended their automated enforcement programs:

- *City of San Jose, California.* San Jose's Neighborhood Automated Speed Compliance Program (NASCOP) began in 1996. In 2000, the California Vehicle Code was amended to clarify that the use of photo radar was not authorized for speed enforcement. In response to court cases filed by recipients of notices and questions raised by the City's District Attorney, NASCOP changed to a warning-only system in March 2007.[47]

- *City of Charlotte, North Carolina.* Charlotte began its "Safe Speed" program in 2004. The City suspended its program in May of 2006 due to a ruling by the North Carolina Court of Appeals that the state constitution requires cities to give 90% of the revenue collected through the automated programs to local schools. The City suspended the programs to limit the financial liability of the ruling.[48]

- *City of Davenport, Iowa.* Davenport installed the first of its speed cameras in 2006. The City has suspended its speed camera program in April 2007 while it appeals a District Court ruling that the program is illegal because it imposes civil fines (instead of criminal), and does not report offenses to the Iowa Department of Transportation, which is required by state law.[49]

[45] Delaney, Amanda, Heather Ward, Max Cameron, and Allan Williams. "Controversies and Speed Cameras: Lessons Learnt Internationally." Journal of Public Health Policy. Vol. 26, No. 4. 2005.
[46] Rodier, Caroline, Susan Shaheen, and Ellen Cavanagh. "Automated Speed Enforcement in the US: A Review of the Literature on Benefits and Barriers to Implementation." Transportation Research Board. July 2007.
[47] Helmer, James R. "Modification to the Photo Radar Speed Enforcement Program." City of San Jose. February 27, 2007.
[48] City of Charlotte. "City Suspends SafeLight & SafeSpeed." May 31, 2006.
[49] Schulte, Grant. "Traffic cameras go before state Supreme Court." Des Moines Register. March 12, 2008.

PART D: STATUS REPORT ON MONTGOMERY COUNTY'S SAFE SPEED PROGRAM

This section provides a status report on the "Safe Speed" program, the automated speed enforcement program implemented by the Montgomery County Police Department. It concludes with a brief overview of the related speed camera programs implemented by three municipalities in the County (Rockville, Gaithersburg, Chevy Chase Village), and the Memorandums of Understanding signed between the County and these municipalities regarding program administration.

1. Montgomery County's Safe Speed Program

Consistent with the authorizing language in State law, Montgomery County's Safe Speed program uses speed cameras to record vehicles traveling more than ten miles per hour above the speed limit on selected residential streets or school zones with a maximum speed limit of 35 miles per hour. Citations ($40 tickets) are mailed to the owners of the vehicles that are found in violation. The Safe Speed program operates both marked mobile speed camera vans and fixed speed camera units.

The Safe Speed program is organizationally located within the Automated Traffic Enforcement Unit (ATEU) in the Montgomery County Police Department's (MCPD) Special Operations Division. The ATEU also manages the County's red light camera enforcement program.

Stated Goals of the Safe Speed Program. According to the Montgomery County Police Department, the primary goal of the Safe Speed program is to change driver behavior in an attempt to reduce the frequency and severity of speed-related collisions and injuries. The MCPD's website describes the Safe Speed program's goal as follows:

> The goal is to decrease speeding violations and crashes and, as a result, prevent injuries and save lives. Speeding in residential areas is a significant public safety problem. The Montgomery County Police developed this program to increase the effectiveness of speed enforcement in areas with recurring speeding problems. Safe Speed will provide consistent speed enforcement that will allow police officers to devote their time to other law enforcement duties.[50]

[50] Montgomery County Police Department. 2008.
http://www.montgomerycountymd.gov/poltmpl.asp?url=/content/pol/ask/speed/faq.asp

The County Executive's Pedestrian Safety Initiative lists the County's photo speed enforcement program under one of seven strategies to reduce the number and severity of pedestrian/vehicle collisions.[51] A description of the Initiative states that:

> The goal of both enhanced enforcement and public education is to encourage and maintain public support and compliance with traffic laws. Modifying perceptions of risk and responsibilities on the road can change behavior and contribute toward building a culture of safety.[52]

Contract for Safe Speed Program Services. The County Government issued a Request for Proposal (RFP) in August 2006 for the speed camera equipment and some of the Safe Speed program services. In February 2007, the County awarded a contract to Affiliated Computer Services State and Local Solutions, Inc. (ACS) to provide the following services:

- Digital speed camera vehicles, equipment, and personnel to service the technology six days a week for two eight-hour shifts;
- Technical service 24 hours a day, seven days a week;
- Initial and online "event" reviews;
- Up to five mailing of notices per speed camera citation;
- Citation payment and processing;
- Public website, three public opinion surveys, training video, and a monthly public relations insert;
- Monthly, quarterly, and annual reports;
- Automated, online reporting capability; and
- Garage space for vehicle maintenance.

The initial contract between the County Government and ACS is for a term of two years, with an option for renewal.[53] The contract states that the Director of the Office of Procurement may renew the contract for three additional one-year terms.[54]

The current cost to the County of ACS' contract is a rate of $16.25 per paid citation or $18,000 per month, whichever is greater. The contract provides for review of the contract provisions at the time of contract renewal.

Site Assessment and Selection. MCPD's speed camera site selection process involved extensive data collection and consultation with the Citizens Advisory Board for Traffic Issues (CABTI). The seven members of CABTI are designated representatives from each of the County's Regional Service Centers' Citizen Advisory Boards.

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[51] Glenn, Orlin. "Pedestrian Safety Programs." Transportation and Environment Committee Memorandum. December 5, 2007.

[52] Montgomery County Executive Isiah Leggett. "Pedestrian Safety Initiative." December 2007.

[53] The Payment section under the General Terms and Conditions of the contract stipulates that "...the County has no obligation to encumber funds to this contract in subsequent fiscal years, even if appropriated funds may be available."

[54] Montgomery County Government. "Contract #7474000045-AA." Office of Procurement. August 2006.

Beginning in 2006, CABTI members systematically examined each "eligible roadway" in the County using a rigorous, quantitative process. Eligible roadways are all roads authorized for automated enforcement under the law.[55] CABTI evaluated data for six roadway risk factors:

- Speed endangerment;
- Accident endangerment;
- Pedestrian proximity;
- Traffic volume;
- Roadway design; and
- Endangerment history.

Through discussion and analysis of the roadway risk factors, MCPD, in consultation with CABTI members, prioritized the County roadways for speed camera enforcement. The appendix includes a more detailed explanation of the site selection process (©6), and a list of roadways identified for automated enforcement as of February 2008 (©9).

Public Awareness Campaign. In March 2007, the County launched a public awareness and education campaign regarding speed cameras. Outreach about Safe Speed was part of a larger "Street Smart Pedestrian Safety" campaign.[56] This roadway and traffic safety campaign included information on the Safe Speed program, pedestrian safety, and the existing red light camera enforcement program. In addition, ACS is contractually required to provide an on-going public awareness campaign for residents and visitors to the County.

The County's public awareness campaign consisted of:

- **Press releases and informational materials** – The County held press conferences informing the public on the use of speed cameras, and issued flyers educating the public on the dangers of speeding.
- **"Photo Enforced" signs** – The County has constructed "Photo Enforced" signage notifying drivers of speed camera enforcement zones.
- **Safe Speed logo** – MCPD created the Safe Speed program's logo for public brand recognition. The logo is visible on the side of the mobile speed camera vans. Additionally, the van operators have literature on the program for residents.
- **Website** – The Safe Speed website, a collaboration between ACS and MCPD, provides information about the program. The site also shows the locations of roadways under speed camera enforcement.
- **Customer service** – ACS provides a basic level of customer service and directs more complicated calls from the public about the Safe Speed program to ATEU.

[55] The law limits automated enforcement to roads in residential districts with a maximum speed limit of 35 miles per hour or less, or in school zones.
[56] Leggett, Isiah. "Fiscal Year 2007 Annual Report." Memorandum. September 28, 2007.

Deployment of Speed Cameras. MCPD officially began using speed cameras to monitor the speeds of motor vehicles on March 12, 2007. As required by State law, (§ 21-809(D)(2)), the program began with a 30-day warning period, which was extended three additional weeks. MCPD initially deployed six mobile speed enforcement vehicles staffed by specially trained, radar-certified civilian employees of MCPD.

During the warning period, motorists received warning violations if they were photographed exceeding the speed limit by 10 miles per hour in the enforcement zones. On May 2, 2007, the County began mailing $40 citations to violators. As of February 2008, the program's mobile speed camera units rotate between about 60 designated speed enforcement zones in residential areas and school zones across the County.

In late September 2007, the County installed the first fixed speed camera. As of February 2008, the County operates 22 fixed speed cameras located on the following roads:

- Bel Pre Road (2);
- Briggs Chaney Road (2);
- Dufief Mill Road (1);
- Grosvenor Lane (1);
- Montgomery Village Avenue (2);
- Piney Branch Road (2);
- Powder Mill Road (2);
- Randolph Road (4);
- Richter Farm Road (2);
- Travilah Road (2); and
- Wayne Avenue (2).

In February 2008, CABTI began the second phase of site selection which involves reviewing and evaluating additional roadways as sites for automated speed enforcement.

Safe Speed Program Expenditures. The FY08 budget for the Safe Speed program is about $3.3 million. Personnel costs comprise about 37 percent ($1 million) of the program's operating budget and operating expenses comprise about 67 percent ($2.3 million). Operating expenses include the contract with the vendor and other expenses, such as public outreach and supplies.

Table 7: Safe Speed Program Budget, FY08

Operating Budget Category	Amount ($1,000s)
Personnel Costs	$1,030
Operating Expenses	$2,254
Total Operating Costs	**$3,284**

Source: Office of Management and Budget

Through February 2008, the actual operating costs have been $2.6 million, and Office of Management and Budget projects that the total FY08 operating costs for the Safe Speed program will be about $5 million. ATEU reports that this difference between the budgeted projected total operating costs is $2.1 million from the vendor's $16.25 payment processing fee for each paid citation.

Safe Speed Program Revenues. As of February 2008, the Safe Speed program had issued about 178,000 citations. ATEU reports that about 83% of the citations issued have been paid.

As of February 2008, the Safe Speed program had generated $5.2 million in revenue. Table 8 (below) shows the amount of speed camera revenue collected by month since March 2007. The program did not bring in any revenue during the warning period of the program (March and April).

Table 8: Speed Camera Revenue, March 2007 – February 2008

Year	Month	Monthly Citation Revenue	Cumulative Fixed Speed Cameras Active
2007	March	$0	0
	April	$0	0
	May	$34,525	0
	June	$177,680	0
	July	$216,365	0
	August	$292,212	0
	September	$234,892	0
	October	$311,822	2
	November	$609,152	6
	December	$1,007,045	10
2008	January	$1,092,026	14
	February	$1,247,719	19
Total		**$5,223,441**	---

Source: Office of Management and Budget; ATEU

Monthly program revenues increased in the fall of 2007 by over 300 percent, from about $235,000 in September to $1 million in December 2007. This increase in monthly speed camera revenue corresponded to the implementation of fixed speed cameras throughout the County beginning of September 2007. As of December 2007, the program's revenues exceeded anticipated annual costs.

The Office of Management and Budget reports that the latest projection for FY09 program revenue is $10.5 million.

2. Municipal Speed Camera Programs

Three municipalities in the County also operate automated speed enforcement programs under the same State law that authorizes the County's Safe Speed program. They are:

- City of Rockville;
- City of Gaithersburg; and
- Chevy Chase Village.

The appendix (©11) includes a listing of speed cameras locations operated by the respective municipal police departments.

Each of the municipalities began its automated speed enforcement program with a warning phase on March 12, 2007, the same date that the County Government's program started. The City of Rockville began issuing citations in May of 2007; the City of Gaithersburg in August of 2007; and Chevy Chase Village in October 2007.

The municipalities provide public outreach about their speed camera programs in ways that are similar to the County's program. This includes information about the program and enforcement locations in newsletters, press releases, and on municipal websites. The municipalities provide visual warnings that drivers are entering enforcement areas through the posting of "Photo Enforced" signs near automated speed enforcement zones. The municipal programs also use the same logo as the County's Safe Speed program.

Memorandums of Understanding. In 2006, the County signed three separate Memorandums of Understanding with Rockville, Gaithersburg, and Chevy Chase Village, regarding the revenue generated from the Safe Speed program. All three MOUs contain similar guidelines and provisions. The MOUs between the County and the City of Rockville and Chevy Chase Village are enclosed at ©21 and ©23.

As part of each MOU, the County Government has agreed to process the payment of citations at no charge to the municipalities provided that "the resources required for collection do not materially interfere with the other duties of the County's Department of Finance." If the collection of fines "do interfere," then the County must notify the municipalities and not charge for at least 60 days. After 60 days, the County may charge an administrative fee to the municipalities.

The MOUs also include the following requirements:

- The County and municipalities will meet annually to discuss the most efficient manner to collect and remit speed camera revenues;
- The municipalities agree to pay all of the costs for vendor management of the speed camera system in their municipality, and any costs or charges from the Maryland Motor Vehicle Administration for "flagging" vehicle registrations; and
- The municipalities will use revenue from speed camera citations in accordance with the State law.

PART E: INSURANCE INSTITUTE FOR HIGHWAY SAFETY'S STUDY

In January 2008, the Insurance Institute for Highway Safety (IIHS) released an independent study of the County's speed monitoring program. IIHS' research design included two components:

- An empirical analysis of vehicle speeds in enforcement zones and non-enforcement zones; and
- A resident survey on the general awareness and opinion of the speed camera program in Montgomery County.

An article published by IIHS that describes the results of the study is attached at ©25. The remainder of this section summarizes what IIHS found.

IIHS' Study of Vehicle Speeds. The Institute measured vehicle speeds six months before and six months after speed cameras were deployed in the County. The study design included 20 sites that are eligible for enforcement in Montgomery County, 10 sites that are not eligible for enforcement, and 10 comparison sites in Northern Virginia.[57] IIHS' analysis included approximately 180,000 measurements taken from 40 study sites. Table 9 (below) summarizes IIHS' major findings on how the deployment of speed cameras in Montgomery County affected vehicle speeds.

Table 9: Summary of IIHS Results on Vehicle Speeds

A comparison of vehicle speeds six months before and six months after the implementation of the speed camera program showed that at all sites in the County (eligible and not eligible for enforcement), the average vehicle speed declined, as did the percent of vehicles exceeding the speed limit by more than 10 mph. Specifically:

At County enforcement sites with warning signs and speed cameras:

- The average vehicle speed declined by 10%.
- Before the use of speed cameras, 30% of vehicles exceeded the speed limit by more than 10 mph; after automated enforcement began, this percent declined to 10%.

In comparison to control sites in Virginia:

- At County sites with warning signs and speed cameras, the decline in mean speeds was 9% and the proportion of vehicles exceeding the speed limit by more than 10 mph declined by 70%.
- At County sites with warning signs but no speed cameras, the decline in mean speeds was 4% and the proportion of vehicles exceeding the speed limit by more than 10 mph declined by 39%.
- At legally-ineligible "spillover" sites, the decline in mean speeds was 2% and the proportion of vehicles exceeding the speed limit by more than 10 mph declined by 16%.

Source: IIHS Study, January 2008

[57] As defined in the State authorizing legislation, eligible sites include all residential streets or school zones with a maximum posted speed limits of 35 miles per hour or less.

IIHS' Resident Survey. The second part of IIHS' study was a resident survey of the general awareness and public opinion of the program. As mentioned on page 17, while surveys about speed cameras do not directly measure changes in driver behavior, they do measure drivers' attitudes, and may be relevant to assessing "effectiveness."

IIHS surveyed a sample of 800 County residents, 18 years or older and eligible to drive. The survey was conducted in May 2007 and repeated in November 2007, before and after the County launched the Safe Speed program. The survey asked drivers:

- If speeding is a problem on residential streets;
- If speed cameras are currently in use; and
- If they favor/would favor the use of cameras to enforce laws against speeding on residential streets in Montgomery County.

After the program began, IIHS expanded the survey to ask questions such as whether knowing about speed cameras had caused respondents to reduce their speeds when traveling on residential streets in Montgomery County. Table 10 (below) summarizes IIHS' major survey findings.

Table 10: Summary of IIHS Survey Findings

- 74% of survey respondents agreed with the statement that speeding was a problem on residential streets.
- Before enforcement began, 58% of survey respondents supported the use of speed cameras on residential streets; after enforcement began, the percent increased to 62%.
- 57% of survey respondents who were aware of the speed camera program said that it had caused them to reduce their vehicle speeds.
- 62% of survey respondents expressed support for expanding the use of speed cameras to major arterial streets.
- 47% of survey respondents expressed support for expanding the use of speed cameras to interstate highways.

Source: IIHS Study, January 2008

PART F: PROPOSAL FOR THE COUNCIL'S REPORT BACK TO THE GENERAL ASSEMBLY

As reviewed earlier (page 7), State law requires the County Council to report to the General Assembly, no later than December 31, 2009, on the "effectiveness of speed monitoring systems in Montgomery County." This chapter outlines the Office of Legislative Oversight's recommended approach to conducting a study that would: fulfill the Council's reporting requirements, and provide information relevant to making local decisions about program funding.

In sum, OLO recommends conducting a study that:

- Measures the effect of speed cameras on reducing vehicle speed and speed-related collisions; and
- Evaluates the administration of the Safe Speed program, to include a review of: program costs and staffing; compliance with the requirements outlined in State law; and the County's collection and allocation of revenue received from the citations issued.

OLO also recommends the report include summary descriptions of the speed camera programs being implemented by municipalities in the County.

The rest of this section further explains each of the primary components of the proposed study. For each, OLO identifies the data to be collected and used in the analysis.

1. Measuring the Effect of Speed Camera Use on Vehicle Speed and Speed-Related Collisions

OLO recommends that the "effectiveness" of the Safe Speed program on reducing vehicle speed and speed-related collisions be based upon an analysis of trend data on:

- Vehicle speed data in enforcement zones, to include average vehicle speed, median vehicle speed, and vehicle speeds categorized into speed intervals, e.g., number of vehicles exceeding the speed limit by 10-15 mph, 16-20 mph;
- The number of speeding violations in enforcement zones; and
- The number of speed-related collisions and fatalities in enforcement zones.

For enforcement zones in the County where the MCPD collected sufficient baseline data on vehicle speeds and collisions before speed cameras were operational, OLO recommends conducting an analysis that includes a "before and after" comparison. For sites where sufficient baseline data are not available, the analysis would examine changes over time with the initial data point representing when automated speed enforcement began.

Sources of Data. OLO's independent analysis would be conducted based on data being collected by the County Government and the County's vendor (ACS). Table 11 (below) lists the specific data elements and sources by category. All information would be collected by month and analyzed over time.

Table 11: Data to be Collected and Analyzed

Category of Data	Data Collected by Month	Data Source
Roadway	Schedules and locations of camera operation	County Government
	Vehicle counts and vehicle speeds for each enforcement zone	ACS
	Available baseline (pre-program) data on vehicle counts and vehicle speeds	County Government
Violations	Speed camera violations by enforcement zone (totals and by speed intervals)	ACS
	Violations by time of day by enforcement zone	ACS
	Violation rates (# divided by traffic count) by enforcement zone	ACS
	Violation rates (# per hour of camera operation) by enforcement zone	ACS
	Violation rates (# per day, per week, per month) by enforcement zone	ACS
	Number of vehicles with multiple violations by enforcement zone	ACS
Speed and Collision	Average and median speeds in enforcement zones	ACS
	Average and median speeds by speed limit (25, 30, 35 mph)	ACS
	Top sites by average/median speed and number/percent of violations	ACS
	Collision, injury, and fatality data on roadways with cameras	County Government
Citation	Number of citations issued	ACS
	Number of violations vs. number of citations issued	ACS
	Number/percent of citations paid on first notice	ACS
	Number/percent of citations rejected/not sent by type of reason (e.g., 14-day limit, unclear photograph, rental, multiple vehicles in photograph)	ACS
	Number/percent of each type of method of resolving citation (court, pay, affidavit)	ACS
	Number/percent of citations flagged at MVA because of unpaid citation	ACS
	Average time for MVA to process a citation for in-state vs. out-of-state tags	ACS
Court	Number/percent of citations that are contested	District Court
	Number/percent of citations where fines were reduced	District Court
	Number/percent of citations where violator was found not responsible (won)	District Court
Revenue	Total revenue collected	County Government
	Amount of revenue disbursed to municipalities	County Government
	Allocation of revenue collected by County Government	County Government
	Estimates of future revenues from program	County Government
Administration	Program budget and actual expenditures: personnel and operating	County Government
	Number and allocation of program staff	County Govt./ACS
	Feedback received from public (questions, complaints, and compliments)	County Govt./ACS

To supplement the review and analysis of local vehicle speed and collision data, OLO recommends updating the search for empirical studies on the effectiveness of speed camera programs in other jurisdictions. This review would include any additional research findings issued by the federal government (e.g., NHTSA) and the Insurance Institute for Highway Safety (IIHS).

2. Evaluation of Program Administration

OLO recommends conducting an evaluation of the Safe Speed program's administration that includes a review of the:

- Personnel and operating costs of the program;
- Staffing levels and division of responsibilities between County staff and the County's vendor;
- Process followed for deciding where to install fixed cameras and deploy the mobile cameras;
- Process of issuing citations and collecting revenue;
- Record of citations appealed in District Court; and
- Amount and allocation of revenue collected from the program.

Where relevant, OLO's review would address whether the County's implementation of the Safe Speed program has complied with the requirements outlined in State law. This would include a review of program operations for compliance with the:

- Location of automated speed enforcement on legally authorized roadways;
- Training of speed camera operators;
- Calibration and self-tests of speed monitoring technology;
- Components of a speed camera citation, e.g., date and time of violation, copy of recorded image, violation charged;
- Amount of time between when a speeding event is recorded and when a citation is mailed to the registered owner of the vehicle;
- Disbursement of revenue from contested speed camera citations to the District Court; and
- Allocation of revenue collected from the program for supplemental public safety purposes, including pedestrian safety programs.

For reference, the State law is included at ©12.

Sources of Data. OLO would conduct an independent analysis of data collected by the County Government, the County's vendor (ACS), and the District Court. Table 11 (page 32) lists the specific data elements and their source by category. The data analysis would be supplemented by information compiled by OLO staff through interviews and field observations.

3. Description of Speed Camera Programs Implemented by Municipalities

As of February 2008, three municipalities in the County have implemented speed camera programs: Rockville, Gaithersburg, and Chevy Chase Village. OLO recommends including a general program overview and summary data for the speed camera programs in these municipalities, to include:

- Schedules and locations of camera operation;
- Available trend data on mean speeds and violations by location;
- Available trend data on collisions by location;
- Trend data on the number of citations issued; and
- Trend data on revenue collected.

As described earlier in this report (see page 28), the County entered into MOUs with Rockville, Gaithersburg, and Chevy Chase Village concerning the collection of revenue from the speed camera program. OLO recommends the 2009 report also include a status report on the implementation of these MOUs.

4. Proposed Time Table

The table below outlines OLO's recommended time table for conducting and completing the study.

Table 12: Recommended Time Table

Task	Target Date
Council approval of OLO study scope/design	Spring 2008
Completion and agency review of draft OLO report	July/August 2009
Transmittal of final OLO report to Council	September 2009
Committee and full Council review of OLO report	October 2009
Transmittal of Council's report to the General Assembly	December 2009

PART G: DISCUSSION ISSUES

OLO recommends the Public Safety Committee hold a worksession to discuss OLO's proposed study of the County's automated speed monitoring system. OLO recommends the Committee also use this worksession for:

- A briefing from the Insurance Institute for Highway Safety on its recently issued study of the County's speed camera program;
- A discussion with Executive Branch staff on the implementation of the Safe Speed program, including the Memorandums of Understanding with the municipalities; and
- An update from Executive Branch staff on the status of State legislation affecting speed monitoring programs.

1. Proposed Scope of OLO's Study of the County's Speed Monitoring System

The previous chapter outlined a proposed scope and design of a study that OLO would conduct and provide to the Council for review in the fall of 2009. The study would constitute the basis for the Council's statutory requirement to report no later than December 2009 to the General Assembly on the effectiveness of the County's speed monitoring system.

OLO recommends that the Council's review of the proposed study design include discussion of the following questions:

- Would the recommended approach for evaluating the Safe Speed program sufficiently address the Council's questions about the "effectiveness" of the County's use of speed cameras?
- Is there additional information or analysis related to the Safe Speed program that the Council would like OLO to incorporate into the study design?
- Would the recommended time table for completion of OLO's report meet the Council's calendar for review before reporting back to the General Assembly by December 2009?

OLO recommends that the Council approve a project on OLO's FY09 Work Program that allocates staff time to: monitor local data collection needed for the 2009 evaluation; and to remain current with the use of speed cameras in other jurisdictions and the empirical research being conducted on speed camera programs.

2. Briefing from the Insurance Institute for Highway Safety

As presented in the previous chapter, the Insurance Institute for Highway Safety (IIHS) recently completed a study of the County's use of speed cameras. IIHS released its initial results in January 2008, based on data collected from 2006-2007.

OLO recommends the Public Safety Committee also use the worksession on OLO's study design for a briefing from IIHS on the Institute's recent study. OLO recommends the Council ask IIHS to provide an overview of their research results and to discuss the Institute's current plans for future evaluations of speed camera programs.

3. Discussion of the Safe Speed Program with Executive Branch Staff

OLO recommends the Public Safety Committee request Executive Branch staff provide a briefing on the following issues related to the Safe Speed program:

- Plans for changes and/or expansion of the Safe Speed program in FY09;
- Plans for continued publicity and outreach related to the Safe Speed program;
- Plans for allocating the revenue expected to be generated in the months ahead;
- Process for making decisions about the allocation of program revenue; and
- Implementation of the Memorandum of Understandings that were entered into between the County Government and the municipalities of Rockville, Gaithersburg, and Chevy Chase Village.

4. Discussion of 2008 General Assembly's Consideration of Speed Camera Legislation

OLO recommends the Committee also request Executive Branch staff to provide comments on the speed camera State legislation considered during the recent Session of the Maryland General Assembly, which adjourned April 7, 2008.

Governor Martin O'Malley proposed on January 21, 2008 to allow speed cameras in jurisdictions across the State, as well as in work zones.[58] The statewide use of photo radar was one of three legislative priorities for the Maryland Municipal League (MML) during the 2008 session of the General Assembly.[59] The Maryland Association of Counties (MACo) also supported legislation to allow the use of speed camera technology to deter speeding in residential areas and school zones.[60]

[58] Office of the Governor. "Governor O'Malley Introduces 2008 Legislative Agenda." January 21, 2008.
[59] Maryland Municipal League. "2008 Legislative Priorities."
[60] Maryland Association of Counties. "Major Issues Summary: 2008 Legislative Initiatives." January 2008.

The House of Delegates (HB 364) and the Senate (SB 269) passed different versions of bills. As introduced, the proposed legislation authorized counties to use speed cameras on roads in school zones and residential neighborhoods with speed limits of 45 miles per hour or less, and highway work areas. There were numerous differences between the law authorizing the County's Safe Speed program and the two proposed bills, including an increase in the speed camera civil penalty, the speed motorists must be driving before being issued a citation, and a change in the use of revenue from the citations.

However, the General Assembly did not pass new statewide speed camera legislation. The House and the Senate failed to resolve the differences between the two versions of the bills before the end of session on April 7.

In addition, the General Assembly proposed two bills that would exclusively alter the law authorizing Montgomery County's speed camera program. They were:

- **House Bill 829: Speed Monitoring Systems – Citations for Subsequent Violations – Restriction.** Prohibits the County and municipal police departments from mailing a second citation from the same speed camera until five days after the first citation has been mailed.
- **House Bill 831: Speed Monitoring Systems – Location.** Requires that a speed camera be located at least 500 feet from a sign increasing or decreasing the speed limit where speed cameras are authorized.

However, both House Bill 829 and House Bill 831 were withdrawn.

Separate pieces of legislation to authorize Baltimore County (HB 174), Howard County (HB 1198), and Prince George's County (HB 1034) to operate automated speed enforcement programs were also withdrawn or failed to get out of committee.[61]

[61] Maryland General Assembly. April 9, 2008. "Current Status of Legislation: Vehicles Laws – Rules of the Road." http://mlis.state.md.us/2008rs/filecode/R5.htm

APPENDIX

Governor Robert Ehrlich's Veto Letter to the General Assembly

May 20, 2005

The Honorable Michael E. Busch
Speaker of the House of Delegates
State House
Annapolis, MD 21401

Dear Mr. Speaker:

In accordance with Article II, Section 17 of the Maryland Constitution, today I have vetoed House Bill 443 - Montgomery County - Vehicle Laws - Speed Monitoring Systems.

Bill Summary

House Bill 443 allows in Montgomery County the use of speed cameras in residential areas where the maximum speed limit is 35 miles per hour and in school zones. The owners of motor vehicles detected traveling in excess of 10 miles per hour in these areas are subject to a civil penalty. The civil penalty may not exceed $40 and for purposes of the citation the amount will be prescribed by the District Court. An owner can contest a citation by proving: (1) the motor vehicle was stolen, provided a police report of the theft was filed; (2) that another was operating the motor vehicle, if the owner provides the name, address, and if possible the driver's license number of the operator as well as other corroborating evidence; and (3) any other issues and introducing any other evidence that the District Court deems pertinent. A violation may not be considered a moving violation for purposes of establishing points, may not be recorded on the driving record of the owner, may be considered a parking violation for purposes of refusing to register a vehicle or suspending a vehicle's registration for an unpaid citation, and may not be considered for purposes of motor vehicle insurance coverage.

Veto of House Bill 455 of 2003

In 2003, I vetoed Senate Bill 455 - Vehicle Laws - Speed Monitoring Systems - Radar Cameras. Senate Bill 455 would have allowed statewide the use of radar cameras that House Bill 443 seeks to allow for Montgomery County only. For many of the reasons I vetoed Senate Bill 455 of 2003, I find House Bill 443 to be equally objectionable for Montgomery County.

Trial by Camera

House Bill 443 will allow the State to charge, try, and convict an individual solely through the use of a photograph of a vehicle. This bill takes what has traditionally been a violation of the criminal law, redefines the violation to be a civil offense, lowers the burden of proof to the civil standard, and abridges the right to confront the witnesses against the accused. Further, the procedure that puts the onus on the owner to request the presence of the technician who set up the speed-monitoring device is entirely inadequate.

Privacy Issues

House Bill 443 is another step toward the pervasive use of cameras by the government to monitor and regulate the conduct of its people. There may be times when this type of surveillance is appropriate. I am, however, reluctant to approve its use in the absence of extraordinary circumstances.

Safety Issues

Although proponents assert this bill will improve traffic safety, the evidence on this issue is incomplete. There has been little study of the effectiveness of speed cameras on improving traffic safety. At present, the Transportation Research Board is undertaking a comprehensive study of this issue. On a related issue, Virginia recently refused to reauthorize the use of red light cameras based on a study showing that the use of such cameras increased the risk of accidents. Therefore, it is appropriate to await the results of a thorough study before concluding that speed cameras improve traffic safety.

"Local Bill"

House Bill 443 applies only in Montgomery County. It does, however, have profound statewide ramifications. First, it applies to anyone who drives in Montgomery County. Undoubtedly there are many commuters from other parts of the State and from other states who use these roads on a daily basis. Second, Montgomery County would be the first jurisdiction in the State to be granted this authority. This would establish a precedent for other counties to seek this authority and, accordingly, is the first step to a statewide system.

Residential Districts

House Bill 443 applies to residential districts with a maximum posted speed limit of 35 miles per hour. Section 21-101 of the Transportation Article defines a residential district as "an area that: (1) is not a business district; and (2) adjoins and includes a highway where the property along the highway for a distance of at least 300 feet is improved mainly with residences or residences and buildings used for business." Information received from the Department of Transportation shows there are many State highways that would qualify as "residential areas" under the bill, some of which are four and six lane highways. These include parts of Connecticut Avenue, Massachusetts Avenue, and Viers Mill Road. Hundreds, if not thousands, of tickets could be issued daily on these roadways to people who are simply traveling with the flow of traffic. In this regard, the District of Columbia government web page contains a statement dated March 18, 2004, boasting that in the first 15 days of operation a single stationary speed camera found more than 10,000 motorists to be speeding.

Revenue Enhancement Issues

The advocates of House Bill 443 are sincere in their desire for increased highway safety, a goal on which we can all agree. It is clear that for governments, however, speed cameras are also an effective revenue raising measure. In January of this year The Washington Times published a letter from District of Columbia Mayor Anthony A. Williams urging the City Council to approve a contract for a speed camera vendor, stating: "There is an urgent need for the approval of this contract to ensure the continued processing of District tickets and the collection of District revenues." There was no mention of traffic safety in his letter. The District of Columbia Metropolitan Police Department web page states that since the speed camera program began in July 2001, over $72 million has been collected. In March 2005 more than 31,000 violations were sent out and nearly $2 million was collected.

The Fiscal and Policy Note to House Bill 443 states that for Montgomery County "revenues would increase significantly and expenditures would also increase." In fiscal year 2006 revenues are estimated to be $6.3 million, with expenditures of $4.6 million. As the experience in the District of Columbia clearly shows, once a jurisdiction begins to use the cameras and receives the increased revenues, expanding the program becomes a logical progression. As the experience with the District of Columbia also shows, the rationale for the expansion may be purely monetary.

Impact on District Court

I am also concerned about the effect House Bill 443 would have on the District Court. The Maryland Judicial Conference opposed this bill before the General Assembly on the basis that it would have "a substantial impact on the District Court." Although the actual number of citations to be issued is unknown, it is clear that a significant number will increase court dockets, trial time, clerical time, and possibly result in the need for costly computer programming changes.

National Use of Speed Cameras

Since my veto of Senate Bill 455 in 2003, the use of speed cameras in the United States remains limited to five states plus the District of Columbia. In the eastern part of the country (in addition to the District of Columbia) only in the state of New York in cities with a population over 1,000,000 are speed cameras authorized. As stated above, Virginia has repealed the use of red light cameras. There is clearly no national trend in support of speed cameras.

For the above stated reasons, I have vetoed House Bill 443.

Very truly yours,
Robert L. Ehrlich, Jr.
Governor

Source:
Maryland Department of Legislative Services
http://mlis.state.md.us/2005rs/veto_letters/hb0443.htm

National Highway Traffic Safety Administration Criteria for Study Selection

The 2007 National Highway Traffic Safety Administration (NHTSA) selected 13 high-quality studies from about 90 English language studies of automated enforcement programs from 16 different countries. This selection was based upon a two-level process. First, studies the elements of the automated speed enforcement evaluation were reviewed, including:

- Country and location information;
- Targeted road types;
- Fixed or mobile deployment;
- Speed limits enforced;
- Enforcement threshold;
- Penalty assessment information;
- Public awareness information; and
- General program description, such as program hours, or the site selection.

If studies met the above criterion, NHTSA reviewed the studies to determine if they examined safety-related outcome measures, including:

- Study period including before/after periods;
- Number and description of treatment units;
- The use and description of comparison group, study design and analyses;
- Whether traffic volume was addressed;
- Presence of other treatment confounders (and whether addressed); and
- Key outcome measures.

NHTSA analyzed the findings of the 13 selected empirical studies based upon whether:

- The study design and analysis documented changes in driving speeds, as well as crashes to provide a causal link between the treatment and safety outcome;
- The study accounted for crash severity to ensure that the treatment is not having counteractive effects on different types or severity of crashes;
- The study methods and analysis controlled for changes in traffic volumes before/after the implementation?
- The study design and analysis accounted for possible time trend effects, such as general trends in crashes, changes in the motoring population, or weather;
- The study accounted for other possible confounding factors, such as concurrent treatments/enforcement, changes in data measures, or other factors that may overlap with before/after periods;
- The study examined possible "crash migration" due to the treatment, either because of non-enforced sections of the same roadways, or to non-enforced alternate roads; and
- The study accounted for regression toward the mean.

Summary of Key Reported Outcomes from Selected Speed Camera Studies

Jurisdiction(s)	Average Speed (mph or kph)	Exceeding Speed Limit	Exceeding Speed Limit by at Least 10 mph (or kph)	Collisions	Comparison to Other Sites
Scottsdale	9.5 mph (13%) reduction; 7 mph reduction	1-2% exceeding speed limit during program, compared to 15% before enforcement	Decrease to 1-2% exceeding speed limit from 15% before enforcement	50-52% reduction in total collisions, but 33% increase in rear-end collisions	5 mph average speed reduction at Glendale spillover sites
Washington, DC	14% reduction in average speeds	---	82% reduction	---	No statistically significant change at Baltimore control sites
Charlotte	1 mph reduction (statistically significant)	---	55% reduction	12% reduction in total collisions	---
Beaverton and Portland	2-9% reduction	---	27-28% reduction	---	---
France	5 kph (3 mph); 6-11% reduction since 2002	---	80% decrease in drivers exceeding speed limit by 18 mph (30 kph)	31% reduction in highway fatalities	---
New South Wales, Australia	2-6% reduction	5-21% reduction	86-88% reduction (kph)	19.7% reduction reported collisions and 22.8% reduction in injury/fatal collisions	---
Queensland, Australia	---	---	---	18% reduction in total collisions and 22% reduction in hospitalization crashes	11-15% reduction in collisions among spillover sites 2-6 km away
Friesland Province, Netherlands	No statistical difference	---	---	21% reduction in injury collisions	---
Norway	---	---	---	20% reduction in injury collisions	---

Risk Factor Analysis Methodology used by CABTI to Prioritize County Roadways

To select the sites for automated speed enforcement, Montgomery County Police Department (MCPD) used input from the Citizens Advisory Board for Traffic Issues (CABTI). CABTI met in the fall of 2006 to begin the first phase of the site selection process.

CABTI systematically examined and quantitatively evaluated each eligible roadway in the County using a rigorous, quantitative process.[62] Over a period of several months, CABTI evaluated roadways based on six characteristics:

Roadway Risk Factors

	Factors	Weighting	Maximum Score
1	Speed Endangerment	25%	0-25
2	Accident Endangerment	25%	0-25
3	Traffic Volume	15%	0-15
4	Pedestrian Proximity	20%	0-20
5	Roadway/Site Design	10%	0-10
6	Endangerment History	5%	0-5
	Total	**100%**	**0-100**

CABTI created a database using these "roadway risk factors" with specific criteria and weights for each of the factors. The components of the six roadways risk factors are outlined on the next page.

The Police provided roadway data, which CABTI plugged into the formulas of the database. The Police Department collected baseline speed and traffic data, and surveyed each of the roadways to gather data for the first five roadways characteristics listed above. The six police districts provided information on the duration and level of concern regarding the endangerment histories of each of the roadways.

[62] The law limits automated enforcement to roads in residential districts with a maximum speed limit of 35 miles per hour or less, or in school zones.

1. Speed Endangerment

Speed Violation (%)	10-15 MPH > Speed	16-20 MPH > Speed	21+ MPH > Speed
<1%	0	1	2
1-5%	1	2	4
5-10%	2	4	7
10-20%	4	7	10
20-40%	7	10	15
>40%	10	15	20

2. Accident Endangerment

Reported Yearly Accidents Per Road Mile	Property Damage	Personal Injury	Fatality
<=2.0	3	7	13
>2.0	5	10	17
>5.0	7	13	21
>10.0	10	17	25

3. Traffic Volume

Avg. Rate/Hour	Weekday Rush	Weekday Non-Rush	Weekend
<=60	2	1	1
>60	4	2	2
>360	6	4	4
>900	10	6	6

4. Pedestrian Proximity

Item	Within 1/10 Mile	Within 1/4 Mile	Within 1/2 Mile
School/Day Care	5	4	3
EACH Bus Stop	4	3	2
Playground/Park	3	2	1
Pool	3	2	1
No Sidewalk	3	2	1
Retirement Facility	3	2	1
Cross-Walk	3	2	1
Community Center	3	2	1
Library	3	2	1
Religious Facility	3	2	1

5. Roadway/Site Design

Design Characteristic	Scoring			
Grade	**Downhill**	**Uphill**	**Level**	**Curve**
	0	1	1	3
Road Type	**Major Artery**	**Artery**	**Primary Residential**	**Secondary Residential**
	0	3	2	1
Intersections with Yield or Stop Signs	**None**	**Single**	**2 to 3**	**More Than 3**
	0	1	3	5
Other Characteristics	**No**	**Yes**		
Bike Lane	0	3		
Wide Shoulder	3	0		
Separate Turn Lanes	3	0		
Median Divider	3	0		

6. Endangerment History

Duration of Concern	Individual Concern	Multiple Individual Concerns
Less than 1 year	1	2
1 to 5 years	2	3
More than 5 years	4	5

Using results of the roadway risk factor database template (above), CABTI prioritized the eligible roadways. The ATEU uses the list of prioritized roadways compiled by CABTI to deploy the County's six speed cameras. The highest priority roadways identified for enforcement are identified as potential fixed speed camera sites.

In February 2008, CABTI began the second phase of site selection. This second phase involves CABTI reconvening to review data and evaluate new roads submitted by the community for possible enforcement, as necessary.

Montgomery County Automated Speed Enforcement Locations, February 2008

Location	Camera Type
Appleridge Road	Mobile
Appleridge Road	Mobile
Appleridge Road	Mobile
Arcola Avenue	Mobile
Arcola Avenue	Mobile
Bel Pre Road	Fixed
Bells Mill Road	Mobile
Briggs Chaney Road	Fixed
Calverton Boulevard	Mobile
Cannon Road	Mobile
Cedar Lane	Mobile
Centerway Road	Mobile
Centerway Road	Mobile
Colesville Road & Dale Drive	Mobile
Colesville Road and Fenton Street	Mobile
Colesville Road & University Boulevard	Mobile
Columbia Pike & Fairland Road	Mobile
Connecticut Avenue & Knowles Avenue	Mobile
Connecticut Avenue & Randolph Road	Mobile
Darnestown Road	Mobile
Democracy Boulevard	Mobile
Dufief Mill Road	Fixed
East Gude & Southlawn	Mobile
East Gude & Crabbs Branch Road	Mobile
East Village Road	Mobile
Firstfield Road & MD 124	Mobile
Fisher Avenue	Mobile
Frederick Avenue & Middlebrook Road	Mobile
Georgia Avenue & 16th Street	Mobile
Georgia Avenue & Colesville Road	Mobile
Georgia Avenue & Connecticut Avenue	Mobile
Georgia Avenue & Randolph Road	Mobile
Glen Mill Road	Mobile
Grosvenor Lane	Fixed
Halpine Road & MD 355	Mobile
Jones Bridge Lane	Mobile
Kensington Parkway	Mobile
Midcounty Highway & Goshen Road	Mobile
Montgomery Village Avenue & Lake Whetstone	Fixed

Montgomery Village Avenue & Duffer Way	Fixed
Montgomery Village Avenue & MD 355	Mobile
New Hampshire Avenue & Dilston Road	Mobile
New Hampshire Avenue & Lockwood Avenue	Mobile
Parkland Drive	Mobile
Plyers Mill Road	Mobile
Piney Branch Road	Fixed
Powder Mill Road	Fixed
Quince Orchard Road	Mobile
Randolph Road & Bluhill	Fixed
Randolph Road & Dewey	Fixed
Randolph Road & Kemp Mill Road	Mobile
Randolph Road & Selfridge Road	Mobile
Redland Road & Crabbs Branch Way	Mobile
Richter Farm Road	Fixed
River Road	Mobile
River Road & Wilson Lane	Mobile
Rockville Pike & First Street	Mobile
Shady Grove & MD 355	Mobile
Shady Grove & Research Boulevard	Mobile
Stone Ridge View	Mobile
Strathmore Avenue	Mobile
Tilden Lane	Mobile
Travilah Road	Fixed
Travilah Road	Mobile
University Boulevard & Colesville Road	Mobile
University Boulevard & Inwood Avenue	Mobile
Viers Mill Road & Newport Mill Road	Mobile
Viers Mill Road & Reddie Drive	Mobile
Viers Mill Road & Twinbrook Parkway	Mobile
Warfield Road	Mobile
Waring Station Road	Mobile
Watkins Mill Road	Mobile
Wayne Avenue	Fixed
Wilson Lane	Mobile
Wisconsin Avenue & Montgomery Avenue	Mobile
Wisteria Drive	Mobile
Wisteria Drive	Mobile
Wisteria Drive	Mobile
Woodfield Road	Mobile

Source: Automated Traffic Enforcement Unit, Montgomery County Police Department

Automated Speed Enforcement Locations of Municipalities in the County, February 2008

Municipality	Road	Camera Type
Chevy Chase Village	Brookville Road at Quincy Street	Mobile
	Brookville Road at East Kirke Street	Mobile
	Connecticut Avenue at East Melrose Street	Mobile
	Connecticut Avenue at Newlands Street	Mobile
	Connecticut Avenue at Quincy Street	Mobile
	Connecticut Avenue at West Melrose Street	Mobile
	Connecticut Avenue at East Kirke Street	Mobile
	Connecticut Avenue at Oxford Street	Mobile
	Grafton Street between Chevy Chase Circle and Cedar Parkway	Mobile
	Oliver Street	Mobile
City of Gaithersburg	Girard Street	Mobile
	Quince Orchard Blvd	Mobile
	Watkins Mill Road	Fixed
	West Deer Park Road	Mobile
City of Rockville	Baltimore Road at Rockville Metro Station	Mobile
	Baltimore Road at Rockville High School	Fixed
	College Parkway at College Gardens Park	Mobile
	College Parkway	Mobile
	First Street at Maryvale Elementary School	Mobile
	Gaither Road in King Farm	Mobile
	Great Falls Road at Julius West Middle School	Mobile
	Mount Vernon Place at Richard Montgomery High School	Mobile
	Nelson Street	Mobile
	Nelson Street at Madison Street	Mobile
	Redland Boulevard in King Farm	Mobile
	Rollins Avenue at Montrose Woods Park	Mobile
	Twinbrook Parkway at Meadow Hall Elementary School	Mobile
	Twinbrook Parkway at Carl Sandburg Learning Center	Mobile
	West Montgomery Avenue east of I-270	Fixed
	Wootton Parkway at Wootton High School	Fixed

Source: Chevy Chase Village, City of Gaithersburg, and City of Rockville

LEXSEE 2006 MD CHAP 15

MARYLAND ADVANCE LEGISLATIVE SERVICE

STATENET STATE NET

MARYLAND 2005 REGULAR SESSION - 419TH SESSION OF THE GENERAL ASSEMBLY

CHAPTER 15

HOUSE BILL NO. 443

2006 Md. ALS 15; 2006 Md. Laws 15; 2006 Md. Chap. 15; 2005 Md. HB 443

BILL TRACKING SUMMARY FOR THIS DOCUMENT

SYNOPSIS: AN ACT concerning

Montgomery County - Vehicle Laws - Speed Monitoring Systems MC 513-05

FOR the purpose of authorizing the placement of certain speed monitoring systems on certain highways in Montgomery County; requiring a certain speed monitoring system operator to complete certain training; requiring a speed monitoring system to undergo certain calibration; providing that certain persons recorded by a speed monitoring system while operating a motor vehicle in violation of certain speed limit laws are subject to certain penalties; requiring certain local police departments in Montgomery County to mail a citation to the owner of a motor vehicle that is recorded by a speed monitoring system in the county to be in violation of certain laws regarding the operation of a motor vehicle in excess of certain speed limits; establishing a certain maximum fine for a violation of law enforced by means of a speed monitoring system under this Act; requiring a citation to include certain information; authorizing the local police department to send a warning instead of a citation; authorizing the local police department to reissue a citation to the driver of a vehicle under certain circumstances; requiring certain citations to be mailed within certain time periods; requiring the District Court to prescribe a certain citation form and a civil penalty to be indicated on the citation; establishing the standard of proof in a trial for a violation of law enforced by means of a speed monitoring system under this Act; requiring the Chief Judge of the District Court, in consultation with certain county agencies, to adopt certain procedures; authorizing persons receiving citations to have the speed monitoring system operator be present and testify at trial; providing that certain persons are responsible for paying the civil penalty indicated on the citation under certain circumstances; providing that persons receiving citations may elect to stand trial in the District Court; establishing defenses that the District Court may consider; authorizing vehicle owners to submit a certain letter to the District Court to establish a certain defense; authorizing the Motor Vehicle Administration to impose certain penalties if the person cited under this Act fails to pay the civil penalty or contest liability; prohibiting imposition of liability under this Act from being considered for certain purposes; providing for the admissibility and use of certain evidence; modifying the jurisdiction of the District Court to include certain proceedings; providing for the handling of certain court costs and penalties; defining certain terms; clarifying certain language; prohibiting the custodian of recorded images produced by a speed monitoring system from allowing inspection of the recorded images, subject to certain exceptions; providing that the fees of certain contractors may not be contingent on the number of citations issued under this Act; restricting the use of certain revenues generated by this Act; providing for the application of this Act; providing that existing obligations or contracts may not be impaired by this Act; requiring Montgomery County to report to the General Assembly on or before a certain date; and generally relating to imposition of liability on certain persons recorded by speed monitoring systems violating certain laws regarding the operation of motor vehicles in excess of certain speed limits.

BY repealing and reenacting, with amendments, Article - Courts and Judicial Proceedings Section 4-401(13), 7-301(a), 7-302(e), and 10-311 Annotated Code of Maryland (2002 Replacement Volume and 2004 Supplement)

BY repealing and reenacting, with amendments, Article - Insurance Section 11-215(e) and 11-318(e) Annotated Code of Maryland (2003 Replacement Volume and 2004 Supplement)

BY repealing and reenacting, with amendments, Article - State Government Section 10-616(o) Annotated Code of Maryland (1999 Replacement Volume and 2004 Supplement)

BY adding to Article - Transportation Section 21-809 Annotated Code of Maryland (2002 Replacement Volume and 2004 Supplement)

BY repealing and reenacting, with amendments, Article - Transportation Section 26-305(a) and 26-401 Annotated Code of Maryland (2002 Replacement Volume and 2004 Supplement)

NOTICE: **[A>** UPPERCASE TEXT WITHIN THESE SYMBOLS IS ADDED **<A]**
[D> Text within these symbols is deleted **<D]**

To view the next section, type .np* TRANSMIT.
To view a specific section, transmit p* and the section number. e.g. p*1

[*1] SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article - Courts and Judicial Proceedings

4-401.

Except as provided in Section 4-402 of this subtitle, and subject to the venue provisions of Title 6 of this article, the District Court has exclusive original civil jurisdiction in:

(13) A proceeding for a civil infraction under Section 21-202.1 **[A>** OR SECTION 21-809 **<A]** of the Transportation Article;

7-301.

(a) The court costs in a traffic case, including parking and impounding cases and cases under Section 21-202.1 **[A>** OR SECTION 21-809 **<A]** of the Transportation Article in which costs are imposed, are $ 20. Such costs shall also be applicable to those cases in which the defendant elects to waive his right to trial and pay the fine or penalty deposit established by the Chief Judge of the District Court by administrative regulation. In an uncontested case under Section 21-202.1 **[A>** OR SECTION 21-809 **<A]** of the Transportation Article or uncontested parking or impounding case in which the fines are paid directly to a political subdivision or municipality, costs are $ 2.00, which costs shall be paid to and retained by the political subdivision or municipality. In an uncontested case in which the fine is paid directly to an agency of State government authorized by law to regulate parking of motor vehicles, the costs are $ 2.00. The fine and the costs shall be paid to the agency, which shall receive and account for these funds as in all other cases involving sums due the State through a State agency.

7-302.

(e) (1) A citation issued pursuant to Section 21-202.1 **[A>** OR SECTION 21-809 **<A]** of the Transportation Article shall provide that the person receiving the citation may elect to stand trial by notifying the issuing agency of the person's intention to stand trial at least 5 days prior to the date of payment as set forth in the citation. On receipt of the notice to stand trial, the agency shall forward to the District Court having venue a copy of the citation and a copy of the notice from the person who received the citation indicating the person's intention to stand trial. On receipt thereof, the District Court shall schedule the case for trial and notify the defendant of the trial date under procedures adopted by the Chief Judge of the District Court.

(2) A citation issued as the result of a traffic control signal monitoring system **[A>** OR SPEED MONITORING SYSTEM **<A]** controlled by a political subdivision shall provide that, in an uncontested case, the penalty shall be paid directly to that political subdivision. A citation issued as the result of a traffic control signal monitoring system con-

trolled by a State agency |A> OR A SPEED MONITORING SYSTEM, IN A CASE CONTESTED IN DISTRICT COURT, <A| shall provide that the penalty shall be paid directly to the District Court.

(3) Civil penalties resulting from citations issued using traffic control signal monitoring systems |A> OR SPEED MONITORING SYSTEMS <A| that are collected by the District Court shall be collected in accordance with subsection (a) of this section and distributed in accordance with Section 12-118 of the Transportation Article.

10-311.

(A) A recorded image of a motor vehicle produced by a traffic control signal monitoring system in accordance with Section 21-202.1 of the Transportation Article is admissible in a proceeding concerning a civil citation issued under that section for a violation of Section 21-202(h) of the Transportation Article without authentication.

|A> (B) A RECORDED IMAGE OF A MOTOR VEHICLE PRODUCED BY A SPEED MONITORING SYSTEM IN ACCORDANCE WITH SECTION 21-809 OF THE TRANSPORTATION ARTICLE IS ADMISSIBLE IN A PROCEEDING CONCERNING A CIVIL CITATION ISSUED UNDER THAT SECTION FOR A VIOLATION OF TITLE 21, SUBTITLE 8 OF THE TRANSPORTATION ARTICLE WITHOUT AUTHENTICATION. <A|

(C) In any other judicial proceeding, a recorded image produced by a traffic control signal monitoring system |A> OR SPEED MONITORING SYSTEM <A| is admissible as otherwise provided by law.

Article - Insurance

11-215.

(e) For purposes of reclassifying an insured in a classification that entails a higher premium, an insurer under an automobile insurance policy may not consider a probation before judgment disposition of a motor vehicle law offense, a civil penalty imposed pursuant to Section 21-202.1 |A> OR SECTION 21-809 <A| of the Transportation Article, or a first offense of driving with an alcohol concentration of 0.08 or more under Section 16-205.1 of the Transportation Article on record with the Motor Vehicle Administration, as provided in Section 16-117(b) of the Transportation Article.

11-318.

(e) For purposes of reclassifying an insured in a classification that entails a higher premium, an insurer under an automobile insurance policy may not consider a probation before judgment disposition of a motor vehicle law offense, a civil penalty imposed pursuant to Section 21-202.1 |A> OR SECTION 21-809 <A| of the Transportation Article, or a first offense of driving with an alcohol concentration of 0.08 or more under Section 16-205.1 of the Transportation Article on record with the Motor Vehicle Administration, as provided in Section 16-117(b) of the Transportation Article.

Article - State Government

10-616.

(o) (1) In this subsection, "recorded images" has the meaning stated in Section 21-202.1 |A> OR SECTION 21-809 <A| of the Transportation Article.

(2) Except as provided in paragraph (3) of this subsection, a custodian of recorded images produced by a traffic control signal monitoring system operated under Section 21-202.1 of the Transportation Article |A> OR A SPEED MONITORING SYSTEM OPERATED UNDER SECTION 21-809 OF THE TRANSPORTATION ARTICLE <A| shall deny inspection of the recorded images.

(3) A custodian shall allow inspection of recorded images:

(i) as required in Section 21-202.1 or Section 21-809 of the Transportation Article;

(ii) by any person issued a citation under Section 21-202.1 or Section 21-809 of the Transportation Article, or an attorney of record for the person; or

(iii) by an employee or agent of a law enforcement agency in an investigation or proceeding relating to the imposition of or indemnification from civil liability pursuant to Section 21-202.1 or Section 21-809 of the Transportation Article.

Article - Transportation

[A> 21-809. <A]

[A> (A) (1) IN THIS SECTION THE FOLLOWING WORDS HAVE THE MEANINGS INDICATED. <A]

[A> (2) "LOCAL POLICE DEPARTMENT" MEANS: <A]

[A> (I) THE MONTGOMERY COUNTY DEPARTMENT OF POLICE; AND <A]

[A> (II) THE POLICE DEPARTMENT OF ANY MUNICIPAL CORPORATION IN MONTGOMERY COUNTY. <A]

[A> (3) (I) "OWNER" MEANS THE REGISTERED OWNER OF A MOTOR VEHICLE OR A LESSEE OF A MOTOR VEHICLE UNDER A LEASE OF 6 MONTHS OR MORE. <A]

[A> (II) "OWNER" DOES NOT INCLUDE: <A]

[A> 1. A MOTOR VEHICLE RENTAL OR LEASING COMPANY; OR <A]

[A> 2. A HOLDER OF A SPECIAL REGISTRATION PLATE ISSUED UNDER TITLE 13, SUBTITLE 9, PART III OF THIS ARTICLE. <A]

[A> (4) "RECORDED IMAGE" MEANS AN IMAGE RECORDED BY A SPEED MONITORING SYSTEM: <A]

[A> (I) ON: <A]

[A> 1. A PHOTOGRAPH; <A]

[A> 2. A MICROPHOTOGRAPH; <A]

[A> 3. AN ELECTRONIC IMAGE; <A]

[A> 4. *VIDEO*TAPE; OR <A]

[A> 5. ANY OTHER MEDIUM; AND <A]

[A> (II) SHOWING; <A]

[A> 1. THE REAR OF A MOTOR VEHICLE; <A]

[A> 2. AT LEAST TWO TIME-STAMPED IMAGES OF THE MOTOR VEHICLE THAT INCLUDE THE SAME STATIONARY OBJECT NEAR THE MOTOR VEHICLE; AND <A] [D> , <D]

[A> 3. ON AT LEAST ONE IMAGE OR PORTION OF TAPE, CLEARLY IDENTIFYING THE REGISTRATION PLATE NUMBER OF THE MOTOR VEHICLE. <A]

[A> (5) "SPEED MONITORING SYSTEM" MEANS A DEVICE WITH ONE OR MORE MOTOR VEHICLE SENSORS PRODUCING RECORDED IMAGES OF MOTOR VEHICLES TRAVELING AT SPEEDS AT LEAST 10 MILES PER HOUR ABOVE THE POSTED SPEED LIMIT. <A]

[A> (6) "SPEED MONITORING SYSTEM OPERATOR" MEANS AN INDIVIDUAL WHO OPERATES A SPEED MONITORING SYSTEM. <A]

[A> (B) (1) THIS SECTION APPLIES TO A VIOLATION OF THIS SUBTITLE THAT OCCURS IN MONTGOMERY COUNTY RECORDED BY A SPEED MONITORING SYSTEM THAT MEETS THE REQUIREMENTS OF THIS SUBSECTION AND HAS BEEN PLACED: <A]

[A> (I) ON A HIGHWAY IN A RESIDENTIAL DISTRICT AS DEFINED IN SECTION 21-101 OF THIS TITLE: <A]

[A> 1. WITH A MAXIMUM POSTED SPEED LIMIT OF 35 MILES PER HOUR; AND <A]

[A> 2. THAT HAS A SPEED LIMIT THAT WAS ESTABLISHED USING GENERALLY ACCEPTED TRAFFIC ENGINEERING PRACTICES; OR <A]

[A> (II) IN A SCHOOL ZONE ESTABLISHED UNDER SECTION 21-803.1 OF THIS SUBTITLE. <A]

[A> (2) (I) A SPEED MONITORING SYSTEM OPERATOR SHALL COMPLETE TRAINING BY A MANUFACTURER OF SPEED MONITORING SYSTEMS IN THE PROCEDURES FOR SETTING UP AND OPERATING THE SPEED MONITORING SYSTEM. <A]

[A> (II) THE MANUFACTURER SHALL ISSUE A SIGNED CERTIFICATE TO THE SPEED MONITORING SYSTEM OPERATOR UPON COMPLETION OF THE TRAINING. <A]

[A> (III) THE CERTIFICATE OF TRAINING SHALL BE ADMITTED AS EVIDENCE IN ANY COURT PROCEEDING FOR A VIOLATION OF THIS SECTION. <A]

[A> (3) A SPEED MONITORING SYSTEM OPERATOR SHALL FILL OUT AND SIGN A DAILY SET-UP LOG FOR A SPEED MONITORING SYSTEM THAT: <A]

[A> (I) STATES THAT THE SPEED MONITORING SYSTEM OPERATOR SUCCESSFULLY PERFORMED THE MANUFACTURER-SPECIFIED SELF-TEST OF THE SPEED MONITORING SYSTEM PRIOR TO PRODUCING A RECORDED IMAGE; <A]

[A> (II) SHALL BE KEPT ON FILE; AND <A]

[A> (III) SHALL BE ADMITTED AS EVIDENCE IN ANY COURT PROCEEDING FOR A VIOLATION OF THIS SECTION. <A]

[A> (4) (I) A SPEED MONITORING SYSTEM SHALL UNDERGO AN ANNUAL CALIBRATION CHECK PERFORMED BY AN INDEPENDENT CALIBRATION LABORATORY. <A]

[A> (II) THE INDEPENDENT CALIBRATION LABORATORY SHALL ISSUE A SIGNED CERTIFICATE OF CALIBRATION AFTER THE ANNUAL CALIBRATION CHECK, WHICH: <A]

[A> 1. SHALL BE KEPT ON FILE; AND <A]

[A> 2. SHALL BE ADMITTED AS EVIDENCE IN ANY COURT PROCEEDING FOR A VIOLATION OF THIS SECTION. <A]

[A> (C) (1) UNLESS THE DRIVER OF THE MOTOR VEHICLE RECEIVED A CITATION FROM A POLICE OFFICER AT THE TIME OF THE VIOLATION, THE OWNER OR, IN ACCORDANCE WITH SUBSECTION (F)(4) OF THIS SECTION, THE DRIVER OF A MOTOR VEHICLE IS SUBJECT TO A CIVIL PENALTY IF THE MOTOR VEHICLE IS RECORDED BY A SPEED MONITORING SYSTEM WHILE BEING OPERATED IN VIOLATION OF THIS SUBTITLE. <A]

[A> (2) A CIVIL PENALTY UNDER THIS SUBSECTION MAY NOT EXCEED <A] [D> $ 100 <D] [A> $ 40. <A]

[A> (3) FOR PURPOSES OF THIS SECTION, THE DISTRICT COURT SHALL PRESCRIBE: <A]

[A> (I) A UNIFORM CITATION FORM CONSISTENT WITH SUBSECTION <A]

[A> (D)(1) OF THIS SECTION AND SECTION 7-302 OF THE COURTS ARTICLE; AND <A]

[A> (II) A CIVIL PENALTY, WHICH SHALL BE INDICATED ON THE CITATION, TO BE PAID BY PERSONS WHO CHOOSE TO PREPAY THE CIVIL PENALTY WITHOUT APPEARING IN DISTRICT COURT. <A]

[A> (D) (1) SUBJECT TO THE PROVISIONS OF PARAGRAPHS (2) THROUGH (4) OF THIS SUBSECTION, THE LOCAL POLICE DEPARTMENT SHALL MAIL TO THE OWNER, LIABLE UNDER SUBSECTION (C) OF THIS SECTION, A CITATION THAT SHALL INCLUDE: <A]

[A> (I) THE NAME AND ADDRESS OF THE REGISTERED OWNER OF THE VEHICLE; <A]

[A> (II) THE REGISTRATION NUMBER OF THE MOTOR VEHICLE INVOLVED IN THE VIOLATION; <A]

[A> (III) THE VIOLATION CHARGED; <A]

[A> (IV) THE LOCATION WHERE THE VIOLATION OCCURRED; <A]

[A> (V) THE DATE AND TIME OF THE VIOLATION; <A]

[A> (VI) A COPY OF THE RECORDED IMAGE; <A]

[A> (VII) THE AMOUNT OF THE CIVIL PENALTY IMPOSED AND THE DATE BY WHICH THE CIVIL PENALTY SHOULD BE PAID; <A]

[A> (VIII) A SIGNED STATEMENT BY A DULY AUTHORIZED AGENT OF THE LOCAL POLICE DEPARTMENT THAT, BASED ON INSPECTION OF RECORDED IMAGES, THE MOTOR VEHICLE WAS BEING OPERATED IN VIOLATION OF THIS SUBTITLE; <A]

[A> (IX) A STATEMENT THAT RECORDED IMAGES ARE EVIDENCE OF A VIOLATION OF THIS SUBTITLE; <A]

[A> (X) INFORMATION ADVISING THE PERSON ALLEGED TO BE LIABLE UNDER THIS SECTION OF THE MANNER AND TIME IN WHICH LIABILITY AS ALLEGED IN THE CITATION MAY BE CONTESTED IN THE DISTRICT COURT; AND <A]

[A> (XI) INFORMATION ADVISING THE PERSON ALLEGED TO BE LIABLE UNDER THIS SECTION THAT FAILURE TO PAY THE CIVIL PENALTY OR TO CONTEST LIABILITY IN A TIMELY MANNER: <A]

[A> 1. IS AN ADMISSION OF LIABILITY; <A]

[A> 2. MAY RESULT IN THE REFUSAL BY THE ADMINISTRATION TO REGISTER THE MOTOR VEHICLE; AND <A]

[A> 3. MAY RESULT IN THE SUSPENSION OF THE MOTOR VEHICLE REGISTRATION. <A]

[A> (2) THE LOCAL POLICE DEPARTMENT MAY MAIL A WARNING NOTICE INSTEAD OF A CITATION TO THE OWNER LIABLE UNDER SUBSECTION (C) OF THIS SECTION. <A]

[A> (3) EXCEPT AS PROVIDED IN SUBSECTION (F)(4) OF THIS SECTION, THE LOCAL POLICE DEPARTMENT MAY NOT MAIL A CITATION TO A PERSON WHO IS NOT AN OWNER. <A]

[A> (4) EXCEPT AS PROVIDED IN SUBSECTION (F)(4) OF THIS SECTION, A CITATION ISSUED UNDER THIS SECTION SHALL BE MAILED NO LATER THAN 2 WEEKS AFTER THE ALLEGED VIOLATION IF THE VEHICLE IS REGISTERED IN THIS STATE, AND 30 DAYS AFTER THE ALLEGED VIOLATION IF THE VEHICLE IS REGISTERED IN ANOTHER STATE. <A]

[A> (5) A PERSON WHO RECEIVES A CITATION UNDER PARAGRAPH (1) OF THIS SUBSECTION MAY: <A]

[A> (I) PAY THE CIVIL PENALTY, IN ACCORDANCE WITH INSTRUCTIONS ON THE CITATION, DIRECTLY TO THE MONTGOMERY COUNTY DEPARTMENT OF FINANCE; OR <A]

[A> (II) ELECT TO STAND TRIAL IN THE DISTRICT COURT FOR THE ALLEGED VIOLATION. <A]

[A> (E) (1) A CERTIFICATE ALLEGING THAT THE VIOLATION OF THIS SUBTITLE OCCURRED AND THE REQUIREMENTS UNDER SUBSECTION (B) OF THIS SECTION HAVE BEEN SATISFIED, SWORN TO, OR AFFIRMED BY A DULY AUTHORIZED AGENT OF THE LOCAL POLICE DEPARTMENT, BASED ON INSPECTION OF RECORDED IMAGES PRODUCED BY A SPEED MONITORING SYSTEM, SHALL BE EVIDENCE OF THE FACTS CONTAINED IN THE CERTIFICATE AND SHALL BE ADMISSIBLE IN A PROCEEDING ALLEGING A VIOLATION UNDER THIS SECTION WITHOUT THE PRESENCE OR TESTIMONY OF THE SPEED MONITORING SYSTEM OPERATOR WHO PERFORMED THE REQUIREMENTS UNDER SUBSECTION (B) OF THIS SECTION. <A]

[A> (2) IF A PERSON WHO RECEIVED A CITATION UNDER SUBSECTION (D) OF THIS SECTION DESIRES THE SPEED MONITORING SYSTEM OPERATOR TO BE PRESENT AND TESTIFY AT TRIAL, THE PERSON SHALL NOTIFY THE COURT AND THE STATE IN WRITING NO LATER THAN 20 DAYS BEFORE TRIAL. <A]

[A> (3) ADJUDICATION OF LIABILITY SHALL BE BASED ON A PREPONDERANCE OF EVIDENCE. <A]

[A> (F) (1) THE DISTRICT COURT MAY CONSIDER IN DEFENSE OF A VIOLATION: <A]

[A> (I) SUBJECT TO PARAGRAPH (2) OF THIS SUBSECTION, THAT THE MOTOR VEHICLE OR THE REGISTRATION PLATES OF THE MOTOR VEHICLE WERE STOLEN BEFORE THE VIOLATION OCCURRED

AND WERE NOT UNDER THE CONTROL OR POSSESSION OF THE OWNER AT THE TIME OF THE VIOLATION; <A]

[A> (II) SUBJECT TO PARAGRAPH (3) OF THIS SUBSECTION, EVIDENCE THAT THE PERSON NAMED IN THE CITATION WAS NOT OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION; AND <A]

[A> (III) ANY OTHER ISSUES AND EVIDENCE THAT THE DISTRICT COURT DEEMS PERTINENT. <A]

[A> (2) IN ORDER TO DEMONSTRATE THAT THE MOTOR VEHICLE OR THE REGISTRATION PLATES WERE STOLEN BEFORE THE VIOLATION OCCURRED AND WERE NOT UNDER THE CONTROL OR POSSESSION OF THE OWNER AT THE TIME OF THE VIOLATION, THE OWNER SHALL SUBMIT PROOF THAT A POLICE REPORT REGARDING THE STOLEN MOTOR VEHICLE OR REGISTRATION PLATES WAS FILED IN A TIMELY MANNER. <A]

[A> (3) TO SATISFY THE EVIDENTIARY BURDEN UNDER PARAGRAPH (1)(II) OF THIS SUBSECTION, THE PERSON NAMED IN THE CITATION SHALL PROVIDE TO THE DISTRICT COURT A LETTER, SWORN TO OR AFFIRMED BY THE PERSON AND MAILED BY CERTIFIED MAIL, RETURN RECEIPT REQUESTED, THAT: <A]

[A> (I) STATES THAT THE PERSON NAMED IN THE CITATION WAS NOT OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION; <A]

[A> (II) PROVIDES THE NAME, ADDRESS, AND, IF POSSIBLE, THE DRIVER'S LICENSE IDENTIFICATION NUMBER OF THE PERSON WHO WAS OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION; AND <A]

[A> (III) INCLUDES ANY OTHER CORROBORATING EVIDENCE. <A]

[A> (4) (I) IF THE DISTRICT COURT FINDS THAT THE PERSON NAMED IN THE CITATION WAS NOT OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION OR RECEIVES EVIDENCE UNDER PARAGRAPH (3) OF THIS SUBSECTION IDENTIFYING THE PERSON DRIVING THE VEHICLE AT THE TIME OF THE VIOLATION, THE CLERK OF THE COURT SHALL PROVIDE TO THE LOCAL POLICE DEPARTMENT A COPY OF ANY EVIDENCE SUBSTANTIATING WHO WAS OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION. <A]

[A> (II) ON RECEIPT OF SUBSTANTIATING EVIDENCE FROM THE DISTRICT COURT UNDER SUBPARAGRAPH (I) OF THIS PARAGRAPH, THE LOCAL POLICE DEPARTMENT MAY ISSUE A CITATION AS PROVIDED IN SUBSECTION (D) OF THIS SECTION TO THE PERSON WHO THE EVIDENCE INDICATES WAS OPERATING THE VEHICLE AT THE TIME OF THE VIOLATION. <A]

[A> (III) A CITATION ISSUED UNDER SUBPARAGRAPH (II) OF THIS PARAGRAPH SHALL BE MAILED NO LATER THAN 2 WEEKS AFTER RECEIPT OF THE EVIDENCE FROM THE DISTRICT COURT. <A]

[A> (G) IF A PERSON LIABLE UNDER THIS SECTION DOES NOT PAY THE CIVIL PENALTY OR CONTEST THE VIOLATION, THE ADMINISTRATION: <A]

[A> (1) MAY REFUSE TO REGISTER OR REREGISTER THE MOTOR VEHICLE CITED FOR THE VIOLATION; OR <A]

[A> (2) MAY SUSPEND THE REGISTRATION OF THE MOTOR VEHICLE CITED FOR THE VIOLATION. <A]

[A> (H) A VIOLATION FOR WHICH A CIVIL PENALTY IS IMPOSED UNDER THIS SECTION: <A]

[A> (1) IS NOT A MOVING VIOLATION FOR THE PURPOSE OF ASSESSING POINTS UNDER SECTION 16-402 OF THIS ARTICLE; <A]

[A> (2) MAY NOT BE RECORDED BY THE ADMINISTRATION ON THE DRIVING RECORD OF THE OWNER OR DRIVER OF THE VEHICLE; <A]

[A> (3) MAY BE TREATED AS A PARKING VIOLATION FOR PURPOSES OF SECTION 26-305 OF THIS ARTICLE; AND <A]

[A> (4) MAY NOT BE CONSIDERED IN THE PROVISION OF MOTOR VEHICLE INSURANCE COVERAGE. <A]

[A> (I) IN CONSULTATION WITH THE MONTGOMERY COUNTY DEPARTMENT OF FINANCE AND THE LOCAL POLICE DEPARTMENTS, THE CHIEF JUDGE OF THE DISTRICT COURT SHALL ADOPT PROCEDURES FOR THE ISSUANCE OF CITATIONS, THE TRIAL OF CIVIL VIOLATIONS, AND THE COLLECTION OF CIVIL PENALTIES UNDER THIS SECTION. <A]

[A> (J) IF A CONTRACTOR OPERATES A SPEED MONITORING SYSTEM ON BEHALF OF MONTGOMERY COUNTY, THE CONTRACTOR'S FEE MAY NOT BE CONTINGENT ON THE NUMBER OF CITATIONS ISSUED OR PAID. <A]

26-305.

(a) The Administration may not register or transfer the registration of any vehicle involved in a parking violation under this subtitle, a violation under any federal parking regulation that applies to property in this State under the jurisdiction of the U. S. government, or a violation of Section 21-202(h) of this article as determined under Section 21-202.1 of this article [A> OR TITLE 21, SUBTITLE 8 OF THIS ARTICLE AS DETERMINED UNDER SECTION 21-809 OF THIS ARTICLE, <A] if:

(1) It is notified by a political subdivision or authorized State agency that [D> a <D] [A> THE <A] person cited for [D> a <D] [A> THE <A] violation under this subtitle or Section 21-202.1 [A> OR SECTION 21-809 <A] of this article has failed to either:

(i) Pay the fine for the violation by the date specified in the citation; or

(ii) File a notice of his intention to stand trial for the violation;

(2) It is notified by the District Court that a person who has elected to stand trial for the violation under this subtitle or under Section 21-202.1 [A> OR SECTION 21-809 <A] of this article has failed to appear for trial; or

(3) It is notified by a U. S. District Court that a person cited for a violation under a federal parking regulation:

(i) Has failed to pay the fine for the violation by the date specified in the federal citation; or

(ii) Either has failed to file a notice of his intention to stand trial for the violation, or, if electing to stand trial, has failed to appear for trial.

26-401.

If a person is taken before a District Court commissioner or is given a traffic citation or a civil citation under Section 21-202.1 [A> OR SECTION 21-809 <A] of this article containing a notice to appear in court, the commissioner or court shall be one that sits within the county in which the offense allegedly was committed.

[*2] SECTION 2. AND BE IT FURTHER ENACTED, That:

(1) Beginning in fiscal year 2006 and each fiscal year thereafter, Montgomery County shall use the revenues generated from the enforcement of speed limit laws as authorized under this Act solely to increase local expenditures for related public safety purposes, including pedestrian safety programs; and

(2) Related public safety expenditures required under this section shall be used to supplement and may not supplant existing local expenditures for the same purpose.

[*3] SECTION 3. AND BE IT FURTHER ENACTED, That this Act shall be construed to apply only prospectively and may not be applied or interpreted to have any effect on or application to any contract awarded before the effective date of this Act.

[*4] SECTION 4. AND BE IT FURTHER ENACTED, That an obligation or contract right existing on the effective date of this Act may not be impaired in any way by this Act.

[*5] SECTION 5. AND BE IT FURTHER ENACTED, That the Montgomery County Council shall report to the General Assembly on or before December 31, 2009, in accordance with Section 2-1246 of the State Government Article, on the effectiveness of speed monitoring systems in Montgomery County.

[*6] SECTION 6. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2005.

2006 Md. ALS 15, *; 2006 Md. Laws 15;
2006 Md. Chap. 15; 2005 Md. HB 443

HISTORY:
Enacted via veto override, January 25, 2006

SPONSOR: Introduced by Montgomery County Delegation

MEMORANDUM OF UNDERSTANDING

This memorandum of understanding between Montgomery County Maryland and the Mayor and Council of Rockville (the "City") sets forth agreed upon expectations by these two parties pertaining to the collection of fines from photo speed monitoring systems.

Montgomery County agrees that it will collect the fines paid in connection with citations issued by the City of Rockville Police Department as a result of a photo speed monitoring enforcement program that has been established by the City in accordance with provisions of State law. Montgomery County agrees that all fines collected by Montgomery County as a result of the issuance of a citation from the City of Rockville Police Department will be remitted in full to the municipality on a quarterly basis. Montgomery County will not charge an administrative fee for the collection and remittance of the fine, provided that the resources required for collection do not materially interfere with the other duties of the County's Department of Finance.

However, it is agreed that the City and the County will each be responsible for all costs due any vendor managing a speed monitoring system within their respective jurisdictions pursuant to a lawful contract, and any cost or charges from the Maryland Motor Vehicles Administration (MVA) for "flagging" vehicle registrations as a result of non-payment of a citation issued under the photo radar speed monitoring program.

In the event that the County finds that the collection and remittance of fines to the City does materially interfere with the other duties of the County's Department of Finance, the County will notify the City and will not charge any administrative fee until at least 60 days after such notice. Staff from the City of Rockville and the County will meet to discuss the most cost effective manner in which to administer the collection and remittance of these revenues.

The City agrees that it will use the revenues generated from a photo speed monitoring program solely to increase expenditures for related public safety purposes, including pedestrian safety programs. Related public safety expenditures shall be used to supplement and not supplant existing expenditures for the same purposes.

The City of Rockville will pursue, and Montgomery County will support, a legislative remedy in the 2007 legislative session that will allow the City to collect fines directly. At such time as the remedy is enacted and the City establishes its own collection mechanism, this memorandum of understanding will cease to be binding and Montgomery County will no longer collect fines from citations issues by the City of Rockville Police Department.

If the General Assembly does not amend the existing law, staff from the County and the City will meet annually to discuss the most efficient manner to collect and remit these revenues.

Montgomery County, Maryland

By: _____
Bruce Romer, Chief Administrative Officer

Date: : 3-22-06

The Mayor and Council of Rockville

By: _____
Scott Ullery, City Manager

Date: : 3/21/06

TOTAL P.03

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding between Montgomery County Maryland and Chevy Chase Village (the "Village") sets forth agreed upon expectations by these two parties pertaining to the collection of fines from photo speed monitoring systems.

Montgomery County agrees that it will collect the fines paid in connection with citations issued by the Chevy Chase Village Police Department as a result of a photo speed monitoring enforcement program that has been established by the Village in accordance with provisions of State law. Montgomery County agrees that all fines collected by Montgomery County as a result of the issuance of a citation from the Chevy Chase Village Police Department will be remitted in full to the municipality on a monthly basis. Montgomery County will not charge an administrative fee for the collection and remittance of the fine, provided that the resources required for collection do not materially interfere with the other duties of the County's Department of Finance.

However, it is agreed that the Village and the County will each be responsible for all costs due any vendor managing a speed monitoring system within their respective jurisdictions pursuant to a lawful contract, and any cost or charges from the Maryland Motor Vehicles Administration (MVA) for "flagging" vehicle registrations as a result of non-payment of a citation issued under the photo speed monitoring program.

If the Village selects a different vendor for its speed monitoring equipment and related supplies and services than the County selects as a result of the County's competitive procurement process, the Village will be responsible for any additional costs to the County that results as a consequence of the Village's use of a different vendor, including, but not limited to, County employee or contractor personnel costs, software or equipment modifications, or other costs.

In the event that the County finds that the collection and remittance of fines to the Village does materially interfere with the other duties of the County's Department of Finance, the County will notify the Village and will not charge any administrative fee until at least 60 days after such notice. Staff from the Village and the County will meet to discuss the most cost effective manner in which to administer the collection and remittance of these revenues.

The Village agrees that it will use the revenues generated from a photo speed monitoring program solely to increase expenditures for related public safety purposes, including pedestrian safety programs. Related public safety expenditures shall be used to supplement and not supplant existing expenditures for the same purposes.

The Village will pursue, and Montgomery County will support, a legislative remedy in the 2007 legislative session that will allow the Village to collect fines directly. At such time as the remedy is enacted and the Village establishes its own collection mechanism, this memorandum of understanding will cease to be binding and Montgomery County

will no longer collect fines from citations issued by the Chevy Chase Village Police Department.

If the General Assembly does not amend the existing law, staff from the County and the Village will meet annually to discuss the most efficient manner to collect and remit these revenues.

Montgomery County, Maryland

By: _____

Bruce Romer, Chief Administrative Officer

Date: 8-31-06

Chevy Chase Village

By: _____

Geoffrey B. Biddle, Village Manager

Date: 8/30/06

Evaluation of Automated Speed Enforcement in Montgomery County, Maryland

Richard A. Retting
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January 2008

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ABSTRACT

Speeding is a major factor in motor vehicle crashes, and almost one-quarter of speeding-related fatalities occur on streets with speed limits of 35 mph or less. In 2007, Montgomery County implemented the state of Maryland's first automated speed enforcement program, with camera use limited to residential streets with speeds limits of 35 mph or less and school zones. Vehicle speeds were measured approximately 6 months before and 6 months after speed cameras were deployed, and signs were installed warning of the speed enforcement program. Relative to comparison sites in Virginia, the proportion of drivers traveling more than 10 mph above posted speed limits declined by about 70 percent at Montgomery County locations with both warning signs and speed camera enforcement, 39 percent at locations with warning signs but no speed cameras, and 16 percent on residential streets with neither warning signs nor speed cameras. Public opinion surveys found 74 percent of Montgomery County drivers thought speeding on residential streets was a problem. Six months after enforcement began, 60 percent of drivers were aware of the camera program and 62 percent supported it.

INTRODUCTION

Speeding is a major factor in motor vehicle crashes, especially those resulting in serious injuries (Elvik, 2005). In the United States, speeding — as defined on police crash reports as driving too fast for conditions, exceeding posted speed limits, or racing — was a contributor in about 32 percent of crash deaths in 2006, resulting in more than 13,500 fatalities (Insurance Institute for Highway Safety (IIHS), 2008). Although speeding is often associated with interstates and other high-speed roads, nearly 90 percent of speeding-related fatalities occur on roads other than interstate highways. In 2006 23 percent of all speeding-related fatalities occurred on streets with speed limits of 35 mph or less. Publicized police enforcement has been shown to reduce vehicle travel speeds and crashes (Stuster, 1995). However, many enforcement agencies do not have sufficient resources to mount effective speed enforcement programs. Staffing levels have not kept pace with the growth in motor vehicle travel. Between 1995 and 2005 the estimated number of vehicle miles traveled in the United States increased by 23 percent (Federal Highway Administration, 2007), but the number of municipal law enforcement officers grew by 12 percent (Federal Bureau of Investigation, 2007). In a survey of US drivers only 1 in 10 reported being stopped for speeding during the past 12 months, even though about three-quarters said they drove above speed limits on all types of roads (National Highway Traffic Safety Administration, 2002).

As a supplement to traditional police enforcement, speed cameras are used throughout the world to deter and punish speeding behavior. Speed cameras monitor traffic speeds and photograph drivers traveling above specified speeds, usually well above the speed limit. There are two methods for deploying speed cameras: mobile cameras accompanied by enforcement personnel that may be moved

among various locations, and fixed cameras that monitor speeds at specific locations and are unaccompanied by officers. A growing body of evidence, based primarily on studies conducted in Australia and Europe, shows that speed cameras can substantially reduce speeding violations and injury crashes (Pilkington and Kinra, 2005; Wilson et al., 2006). Although some US studies have been conducted (Berkuti and Osburn, 1998; Retting and Farmer, 2003), evidence of speed camera effectiveness in the United States is limited due to the relatively recent introduction of camera enforcement and the small number of US programs that have been formally evaluated.

The purpose of the present study was to evaluate the effects on traffic speeds and public opinions during the first 6 months of speed camera enforcement in Montgomery County, Maryland.

METHODS

The study was conducted in Montgomery County, Maryland, a large, populous suburb of Washington, DC. with a geographic area of 496 square miles and a population of about 930,000 residents (US Census Bureau, 2008). In 2006 Montgomery County became the first Maryland jurisdiction authorized to deploy speed cameras. Camera-based enforcement is permitted on residential streets with speed limits up to 35 mph and in school zones. Tickets can be issued for vehicles observed traveling at least 10 mph above the speed limit. The registered vehicle owner is subject to a $40 fine with no driver license points. Rear photography is used to capture an image of the rear license plate of a vehicle detected speeding. The driver is not photographed.

Program Description

Montgomery County officials sought to develop a model speed camera program designed to optimize the safety benefits of camera enforcement and to garner high levels of public support. The concept of developing a model program grew in part from recent research by Delaney et al. (2005) that identified common controversies associated with speed camera programs around the world and suggested techniques to address them. Controversies include fine revenue (claim that the aim of cameras is to raise revenue rather than increase safety), fairness (e.g., identification of vehicle owner rather than driver, lack of opportunity to explain the circumstances to a police officer on the spot), speeding not perceived as a safety problem, and privacy concerns.

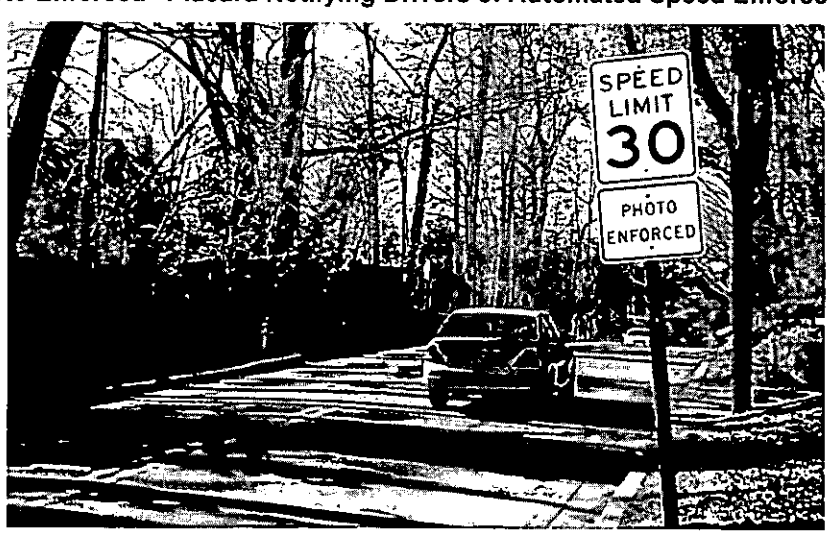
In line with recommendations by Delaney et al. (2005), Montgomery County officials placed considerable emphasis on creating public awareness of the speed camera program and building public support for automated speed enforcement. Police officials developed a public information and education campaign that initially emphasized the dangers of speeding and the role of speed cameras, and later informed drivers that speed cameras were in use. The campaign included press releases, a program website, informational materials, a speakers bureau, and a logo to create public brand recognition of the

"Safe Speed" program (Figure 1). This logo was used by Montgomery County as well as three smaller municipalities within the county (Chevy Chase, Gaithersburg, and Rockville) that planned to implement speed camera programs.

Figure 1
Montgomery County Speed Camera Program Logo

Selection of sites for potential camera enforcement was based on several factors, including crash data, vehicle speed data, and input from citizen advisory boards. Speed camera enforcement was preceded by a 30-day warning period, during which cameras photographed violators, but no tickets were issued. A press conference held at the start of the warning period attracted extensive media coverage, including print and broadcast media and local and regional coverage. A second press conference, held when enforcement began, also generated extensive media coverage. Signs advising motorists of speed camera enforcement were posted on major roadways entering Montgomery County, and "photo enforced" placards were installed below the speed limit signs on roads designated for camera enforcement (Figure 2).

Figure 2
"Photo Enforced" Placard Notifying Drivers of Automated Speed Enforcement



The initial camera enforcement consisted of six mobile cameras deployed in marked vans by specially trained, radar-certified police employees operating in two shifts per day. The vans were in service from approximately 6 a.m. to 9 p.m., Monday through Saturday, and rotated among 10-12 locations. During the first 6 months of enforcement, mobile cameras were deployed at about 60 locations and resulted in the issuance of approximately 40,000 citations. Mobile cameras later were supplemented by two fixed speed cameras, with the first one installed about 5 months after mobile enforcement began, and the second site operational about 1 month later.

Study Design

The study examined traffic speeds and driver attitudes toward speeding and automated speed enforcement approximately 6 months before and 6 months after the start of the speed camera program in May 2007.

Traffic Speed Measurements

One year in advance of the camera program, Montgomery County police identified 40 locations as potential camera enforcement sites. Of these locations, 20 were randomly selected for evaluation. Although all 20 of the study locations were on roads where "photo enforced" warning signs were posted, cameras were deployed at only 5 of the 20 locations during the initial 6-month enforcement period. The police deployed speed cameras at about 60 locations throughout the county during the 6-month study period, so these 5 "camera" sites represented about 1 in 12 camera-enforced locations. Nineteen of the 20 study sites were residential streets with speed limits that ranged from 25 to 35 mph. One of the sites with warning signs but no camera enforcement was located within a school zone on an arterial street with a speed limit of 40 mph. At the school zone site the speed limit was lowered from 40 to 30 mph for about 1 hour at the beginning and 1 hour at the end of each school day, with flashing yellow beacons indicating the reduced speed limit.

To examine potential spillover effects of camera enforcement to nonenforced locations within the same county where neither warning signs or speed cameras were deployed, 10 sites were randomly selected from 20 Montgomery County locations that had similar characteristics (e.g., roadway geometry, traffic volumes, residential land use) as most of the camera-enforced locations, but were ineligible for speed cameras because they had 40 mph speed limits. A fourth group of study sites located in nearby areas of Virginia was selected to control for external factors that might affect traffic speeds (e.g., seasonal variability in travel patterns). Ten comparison sites were randomly selected from 20 locations on residential streets in Arlington County and Fairfax County, Virginia, that had roadway characteristics and traffic volumes similar to those of potential camera-enforced locations in Montgomery County. Speed limits at the Virginia comparison sites ranged from 25 to 35 mph. One site was located within a school

zone. The speed limit at this site was lowered from 35 to 25 mph at the beginning and at the end of each school day, with flashing yellow beacons indicating the reduced speed limit.

Traffic speeds were recorded at all study sites using speed camera technology similar to the equipment used for the enforcement program. The study cameras were deployed on the roadside in a covert manner by a photo enforcement vendor not affiliated with the Montgomery County speed camera program. The equipment was concealed in a metal housing and electronically recorded the speeds of all passing vehicles. At each location traffic speeds were measured from approximately 10 a.m. to 4 p.m. on weekdays.

Telephone Surveys

To assess public awareness of the speed camera program and attitudes toward camera enforcement, telephone surveys were conducted approximately 6 months in advance of camera enforcement and the public education campaign, and then approximately 6 months following implementation of the speed camera program. Random-digit-dialing methods were used to select representative samples of 800 licensed drivers ages 18 and older residing in the county.

Analyses

Summary measures of vehicle speeds included mean speeds and the proportion of vehicles exceeding posted speed limits by more than 10 mph. Although the amount of time spent at each study site was approximately the same in the before and after periods, changes in traffic volume at some sites led to large differences in the before and after sample sizes. Thus some sites accounted for a much larger portion of the sample in the after period compared with the baseline sample. To ensure consistent representation of each study site in the two time periods, overall statistics for each group of sites were computed as a weighted average of the statistics for each site, with weights defined as the proportion of vehicles observed at each site during the before period. Changes in mean speed were evaluated using linear regression models, including terms for site-to-site variability and expected variability over time. Logistic regression models were used to estimate the effect of the program on the proportion of speeding vehicles.

Survey results were evaluated statistically using chi-square (χ^2) tests of homogeneity.

RESULTS

Traffic Speeds

A total of 180,196 speed measurements were recorded at all sites during all phases of data collection. About 1,200 observations were excluded at two sites (one Montgomery County site with warning signs but no camera enforcement, and one Virginia comparison site) during times when reduced

"school zone" speed limits and flashing yellow beacons were in effect, leaving a total of 178,954 observations (99 percent of the original sample).

Table 1 summarizes mean traffic speeds and the proportion of vehicles exceeding speed limits by more than 10 mph for the four groups of study sites.

Table 1
Traffic Speeds before and after Implementation of Speed Camera Program

Location type	Number of sites	Mean speeds (mph)		Percent exceeding speed limit by >10 mph	
		Before	After*	Before	After*
Maryland sites					
Signs installed, cameras deployed	5	42	38	30	10
Signs installed, cameras not deployed	15	39	37	25	16
Similar sites with 40 mph speed limits	10	43	41	10	6
Virginia comparison sites	10	36	36	12	10

*Computed as weighted averages across sites, where the weights equal the proportion of vehicles observed at each site during the before period.

Mean speeds and the proportion of vehicles exceeding speed limits by more than 10 mph declined at all 30 of the Maryland sites and 9 of the 10 Virginia sites. However, the declines were greater at the Maryland sites, particularly at those sites with cameras deployed. At the 5 locations where "photo enforced" signs were installed and speed cameras were deployed, the decline in mean speeds ranged from 5 to 18 percent, and the average decline was 10 percent.

Tables 2 and 3 summarize results of the regression models. The time effect represented an estimate of the change that occurred apart from the influence of the speed camera program (i.e., at the Virginia comparison sites). So according to Table 2, mean speeds at the Virginia comparison sites

Table 2
Estimated Effects of Speed Camera Program on Mean Speeds

Effect	F-value	p-value	Estimate	Percent reduction*
Site	2333.98	<0.0001		
Time (2007 vs. 2006)	186.86	<0.0001	-0.0195	1.9
Signs and cameras vs. comparison	1517.32	<0.0001	-0.0933	8.9
Signs only vs. comparison	604.86	<0.0001	-0.0426	4.2
Spillover vs. comparison	120.80	<0.0001	-0.0199	2.0

*As the dependent variable was the natural logarithm of each measured speed, percent reduction was computed as 1 minus the inverse logarithm of the estimate.

Table 3
Estimated Effects of Speed Camera Program on Exceeding Speed Limit by >10 mph*

Effect	*Odds ratio*	*Percent reduction*	*95% confidence limits*	
			Lower	Upper
Time (2007 vs.2006)	0.70	30	25	35
Signs and cameras vs. comparison	0.30	70	66	73
Signs only vs. comparison	0.61	39	33	44
Spillover vs. comparison	0.84	16	7	24

*Logistic regression on the odds of exceeding the speed limit by >10 mph.

declined by about 2 percent. At Montgomery County locations where "photo enforced" signs were installed and speed cameras were deployed, mean speeds declined by another 9 percent (an estimated decline of 11 percent minus the 2 percent decline observed at the Virginia comparison sites). The proportion of vehicles exceeding speed limits by more than 10 mph declined by 70 percent at these sites relative to the Virginia comparison sites (Table 3). Relative to the Virginia comparison sites, at Montgomery County locations with warning signs but no camera deployment, mean speeds declined by 4 percent and the proportion of vehicles exceeding speed limits by more than 10 mph declined by 39 percent. At the noncamera enforced "spillover" sites in Montgomery County, mean speeds declined by 2 percent and the proportion of vehicles exceeding speed limits by more than 10 mph declined by 16 percent, relative to the Virginia comparison sites.

Telephone Surveys

Samples of drivers surveyed before and after the start of enforcement included similar proportions of drivers by age group and gender. When asked if speeding was a problem on residential streets, about 74 percent of drivers during both study periods said it was; about 18-19 percent said it was not, and about 7-8 percent did not know. Among drivers who said speeding was a problem, close to half during both study periods said it was a big problem. During both study periods about 78 percent of female respondents thought speeding was a problem compared with 67-68 percent of males (before enforcement: $\chi^2 = 8.4$, $p = 0.0151$, $df = 2$; during enforcement: $\chi^2 = 15.1$, $p = 0.0005$, $df = 2$). There were no consistent differences by age group.

Drivers were asked if speed cameras currently were in use on residential streets in Montgomery County (table not shown). Before camera enforcement 46 percent of drivers responded correctly that speed cameras were not in use (32 percent said cameras were in use, and 22 percent said they did not know). Six months after enforcement began 60 percent of drivers responded correctly that speed cameras were in use (20 percent said cameras were not in use, and 20 percent said they did not know). During camera enforcement young drivers (ages 18-34) were more likely than drivers ages 35-64 and 65 and older to respond correctly that speed cameras were in use (68 versus 61 and 53 percent, respectively; $\chi^2 = 12.5$, $p = 0.0142$, $df = 4$).

Drivers were asked their opinions about the use of speed cameras on residential streets in Montgomery County (Table 4). Those who thought cameras were in use were asked "Do you favor the use of cameras to enforce laws against speeding on residential streets in Montgomery County?" Those who thought cameras were not in use or did not know were asked "Would you favor the use of cameras..." Results in Table 4 were combined for both groups of drivers. The proportion of drivers who favored speed cameras was 58 percent before camera enforcement and 62 percent 6 months after

Table 4
Responses of Montgomery County Drivers Concerning Approval of Speed Cameras on Residential Streets before and after Start of Enforcement (percent)

	Before enforcement				During enforcement			
	N	Favor	Oppose	Don't know	N	Favor	Oppose	Don't know
Overall	800	58	33	9	800	62	31	8
Ages 18-34	107	52	36	11	106	58	37	5
Ages 35-64	518	56	36	8	519	60	33	7
Ages 65+	175	69	21	10	175	69	21	10
Male	299	53	40	7	309	54	40	6
Female	501	62	29	10	491	67	25	8

enforcement began. In both surveys support for speed cameras was higher among females (before enforcement: $\chi^2 = 11.7$, $p = 0.0029$, $df = 2$; during enforcement: $\chi^2 = 20.0$, $p < 0.0001$, $df = 2$) and among older drivers (before enforcement: $\chi^2 = 15.6$, $p = 0.0036$, $df = 4$; during enforcement: $\chi^2 = 11.8$, $p = 0.0192$, $df = 4$).

In the survey conducted during camera enforcement, drivers opposed to speed cameras ($n = 245$) were asked if they were opposed to surveillance cameras used by law enforcement agencies in general, or only those that ticket speeders. One-third of respondents said they were opposed to surveillance cameras in general, about half (45 percent) were opposed only to speed cameras, and 21 percent had no opinion (table not shown). Drivers aware of the camera program ($n = 479$) were asked if the speed cameras had caused them to reduce their speeds when traveling on residential streets in Montgomery County; 57 percent said they had (table not shown).

In the survey conducted during camera enforcement, drivers were asked if the speed camera program should be expanded to include major arterial streets and interstate highways. The level of support for expanding camera enforcement to arterial streets was 62 percent, the same proportion of drivers that favored use of speed cameras on residential streets. By comparison, 47 percent of drivers favored expanding the use of speed cameras to interstate highways (table not shown).

DISCUSSION

The present study found large and significant reductions in speeding 6 months after implementation of Maryland's first speed camera program in Montgomery County. The size of the effect on speeding 10 mph or more above the speed limit varied by type of study site — 70 percent on streets with both warning signs and speed cameras, 39 percent on streets with just warning signs, and 16 percent on residential streets in the same county with neither warning signs nor speed cameras. The finding of speed reductions beyond the specific locations where cameras were deployed during the initial enforcement period is evidence that highly visible automated enforcement can promote community-wide changes in driver behavior. So-called "distance halo effects" are a key advantage of automated speed

enforcement that generally are not achieved by traditional police speed enforcement (Zaal, 1994). Field studies by Barnes (1984) and Hauer et al. (1982) found speed reductions associated with traditional speed enforcement lasted only several kilometers after police were encountered.

Increasing the perceived risk of detection is one of the most important objectives of all speed enforcement strategies (Ostvik and Elvik, 1990). In most communities with automated speed enforcement programs the number of speed cameras is relatively small compared with the number of roads, so it is important to promote a perception of widespread camera use through highly visible public information and education activities. Informing drivers about the dangers of speeding and the role of automated enforcement, and alerting drivers that cameras are in use, help to build broad support for camera enforcement and are needed throughout the life of the enforcement program.

To maximize potential safety benefits of community automated speed enforcement programs, the primary criterion for camera deployment should be a history of crashes and, to the extent possible, a history of speed-related injury crashes. Other factors such as complaints of speeding, documented speeding problems, and geography should be given secondary consideration.

Although a majority of drivers supported automated speed enforcement on residential streets in Montgomery County, about one-third opposed it. Opponents can express strong views that generate controversies wherever speed cameras are used. Jurisdictions planning to implement speed camera programs should draw on international experience to anticipate the controversies that generally arise (Delaney et al., 2005) and take steps in advance to address them. These steps include (1) targeting locations or corridors with a history of crashes; (2) conducting highly visible public information and education campaigns to create awareness of the dangers of speeding and scope of the community's speeding problem, awareness of the speed camera program, and support for automated speed enforcement; (3) making camera enforcement conspicuous with warning signs and marked vehicles to maximize deterrent effects; and (4) limiting the responsibility of camera vendors to a supporting role.

In Montgomery County support for automated speed enforcement varied by road type, with 62 percent of drivers in support of speed cameras on surface streets and 47 percent in support on interstate highways. The level of support on residential streets and arterials is about equal to results from a recent nationwide telephone survey that found 60 percent of drivers favored speed cameras (Insurance Research Council, 2007). Differences in the level of support by road type might reflect the extent to which drivers perceive speeding is a safety problem or the extent to which they think it is acceptable to speed on these roads. In a recent study of automated speed enforcement on a high-speed urban freeway in Scottsdale, Arizona, 77 percent of drivers favored the use of speed cameras. This relatively high level of support occurred simultaneously with widespread concerns about speeding; about 80 percent of drivers said speeding was a problem on the freeway where speed cameras were deployed (Retting et al., 2007).

The current study did not evaluate crash outcomes because of the short amount of time speed cameras had been in effect. Research from countries with more extensive speed camera use has established crash and injury reductions associated with automated speed enforcement (Pilkington and Kinra, 2005; Wilson et al., 2006). Longer term studies are needed to assess effects of sustained speed camera enforcement on vehicle speeds and injury crashes in Montgomery County.

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