A GUIDE TO RED LIGHT CAMERA PROGRAMS

STOP ON RED = SAFE ON GREEN

The National Campaign to Stop Red Light Running is an independent advocacy initiative guided by a voluntary national Advisory Board comprised of leaders from the fields of traffic safety, law enforcement, transportation engineering, healthcare and emergency medicine. The Campaign was founded in July 2001 to provide the public and elected officials with a better understanding of the seriousness of the red light running problem and law enforcement practices and tools, including red light cameras, that can make our roadways safer. Our goal is to save lives by reducing the incidence of red light running in the United States and the fatalities and injuries it causes. For more information on the Campaign, go to *(http://www.stopredlightrunning.com)*.

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FIELD NOTES. Tips and best practices from successful red light camera programs are boxed and interspersed throughout the guide, including highlights from programs in

For links to program websites, see Appendix A.

ACKNOWLEDGMENTS

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Glenn Hansen, a member of the traffic law enforcement committee of the National Academy of Science's Transportation Research Board and a lieutenant with the Howard County Police Department;

Barbara Harsha of the Governors Highway Safety Association;

Patrick Hasson, safety engineer in the Federal Highway Administration's Midwestern Resource Center;

Bryan Porter, behavioral psychologist & associate professor at Old Dominion University;

Richard Retting, senior transportation engineer for the Insurance Institute for Highway Safety; and

Lisa Sutter, senior program manager/state and local solutions at ACS.

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THE NATIONAL CAMPAIGN TO STOP RED LIGHT RUNNING ADVISORY BOARD

Barbara Harsha
Executive Director,
Governors Highway Safety Association

Brian O'Neill
President,
Insurance Institute for Highway Safety

Judith Lee Stone
President and Executive Director,
Advocates for Highway and Auto Safety

Harry Teter
Executive Director,
American Trauma Society

Wendy Hamilton
National President,
Mothers Against Drunk Driving (MADD)

Ann Sweet
Founder, Focus on Safety

Bill Wilkinson
Executive Director,
National Center for Bicycling and Walking

Bryan Porter, Ph. D
Associate Professor of Psychology,
Old Dominion University

Dr. Ricardo Martinez
Clinical Professor of Emergency Medicine, Emory University
Former Administrator of the National Highway Traffic Safety Administration

Allen Fields
Chief Justice,
Republic of the Marshall Islands

Louis Blanas
Sheriff,
Sacramento County, CA

Terry Gainer
Chief of Police,
U.S. Capitol Police, Washington, D.C.

Earl Sweeney
Director, New Hampshire Police Standards and Training, Chairman of the Highway Safety Committee, International Association of Chiefs of Police

Peter Harkness
Editor and Publisher,
Governing Magazine

GUIDE'S PURPOSE

Over the past decade, red light camera technology in the United States has grown from an experimental enforcement tool to a mature traffic safety strategy that is being successfully used in communities across the country. Red light camera programs of today and tomorrow are built on the lessons learned—both the successes and shortcomings—along the way. This publication is intended to serve as a guide to help localities build upon that past experience to design and implement successful red light camera programs. Based on up-to-date research and best practices and experiences of successful programs across the United States, this guide provides references for related research, resources and backup materials that can help promote a photo enforcement program that enhances intersection safety. It does not suggest that there is only one correct way to implement a red light camera program. Program applications and details must be determined by the circumstances of individual jurisdictions.

Included is practical information for developing or supporting a red light camera program, such as a model red light camera law and tips on how to start a program and keep one running. Program management guidance is based on reports and interviews with managers and program administrators from around the country. Sound program management is essential to preserve program credibility and public support.

THE PROBLEM

A 2001 report by the New York City Comptroller's office found that drivers citywide run more than 1 million red lights during a typical 7 a.m. to 7 p.m. workday.

Red light running was to blame for approximately 200,000 crashes, over 150,000 injuries, and more than 1,100 fatalities in 2001, according to initial estimates.[1] It plagues cities—where running traffic controls is the leading cause of urban automobile crashes—as well as rural communities.

From 1992–2000, the number of fatal crashes at signalized intersections jumped 19 percent nationally, with red light running being the single most frequent cause—that's more than three times the rate of increase for all other fatal crashes during the same period.[2] More than half of those deaths were pedestrians and occupants in other vehicles hit by red light runners. In addition to the tragic loss of life and health, the financial cost to the public was estimated to be in excess of $12 billion a year.[3] The California Highway Patrol estimates that each red light running fatality costs society $2,600,000 and other red light running crashes cost between $2,000 and $183,000 depending on their severity.[4]

Despite such catastrophic consequences, only a tiny fraction of red light offenders face any punishment for their actions.

Who are red light runners?

As can be observed at almost any intersection across the country, drivers of all ages, economic groups and gender run red lights. As a group, an Insurance Institute for Highway Safety (IIHS) study found that red light violators involved in crashes were more likely than non red light runners to be young (under 30), to have invalid driver's licenses, to be alcohol impaired, and to not wear seat belts.[5]

Many of us are all too familiar with red light runners

Red light running scares and angers motorists, yet even those who condemn it continue to put themselves and others at risk. Most Americans (96 percent) are afraid of being hit by a red light runner,[6] but nearly 1 in 5 admit to running a red light in the last 10 intersections.[7] The leading excuse given for speeding up to beat a light about to turn red is simply "being in a hurry."[8]

Far too many drivers view stopping on red as optional. An IIHS study found that during peak commuting time at an intersection in Virginia, a motorist ran a red light every five minutes. A 2001 report by the New York City Comptroller's office found that drivers citywide run more than 1 million red lights during a typical 7 a.m. to 7 p.m. workday.[9]

According to a survey conducted by the U.S. Department of Transportation and the American Trauma Society, 63 percent of Americans see someone running a red light at least a few times a week. One in three Americans knows someone who has been injured or killed in a red light running crash.[10]

Public Response

Red light cameras are increasingly being used to address this problem. They are in use in more than 70 U.S. communities (for list, see IIHS webpage, *http://www.hwysafety.org/safety_facts/rlc_cities.htm*). Although not without detractors (many public safety initiatives meet resistance early on), red light camera programs have widespread public support. A 2001 Harris Poll, conducted for the Advocates for Highway and Auto Safety, found that 73 percent of the public supports red light camera enforcement. Polls conducted by the Insurance Institute for Highway Safety also have found that the large majority of the U.S. public supports the use of red light cameras—80 percent in five cities with cameras and 76 percent in five cities without cameras (*http://www.hwysafety.org/srpdfs/sr3604.pdf*).

Organized Initiatives to Stop Red Light Running

Public awareness and opposition to red light running have led to several national and local initiatives, including national initiatives such as the **National Campaign to Stop Red Light Running** and the Federal Highway Administration's **Stop Red Light Running Program**. **The Red Means Stop Coalition**, a Phoenix, Arizona, non-profit organization established in 1999, is an excellent example of a local initiative. (See Appendix B)

Percent of Drivers Who Favor Red Light Cameras

provided by IIHS

In Cities With Cameras:	
Fairfax, Virginia	84%
Charlotte, North Carolina	82%
Oxnard, California	79%
Mesa, Arizona	78%
San Francisco, California	77%

In Cities Without Cameras:	
Fort Lauderdale, Florida	82%
Raleigh/Durham, North Carolina	76%
Arlington, Texas	74%
Charlottesville, Virginia	74%
Fresno, California*	72%

* This poll was published April 28, 2001. Since then, Fresno, California, has begun using red light cameras.

For a list of red light running abatement initiatives from across the country go to *www.stopredlightrunning.com.*

BENEFITS OF RED LIGHT CAMERAS

AN EFFECTIVE COUNTERMEASURE TO A DEADLY PROBLEM

Most encouragingly, there seems to be a spillover effect of violation reductions to intersections not equipped with cameras, indicating that photo enforcement is leading to a more widespread behavioral change.

Red light cameras have led to significant decreases in intersection violations and crashes in communities throughout the United States and around the world. Photo enforcement is a proven deterrent that can bring about a behavior change that results in motorists obeying traffic signals, respecting fellow drivers, and avoiding the crashes, injuries and loss of life caused by red light running. Numerous studies have shown that red light cameras reduce violations. Recent studies show that photo enforcement leads to a 25 to 30 percent reduction in intersection injury crashes as well.[11]

With increasing substantiation of benefits and growing public support, more and more communities are turning to photo enforcement programs to supplement traditional law enforcement and reduce red light running.

The increasing use of red light cameras has been fueled by escalating violations combined with growing public support, advances in technology, and mounting documentation of their safety benefits. Red light camera technology has been shown to be a promising tool that

- Changes behavior and leads to safer driving habits
- Saves lives
- Reduces traffic crashes and dangerous driving
- Reduces health care costs
- Increases police officer safety and public safety
- Responds to public concerns
- Creates a violator-based revenue source that can be used to pay for increased public safety

Traditional enforcement measures alone don't work as efficiently or as safely

The problem of red light running isn't easily or adequately addressed by the traditional law enforcement technique of observation, chase, and citation, which is hazardous and expensive.

It's a violation that often puts police officers in a difficult situation. First, an officer must have an unobstructed clear view of the traffic signal and the vehicles entering the intersection. If the officer chooses to pursue, then the officer must also run through the red light, presenting a danger to the officer as well as other motorists, pedestrians, and bicyclists. The pursuit can involve high speeds, which presents yet another safety issue. The resulting traffic stops also can block traffic lanes and cause rubbernecking, which can lead to other crashes.

There are new laws and devices that allow police to work in teams to target red light running. Many states allow a police officer to spot a violation and relay the information downstream. Some of the downsides to this approach: it is costly because of the added personnel required for enforcement; and it requires both officers to be in court, adding additional expense.

Another technique involves red light indicators that allow officers to see the color of the light downstream from the intersection, so they can tell if a driver passing them has run the red. Again, this increases safety but requires a

police officer to be present. Neither approach is as efficient as photo enforcement.

Traffic volume and safety considerations mean that law enforcement officers can only apprehend a fraction of violators, which can raise the issue of inconsistent enforcement and profiling.

Economic considerations present another compelling argument for red light cameras

Resources to enforce traffic laws haven't kept pace with the increasing traffic volume and number of red light violations.[12, 13] Communities don't have the financial capability to patrol intersections as often as would be needed to ticket all motorists who run red lights. Intersections equipped with red light cameras accomplish that goal.

The reduction in crashes, deaths, and injuries, with their direct and indirect costs—law enforcement, medical and other emergency personnel, traffic tie-ups, etc.—provide a substantial savings to the community. Plus, red light camera programs typically are violator funded, eliminating any drain on public coffers. In a number of localities across the country, smaller jurisdictions have teamed with larger or other smaller jurisdictions to enhance the affordability and lower program operations costs.

WASHINGTON, D.C.: STRONG LEADERSHIP

For any initiative aimed at curtailing red light running, success means reducing the number of crashes, preventing injuries, and saving lives. By each of those measurements, the Washington, D.C. red light camera program is an unqualified success.

One hallmark of D.C.'s program is its strong leadership from the highest levels of the police department. From the very beginning of the program, Washington, D.C. Police Chief, Charles Ramsey, has been a vocal and visible supporter of the technology. The chief frequently answers questions on the District's automated photo enforcement during his monthly radio program "Ask the Chief." Ramsey has also testified before the D.C. City Council's Committee on Public Works and the Environment on the use of automated photo enforcement cameras to detect red light and speeding violations. His statements on red light enforcement and the text of his remarks at these hearings are available to the public on the department's website at (*http://mpdc.dc.gov/info/traffic/redlight.shtm)*.

Chief Ramsey, along with other traffic safety advocates, appeared at a roadside news conference unveiling the program's expansion into use of the photo radar cameras. Former Executive Assistant Chief Terry Gainer serves as a voluntary, unpaid Advisory Board member of the National Campaign to Stop Red Light Running. The leadership of the Metropolitan Police Department has also specially honored the three members of the force who run the automated enforcement program with the department's Lifesaving Award for their efforts to save or sustain human life. The efforts of the Metropolitan Police Department to present a unified, supportive position on D.C.'s automated enforcement have helped to make the program a huge success.

> "Traffic law enforcement by conventional means – uniformed officers in marked cruisers – has become a virtual impossibility during rush hours in many jurisdictions. Rush hours now drag on for several hours. It has become too dangerous, and in some cases impossible, for officers who observe violations to pull out into traffic, catch up with violators, and pull them over. If an officer is successful on pulling a motorist over under these conditions, the traffic stop may cause a tie-up that only worsens the congestion."
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> *Earl M. Sweeney, director, New Hampshire Police Standards and Training Council, and chairman, IACP Highway Safety Committee, The Police Chief, July 2002*

JURISDICTION	VIOLATION/CRASH REDUCTION
OXNARD, CALIFORNIA	Injury crashes at intersections with traffic signals dropped 29 percent after camera enforcement began in 1997, and the reductions occurred at intersections with and without cameras.
FAIRFAX, VIRGINIA	Red light violations declined 44 percent after one year of camera enforcement.
WASHINGTON, D.C.	Red light running fatalities were reduced from 16 percent to 2 percent in the first two years of red light cameras.
CHARLOTTE, NORTH CAROLINA	Red light running violations dropped by more than 70 percent the first year.
NEW YORK CITY	The city experienced a 62 percent decline in red light violations at camera intersections.
HOWARD COUNTY, MARYLAND	In the four years the cameras have been operational, the number of crashes at every camera location dropped, with the declines ranging from 21 percent to 37.5 percent.
SAN FRANCISCO, CALIFORNIA	Red light cameras led to a 68 percent violation rate reduction.
LOS ANGELES COUNTY, CALIFORNIA	Experienced a 92 percent drop in violations.
NATIONWIDE	*Automated Enforcement of Traffic Signals: A Literature Review*[16] reported violation reductions ranging from 20 percent to 87 percent, with half of the jurisdictions reporting between 40 percent and 62 percent reductions in red light violations.

Law enforcement officers support photo enforcement

Law enforcement officers have come out in strong support of red light camera technology, not only because it enhances their ability to safely cite more red light violators, but because it frees up police personnel for other enforcement duties. In 1998, the International Association of Chiefs of Police passed a resolution supporting red light cameras "for more effective and efficient traffic law enforcement, in conjunction with normal enforcement efforts."

Red light cameras work in concert with sound engineering

Red light camera programs are a valuable supplement to good engineering. Good engineering practices include appropriately timed yellow signal change intervals, use of all-red clearance intervals, conspicuous traffic signal housings, adequate signal brightness, coordinated signal timing, and the use of advance warning signs on high-speed roads or at locations with limited sight distances.[14] Good engineering is a prerequisite for intersection safety.

A countermeasure that works

The most effective countermeasure available appears to be a combination of the three E's: education, engineering, and enforcement that includes photo enforcement technology.

Intersection photo enforcement has been successful not only in reducing violations but in reducing crashes as well. Most encouragingly, there seems to be a spillover effect of violation reductions to intersections not equipped with cameras, indicating that photo enforcement is leading to a more widespread behavioral change.[15]

Compared with the numerous research studies demonstrating positive safety benefits of red light cameras, only one, from Australia, found a statistically significant increase in rear-end and right angle crashes.[17]

HISTORY OF RED LIGHT CAMERA ENFORCEMENT

Unlike other parts of the world, photo enforcement technology is a relatively recent addition to law enforcement efforts in the United States. Red light cameras have become routine in many countries, where the basic technology has been used for more than 35 years. Red light camera systems are currently installed in more than 45 countries throughout Europe and in Australia, Hong Kong, Malaysia, Singapore, and South Africa.[18,19] In many cases, such as in the United Kingdom, red light cameras are coupled with automated speed enforcement to effectively tame the two most dangerous aspects of intersection safety.

The first red light camera program in the United States began in New York City in 1993. Between 1981 and 1985, a half million citations for red light running were issued using traditional law enforcement practices. The sheer volume of red light runners sparked New York City officials to begin researching a solution, but it took a horrifying crash involving a toddler in a stroller to galvanize city efforts against its rash of red light runners.

In 1982, an 18-month-old girl in Manhattan was dragged 13 blocks in her stroller by a red light runner. Miraculously, the child was not seriously injured, but her mother and a neighbor were prompted to form a traffic safety advocacy group called STOP (Stop Traffic Offense Program). STOP worked closely with the New York City Department of Transportation (NYC DOT) for the next five years to convince city administrators to begin the United States' first red light camera program.

Within a year of implementing its red light camera program, New York City issued 168,479 tickets with 15 cameras. After three years of photo-enforcement and an average conviction rate of 85 percent, red light violations at photo enforced locations were reduced by nearly 60 percent.[20]

The New York City program has gone on to become one of the largest red light camera programs in the country, with more than 50 cameras. In 2002, in order to increase deterrence and spillover effects, the city was adding an additional 200 fake cameras that flash but don't take actual pictures. (*The city had requested but been denied state authorization to install 50 more functioning red light cameras.*) Since the Red Light Camera program began, more than 1.4 million summonses have been issued. Fewer than 7,000 have been found not guilty.[21]

During the past 10 years the increasing number of motorists and a rise in aggressive driving have led to a surge in photo enforcement programs in general and red light camera programs in particular. Red light camera programs expanded to

about 24 municipal enforcement programs in 1998[22] and were operating in about 70 U.S. communities in 2002.

Programs in some jurisdictions have evolved to include speed on green technology, wherein a red light camera can also monitor, photograph and ticket violators who speed at the intersection regardless of the color of the light.

Similar success at railroad crossings

Photo enforcement also is being successfully used at railroad crossings. The effectiveness of cameras at railroad crossings to catch violators who run the lights and barriers led the National Transportation Safety Board to recommend the use of photo enforcement.[23] The NTSB noted that the use of photo enforcement at railroad crossings led to a substantial reduction—47 to 51 percent—in collisions at camera-equipped crossings in Los Angeles and the Illinois cities of Wood Dale and Naperville.

In Naperville, the American Short Line and Regional Railroad Association notes that the number of motorists who ignore the warning gates has dropped more than 80 percent since police installed video cameras. Naperville police have photographed and ticketed violators at the crossing since June 2000, when cameras caught 315 cars rushing to beat the closing gates. After one month of enforcement, citations dropped from 315 to 174. They continued to drop until there were 62 in April 2001 and leveled off in 2002 to about 50 per month. About 110 trains and 10,000 cars pass through the intersection each day. (See *http://www.aslrra.org/whats_in_the_news/views_and_news/results.cfm?articleid=873*).

In 1995, the Los Angeles Metropolitan Transportation Authority (MTA) began a photo enforcement program that has been credited with reducing by almost 50 percent the number of grade crossing violations detected at 17 gated crossings along the Metro Blue Line route. The program's success led to MTA plans to expand its photo enforcement program by installing six more crossing video systems during the first half of 2002.

HOW RED LIGHT CAMERAS WORK

Three types of cameras—**film, digital and video**—are used for photo enforcement, with the 35 mm, or wet film system being the most common. Jurisdictions should be flexible when choosing camera system technology. In choosing a camera system, consideration should be given to cost (both the system and its operation and maintenance), feasibility of installation at certain sites, reliability, evidentiary credibility of images produced, and quality of the system.

The typical camera system. A red light camera system generally consists of an industrial wet film camera that is housed in a durable cabinet to protect it from the weather and vandalism and placed atop a pole. The camera is connected by cables to the traffic signal system and to sensors that are buried in the pavement near the crosswalk or the point of violation.

Camera and equipment positioning will be different depending on whether a rear or front photograph of the vehicle is required. A rear photography system, the form most commonly used, is described here.

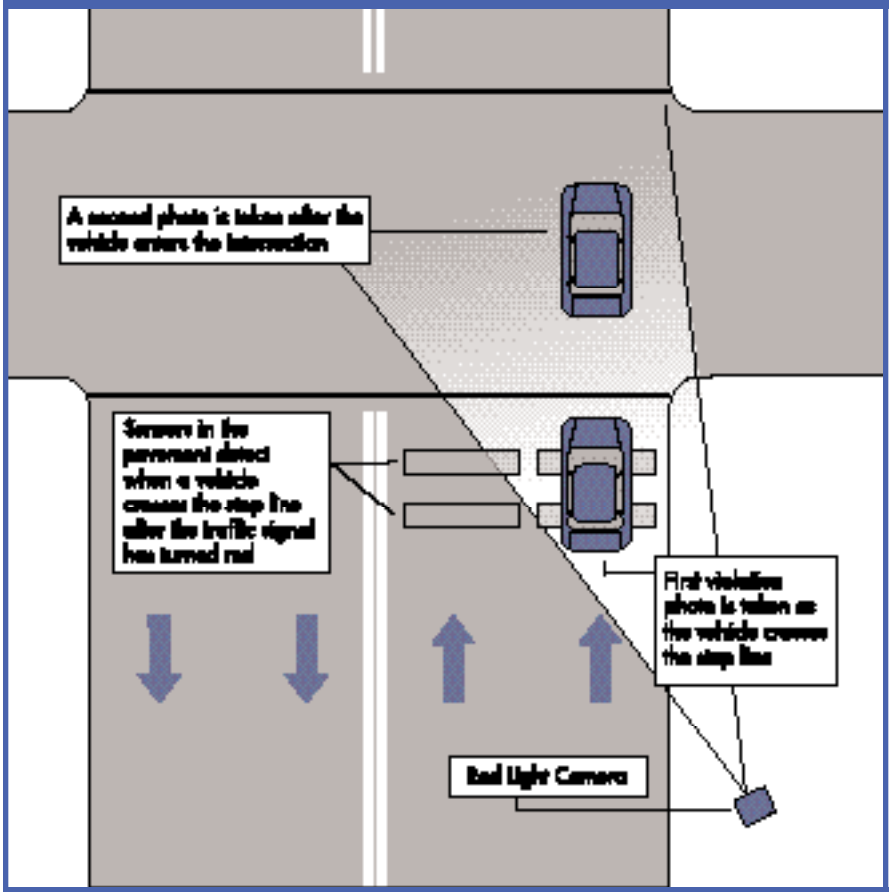
The sensors continuously monitor the traffic flow and the traffic signal. When the signal turns red, the camera system activates. The camera is then triggered by any vehicle passing over the sensors above a pre-set minimum speed after the signal has turned red and any red delay time has expired.

The cameras are set to detect red light runners and do not detect those who enter intersections when the signal is yellow. A small period of time, referred to as a tolerance period, and a preset speed necessary to activate the system are often allowed in order to differentiate between vehicles attempting to stop or turn right on red and vehicles that clearly are running the red light. A common tolerance period is one-tenth to three-tenths of a second. A minimum speed necessary to activate the system generally ranges from 12 to 20 miles per hour. Other parameters may be appropriate, according to jurisdictional, environmental and other considerations.

To activate the cameras, drivers must enter the intersection **after** the light has changed from yellow to red. Those who enter the intersection prior to the light turning red, but who, for whatever reason, are trapped in the intersection when the light changes, do not trigger the camera.

When the system is activated by a vehicle running a red light, at least two pictures are taken by the camera. The first picture shows that the front of the vehicle is not yet into the intersection while the traffic signal is already red. This picture must show the pavement marking defining the intersection (usually the stop bar or the crosswalk), the traffic signal displaying a red light, and the vehicle in question. The second picture then shows the vehicle continuing through the intersection a short time later (0.5 to 1.5 seconds).

How Red Light Cameras Work



Courtesy of the Metropolitan Police Department, Washington, D.C.

It's important to get two pictures of the car to show that it entered the intersection when the light was red and then proceeded into the intersection. Depending on state legislation, photographs are taken of the rear of the vehicle, the front of the vehicle, or both the front and rear. If driver identification is necessary, a third picture of the driver may be taken. From the photographs, the license plate will be magnified for identification. Information on which states have driver or registered owner liability can be found at (*http://www.statehighwaysafety.org/html/state_info/auto_enforce.html).*

The placement of traffic loops or sensors will often determine how many pictures will be taken by the system to differentiate between vehicles accelerating to run the traffic signal and vehicles attempting to stop or turn right.

The camera records the date, time of day, time elapsed since the beginning of the red signal, and the speed of the vehicle. Photographs are carefully reviewed by trained police officers or other city officials to verify vehicle information and ensure the vehicle was in violation. Tickets are then issued by mail to the registered owner, identified by department of motor vehicles' records.

When choosing a wet film camera system, one consideration is that camera locations must be visited frequently, often on a daily basis, to retrieve exposed film and reload. The film is then transported for processing, developed, sent to a facility for review and then converted to a digital image.

On the plus side, film cameras supply the sharpest detail and highest resolution images at almost 20 million pixels. Digital is next at about 2 million pixels (1/10th that of film). And lastly, video produces about 500,000 pixels (1/4th that of digital and 1/40th that of film).

Digital systems

More and more jurisdictions are turning to digital cameras. Digital camera and video systems operate much the same way as the wet film camera. A major benefit of digital cameras is in easing the photo collection and accelerating the processing and distribution of tickets. Digital cameras can eliminate costs of film, processing, and the personnel required for daily film handling.

Once the picture is taken it is uploaded from the camera over a dedicated telephone line (if one exists), and fed directly into the citation processing system. (If there is no dedicated line the frequency of site visits to retrieve data is similar to wet-film systems. While a digital system can store more violation images and data than a wet film camera system,

the images and data need to be collected and processed regularly to issue citations in a timely fashion.)

Video systems

The use of digital video cameras and video processing technologies is a recent development for red light enforcement activities. Advantages of a video system include its ability to detect vehicle speed and predict whether or not a red light running violation will occur. With this prediction, it is possible to preempt the normal signal changes and create an all-red signal, thereby preventing crossing traffic from entering the intersection when a collision is possible. Although this does not prevent the violation, it can help diminish the potential consequences.

Video can also show more directly when extenuating circumstances (presence of emergency vehicle with lights and siren, funeral processions, etc.) have led to a red light running violation.

Because of the poor resolution of video, night pictures require extensive lighting to capture the license plate and/or driver. This lighting has been questioned in the courts as a distraction to drivers. Also, claims of "big brother" are more common with video since the camera moves about the intersection and a video clip is taken of more than the traffic violator.

BOULDER, COLORADO: FRONT–ONLY PHOTOGRAPHY

Boulder, Colorado, had hoped that citations issued from its red light running cameras would be sent to the registered owner following a parking ticket model, but the state legislature required a monetary-only penalty written against the vehicle's operator. The legislature mandated that photographs only be taken of the front of a vehicle and a citation sent to the registered owner. The state must then prove without a reasonable doubt that the owner and the driver of the vehicle are the same person. The citation issuance rate for front-only photography is very low because only cars with front license plates (required by Colorado law) can be sent citations. It is also often difficult to positively identify the owner as the driver. Registered owners have the option of volunteering the name of the driver, but that is strictly voluntary and few people take the option. Another drawback of front-only photography is that the traffic signal is not visible in the photograph, leading to frequent questions from the alleged violator as to whether the light was actually red.

TOLEDO, OHIO: DIGITAL PHOTOGRAPHY

Toledo, Ohio's red light camera program began in early 2001 and includes cameras monitoring 20 approaches at 10 intersections. The Toledo Police Department and the camera vendor share in the management of the program. One obstacle at the beginning of Toledo's program was difficulties with the photographs taken of violating vehicles. The Toledo program uses digital photography, which requires more lighting than traditional photo finishing. Due to imperfect photography, several citations had to be thrown out. The police worked with the vendor to resolve such photography issues as increased lighting for night photography and brightening pavement markings for better visibility. The intervals between each picture also had to be reduced in order to capture a series of photographs of vehicles entering the intersections at high speeds. The problems have been largely resolved and registered owners of violating vehicles in Toledo can expect to receive a citation by mail with three clear photographs of their car at the red light, proceeding through the intersection on the red, and their license plate.

TEN STEPS FOR IMPLEMENTING A PROGRAM

How and why do jurisdictions begin considering a red light camera program? Sometimes a tragic traffic fatality and subsequent public outcry for increased intersection safety prompts public officials to consider photo enforcement. Many times elected officials fund and implement a program after traffic and public safety officials recommend red light cameras as a means to improve safety. Some programs begin as pilot projects, allowing communities to become familiar with the program while allowing the jurisdiction to work out program details.[24]

Where to start?

A well-executed program—including a clear, well-defined process coupled with good legislation—from inception can increase effectiveness, facilitate public acceptance and improve the long term success of red light camera programs. While there is no cookie-cutter formula that addresses the specific needs and characteristics of every jurisdiction, common steps in successful programs include:

STEP 1: Identify the safety problem and determine if red light cameras are an appropriate solution

STEP 2: Identify and enlist the support of key players

STEP 3: Establish program goals

STEP 4: Evaluate and select sites

STEP 5: Initiate multi-faceted public awareness campaign prior to program start and continue throughout life of program

STEP 6: Resolve legislative needs

STEP 7: Choose camera system and vendor(s) based on the jurisdiction's objectives, priorities, and resources

STEP 8: Implement the program using best management practices

STEP 9: Predict, acknowledge and address public concerns

STEP 10: Evaluate and monitor program's success

Step 1:

Identify the safety problem and determine if red light cameras are an appropriate solution

What is the particular problem? Pedestrian safety? Intersection crashes? An engineering review should be conducted on the problem intersection to determine the extent of the problem and the causes of red light running. The study helps ensure that the red light running problem is not due to engineering or other setting shortcomings. Can the problem be addressed with other countermeasures such as road improvements, improved visibility of signals, or better traffic signal timing? *Guidance can be found in the FHWA/ITE Toolbox of Engineering Countermeasures for Red Light Running, Fall 2002.*

Signal timing

Guidelines for yellow light timing are set by the Institute of Transportation Engineers (ITE) in conformance with the laws set forth in the *Uniform Vehicle Code* and national standards set forth in the FHWA's *Manual on Uniform Traffic Control Devices*.[25] Rules of specific jurisdictions are applied by traffic engineers based on the characteristics of individual intersections and follow a complex mathematical equation. The yellow interval normally has a duration of three to six seconds. A longer duration is reserved for use on approaches with higher speeds.

The sole purpose of the yellow phase is to warn drivers that the light is about to change from green to red. It is not meant to accommodate all

ALEXANDRIA, VIRGINIA: PRIOR ENGINEERING REVIEW

The red light camera program in Alexandria, Virginia, demonstrates the importance of police and traffic engineers working together to ensure good intersection and traffic signal engineering, including yellow light timing. Alexandria police used crash data and red light running frequency to determine the locations of their red light cameras. At the time of the first installation, police had not consulted with traffic engineers. The program soon learned that very short yellow lights were causing many people to run the red. This generated complaints from the public and led to tickets being thrown out. The city rectified the problem by hiring a traffic engineering consultant to retime the yellow lights citywide.

The city also found that the location of the camera-triggering sensor in the pavement is crucial since, if it is not placed properly, the back of longer vehicles may pass over the sensor on red even though the vehicle has proceeded legally on a yellow light. The experience in Alexandria underscores the importance of conducting a complete engineering study prior to program implementation.

> "Altering yellow light timing alone doesn't solve the red light running problem. This singular approach ultimately shortchanges public safety because it doesn't address a more challenging behavioral cause: people often run red lights because they can get away with it. Applying consistent consequences in the form of fines for every violation will reduce red light running. Drivers will learn the behavior is no longer tolerated. Failing to acknowledge and alter consequences of red light running behavior reduces the effectiveness of any countermeasure."
>
> *Dr. Bryan Porter, behavioral psychologist and associate professor at Old Dominion University*

ranges of driving behavior including speeding and other forms of risk taking. Once the yellow warning appears, drivers are obligated to stop or to clear the intersection.

The equation the Institute of Transportation Engineers (ITE) uses to set yellow light signal length allows time for the motorist to see the yellow signal and decide whether to stop or to enter the intersection. It allows for motorists further away from the signal to decelerate comfortably and motorists closer to the signal to continue through to the far side of the intersection. Factors such as the characteristics of the traffic and roadway environment are taken into account.

IIHS studies indicate that increasing the length of the yellow change interval decreased the frequency of red light running in the short term period following the timing change. However, IIHS researchers acknowledge that these initial reductions in red light running are not a long-term solution.[26]

At intersections where the yellow phase is inappropriately short, lengthening the yellow can bring some drivers who are inadvertent offenders into compliance. However, extending the yellow phase will not reduce the incidence of deliberate red light running.

Some jurisdictions employ an all-red interval in which the red signal indication is displayed to all traffic. This is not intended to reduce the incidence of red light running; it is a safety measure that separates the last red light runner from the first green light runner for one to three seconds, which can prevent a collision.[27,28]

Before red light cameras are used, jurisdictions should make sure that intersections are properly engineered to give the driver every chance to comply. Signal timing should be checked, not just the yellow and all-red phases, to assure it is in tune with current traffic demand. Hardware should also be checked to make sure traffic signal controllers and their detectors are working properly. Poorly timed and/or poorly maintained equipment contribute to congestion and delays that encourage red light running.

These engineering options are not sufficient for intersections that have been tweaked as best as possible by local engineers. Red light running is a complex behavior that needs to be addressed through engineering, enforcement, and education, not just engineering alone. The three E's work in concert, not independently.

Step 2:

Identify and enlist the support of key players

While a red light camera program is an enforcement and traffic engineering tool, the decision to use cameras to enforce traffic laws is a public policy issue.[29] Consequently, a broad coalition of key players is required. The importance of their coordination and cooperation cannot be overstated. It involves bringing on board a long list of organizations, but it is **critical to consult them early in the process.**

MESA, ARIZONA: STRONG COURT TESTIMONY

A red light citation is only as good as its ability to hold up in court. Mesa, Arizona's program has effectively and efficiently done this over its five-year history. Citation recipients wishing to appeal their camera-issued ticket do so in a civil traffic court presided over by a judge familiar with the red light camera system. As part of the state's evidence, the defendant, the police representative testifying for the state and the judge all have a packet of five exhibits that includes photographs of the offending vehicle running the light and a diagram of the site and the intersection. The police also have available an equipment inspection log certifying that the cameras were operational before and after the violation. A police officer arrives at the court fifteen minutes prior to the hearing and is available to go over the evidence with the defendant and answer any and all questions that he or she might have.

The hearing itself proceeds as follows: 1) the state presents evidence, which is a consistent script of testimony developed by the police department; 2) the defendant asks questions of the police; 3) the defendant gives testimony; 4) the judge asks for rebuttal to defendant's testimony; and 5) the judge issues a decision. Defendants have 10 days to appeal the ruling. In Mesa, violators are sentenced to a $170 fine, traffic survival school and demerit license points. Detective Terry Dorn of the Mesa Police Department stresses that "most of the program ends up being educational for the defendant. Our goal is to make sure that red light runners don't do it again."

KEY PLAYERS IN PHOTO ENFORCEMENT PROGRAMS	
ORGANIZATION	**POTENTIAL ROLE IN PROGRAM**
Law enforcement	• May manage and operate program • Assist in site selection • Consult on program/enforce program • Serve as spokespersons for the program • Provide public education
City/county administrators, such as department of public works and transportation officials	• May manage and operate program • Assist in site selection • Consult on program • Serve as spokespersons for the program • Provide information about existing traffic systems
Traffic engineers	• Assist in site selection • Coordinate with existing traffic systems • Assist in installation • Conduct prior engineering reviews • Monitor results
Media	• Help inform and educate public
Legislature	• Create enabling legislation
Local elected officials	• Provide initial startup funds • Approve and oversee • Provide public education
Judiciary	• Can help address legal issues when program is being designed • Has authority to overturn program
Vendors and contractors	• Install red light camera systems • Maintain systems • Process violations • Provide back office processing • Provide customer service • Collect payments
Grass roots/traffic safety groups/local coalitions	• Elevate issue on traffic safety agenda • Serve as spokespersons • Provide input on problem locations • Provide, generate and preserve public support • Advocate enabling legislation
General public	• Support or undermine program • Increase community's focus on safety • Help identify problem intersections
Public information officers (usually part of police or transportation departments)	• Disseminate information on the program • Present benefits and achievements of program
Other area jurisdictions using red light programs	• Offer advice from experience
Victims	• Act as spokespersons and advocates

Crucial to that coalition are law enforcement officers, transportation officials and the judiciary, but key players also include traffic engineers, public works departments, traffic safety groups, red light running crash victims, the media, local elected officials, the legislature, the public, vendors and contractors, and local coalitions or task forces. These groups should all help establish the program, push for legislation or an ordinance, and provide continued support.
The assistance of law enforcement officials, transportation officials and engineers is particularly important in selecting sites based on violation studies and collision, citation, and citizen complaint data.

Although they are sometimes overlooked until after the photo enforcement program is operational, jurisdictions should communicate with the judiciary about every step. Judges need to be educated about photo enforcement, why the jurisdiction is doing it, how tickets can be adjudicated, how evidence can be processed or assessed, and what judiciaries can expect in terms of their work loads and prosecution of the tickets. (Some jurisdictions may handle ticketing administratively, outside the court system, through a violations bureau.)

Step 3:
Establish program goals

What are the desired results? Fewer violations? Crashes? Injuries? Fatalities? All of the above? Identifying the program's specific objectives is the first step toward evaluating the program's effectiveness.

A specific goal provides a benchmark for determining program success. Possible goals include[30]

- Reduce the number of *injury crashes at the intersection*
- Reduce the number of *injury crashes at other intersections*
- Reduce the number of *violations at the intersection*
- Reduce the number of *citations at the intersection*
- Reduce the number of *violations at nearby intersections*

While it may seem obvious that the goal is to reduce intersection crashes due to red light running, that is the most difficult goal to quantify and therefore presents the greatest challenge to program evaluation. The difficulty in determining which crashes are caused by red light running lies in the differences in recordkeeping by each state. Many states do not list red light running specifically as a crash cause, instead using the larger category failure to obey a traffic signal. While many times this is red light running, it can include disregard of any kind of traffic signal device. Another difficulty lies in the fact that state statistics on crash causes are compiled from police reports. It is then incumbent upon the crash investigator to explicitly note that the crash was caused by a red light runner.

Jurisdictions with no or very little prior data on intersection crashes and red light violations need to collect it **BEFORE** they implement a camera program. They should also plan for measurements of control locations or intersections that will not get cameras right away, but at a later date. Without data, jurisdictions cannot empirically demonstrate a need for cameras—or any other intervention. Research and program evaluation experts should be consulted in this process before data are collected. Collecting the appropriate data takes time. Jurisdictions should be prepared to study potential intersections for six months to one year (or more, if crash data/trends are required).

Coordination between law enforcement and engineers is important to setting goals and gathering data. Effective coordination between these two groups at local levels can reduce reliance on state traffic data systems.

Step 4:
Evaluate and select sites

Intersections generally are chosen for photo enforcement based on collision, citation and complaint data, as well as violation studies and citizen input. Traffic engineers must determine if an existing intersection's features are engineered appropriately or need to be modified. It should also be determined whether an intersection's characteristics are conducive to the construction and installation of a camera system. For example, is there a manhole or a driveway that would interfere with placement of system components?

ARLINGTON, VIRGINIA: PUBLIC INPUT INTO INTERSECTION SELECTION

Citizen input is a valuable component of Arlington, Virginia's red light camera program. Arlington police involve the local citizens in selecting which intersections will receive red light cameras by sending out requests for suggested camera locations to local civic associations. Citizen responses, including direct requests from residents, are then compared to police reports of high crash and high violation sites to see if they coincide. The camera contractor then conducts an intersection feasibility test to see if the potential intersection is a good candidate for cameras.

Allowing the public to recommend intersections has helped garner support for the program. When cameras are placed at an intersection that a citizen has suggested, he or she feels more connected to the process. If the proposed site is not selected because an intersection study shows that the red light running problem was not as severe as the citizen thought, that knowledge is still reassuring.

"When citizens realize their input has resulted in a camera at the suggested location, reaction to the police is, 'they really listened to us,'" said Captain Roy Austin of the Arlington police department.

Typically, intersections are chosen based on one or more of the following

- High violation and crash rate
- High traffic volume
- Community request
- Concern for pedestrian safety
- Difficulty or danger of enforcement

As referenced earlier, an engineering review is an important part of this process. In order for a red light camera to be effective, the intersection must be engineered to encourage good driver behavior. Researchers suggest that, at a minimum, an intersection review should include a determination that the sight distance of the signal is adequate and that the yellow phase is sufficient for drivers to stop or pass the stop bar before the red phase begins.

Once an intersection is selected, attention should be paid to the permitting process for installation of camera components. Because the permitting process can be lengthy, jurisdictions should either request an expedited permitting process or allow sufficient time in their implementation timeline. It is especially important that the department of transportation have proper records of where the components are located to avoid damage by any future road construction.

Intersections should be reviewed periodically to see if conditions have changed or program modifications are needed.

Step 5:

Initiate multi-faceted public awareness campaign prior to program start and continue throughout life of program

A multi-faceted public awareness campaign, instituted prior to the kickoff of the red light camera program, is essential for program success. The goal is to seek a change in behavior at signalized intersections and to have the cameras create a deterrence to red light running not only at monitored intersections, but at all intersections within the community.

General deterrence can only be achieved if drivers are aware of the program.[31] The public needs to be told of the extent of the problem (number of violations, number of crashes, etc.) and the success of red light camera programs in other jurisdictions. Emphasis should always be placed on the main objective: to reduce crashes and save lives.

Public awareness campaigns often include

- roadside signs placed at the entrances to the city or county
- signs at the intersections monitored by the cameras (use signs as specified in the *Manual on Uniform Traffic Control Devices)*
- media coverage; outlets include radio, print, television and internet
- billboards and bumper stickers
- mailings to residents
- website information
- law enforcement and victim spokespersons who emphasize that red light running is life-threatening and that violators will be caught

CHARLOTTE, NORTH CAROLINA: PUBLIC AWARENESS CAMPAIGN IS KEY TO PROGRAM SUCCESS

Charlotte's *Safe*Light Program Noted for Communication

How does Charlotte, North Carolina, promote *Safe*Light, its campaign to stop red light running? A better question might be, *What don't they do to promote it?* Details of *Safe*Light are broadcast on billboards, bumper stickers and bookmarks. The program is publicized on posters, in English and Spanish brochures, and in lesson plans for driver education instructors.

*Safe*Light is featured in television and radio spots, press releases, a coloring book, and an extensive website at (*http://www.ci.charlotte.nc.us/citransportation/programs/safelight.htm)*.

Intensive branding efforts and an extensive marketing program have been crucial to the program's success, said Clement Gibson, Special Programs Manager for the Charlotte Department of Transportation, which oversees the program.

Public Perceptions

A July 2001 survey by MarketWise, Inc., for the Charlotte Transportation Department, found that most people learned about the *Safe*Light program through television news, newspaper articles, cameras and signs. One third of respondents agreed that the program has changed their driving behavior.

According to the survey, 98 percent of residents are aware of the program, and 84% believe the *Safe*Light program is beneficial to the community and has helped to reduce red light running. Statistics for the first three years of operation show that the public perception is correct. Crashes caused by red light runners dropped 37 percent at *Safe*Light intersections and crash severity was reduced by 16%.

The city has found that safety benefits extend beyond the red light camera intersections. As of October 2001, data showed a 9 percent drop in red light running at all intersections since Charlotte began the *Safe*Light program.

- public service announcements
- warning periods during which residents are sent warning citations and are alerted to the imminent beginning of the safety program.

As part of the public awareness campaign, the driving public should be repeatedly reassured that the engineers have done their job by making sure that the intersection is properly engineered (as detailed in step 1). Further, they should be reassured that the next best step is to use photo red cameras to reduce red light running.

Every campaign should also repeatedly make it clear that red light cameras *are not* surveillance cameras. Only those individuals breaking the law trigger a picture. Those who obey the law and respect traffic lights never generate a photograph.

Jurisdictions must not shortchange their public information campaign. This is a key component of the three E's referenced earlier (education, engineering, and enforcement). It needs to be in place before the cameras are installed and continue throughout the life of the photo enforcement program. As some localities have learned the hard way, a lack of public support can seriously hamper any photo enforcement program.

Since education contributes to changing behavior patterns, localities may want to consider including information on the danger of red light running with citations that are mailed to violators. Local crash statistics and the testimony of crash victims also help to increase public understanding.

In addition to the general public, police officials, the judiciary, legislators and all potential partners should be kept well-informed about the merits of the program.

The FHWA provides extensive, detailed guidance on community-based public information and educational campaigns as part of their *Stop Red Light Running Step-By-Step Guide*, which is available from the FHWA on CD ROM or can be found on the American Trauma Society stop red light running web page. Much valuable information is available on the FHWA Stop Red Light Running web pages at *(http://safety.fhwa.dot.gov/community/srlr.htm)*

Step 6:

Resolve legislative needs

In most jurisdictions within the U.S. a red light camera program requires enabling legislation that allows a ticket to be mailed to a suspected violator.[32] The legislation must also make the vehicle owner responsible for the ticket, establishing a presumption that the registered owner is the vehicle driver at the time of the offense. Legislation is typically enacted on the state level but can also be passed at the local level. Unless a state provides for home rule—a designation that allows cities or municipalities limited autonomy to enact their own laws and ordinances without requiring state legislative approval—a state law needs to be passed to enable the use of photo enforcement.

Only six states and the District of Columbia have statewide red light camera laws. In other states, laws authorize camera use in specific areas or under specific circumstances. Several states' attorneys general have ruled that a combination of current laws and court rulings in effect prohibit automated enforcement.[33] In Nevada, automated photo enforcement is prohibited unless it is hand held by an officer or installed in a law enforcement vehicle. New Jersey and Wisconsin state laws prohibit photo radar for speed enforcement.

Red light cameras are currently permitted in 14 states—Arizona, California, Colorado, Delaware, Georgia, Illinois, Maryland, New York, North Carolina, Ohio, Oregon, Tennessee, Virginia, and Washington—and the District of Columbia. Violations photographed by red light cameras are most commonly treated in two ways: as traffic violations or as the equivalent of parking tickets, depending on state law. If, as in New York, red light camera violations are treated like parking citations, the law can make registered vehicle owners responsible without regard to who is driving at the time of the offense. Virginia makes red light

PRINCE GEORGE'S COUNTY, MARYLAND: CONTRACT SHARING

Smaller jurisdictions face unique issues in establishing red light camera programs. Two cities in Maryland without individual municipal police departments — Bowie and College Park — found a way to work together to initiate red light camera programs despite a state law requiring that police departments run the programs.

The solution involved sharing a contract with Prince George's County Police Department. Bowie and College Park used the Prince George's County vendor contract as a template and set up a contract with the vendor using Prince George's County Police to review and process red light camera citations. Bowie and College Park are each responsible for selecting the camera sites and collecting statistics on their programs. This city/county cooperation has allowed more citizens in Maryland to reap the benefits of automated red light camera enforcement.

BOULDER, COLORADO: STATE LEGISLATIVE SUPPORT

State legislative limitations have presented the biggest challenges to the Boulder red light camera program. Boulder has home rule, but the state legislature enacted legislation on statewide standards for photo enforcement programs. Other cities with home rule lost a case against the state, paving the way for Colorado to enact laws limiting the scope of photo enforcement programs. The Boulder program has since had to adjust its program to try to comply with the new state laws. Because of their experience, Boulder red light camera program managers suggest working at the state legislative level to persuade legislators of the high value of using the programs and educate them to avoid common misconceptions about automated photo enforcement.

camera violations a civil offense like New York, but unlike New York, the state allows registered owners to avoid citations by filing affidavits attesting they weren't driving when the violations occurred.[34]

To create a viable program, enabling legislation should provide for funding, fines, penalties, handling of evidence, and follow-up enforcement. It must also address the constitutional issues of confidentiality and due process.[35]

When implementing a red light camera program, program planners must be aware of budget cycles to ensure that funds are available when the program begins. Funding can come from a number of sources. In some cases, jurisdictions can use general tax revenues, sales tax revenues, or other public funding sources to support the program. In other cases, legislation provides seed money or capital funds for equipment purchase and installation. Costs for a program should include reimbursement to affected agencies for money spent on administration oversight, police department review, court liaison, etc.

Some laws specify that the program must pay for itself, and in some states, legislation determines what a jurisdiction can do with ticket proceeds.[36] The legislation can stipulate that the collected fines in excess of program cost be reinvested in the red light camera program or in other traffic safety programs. Some jurisdictions allow excess program revenue to be put into general revenue funds and used for any and all government programs. In San Francisco, for example, the money from red light tickets goes to sustain the program and funds the San Francisco Department of Health's Stop Red Light Running campaign and other pedestrian safety publicity efforts.

OWNER OR DRIVER RESPONSIBILITY

In most states, a ticket is issued to the vehicle's owner, no matter who's actually driving. In these states, the red-light camera only needs to photograph the car from behind, since the authorities only need a clear view of the rear license plate. These jurisdictions treat automated enforcement citations just like parking tickets in that the registered owner is liable. Similarly, like parking tickets, these citations do not result in points and are not recorded on a driver's record.

Other states, notably California and Arizona, hold the vehicle's driver liable and points are assessed on the driver's record. These and other differences in automated enforcement laws are summarized on the web pages of the Insurance Institute for Highway Safety at (*http://www.hwysafety.org)*. (On the web page, click on *IIHS research by topic* and then click on *red light cameras*.)

Although legislation can be written both ways, owner liability laws are far more effective. According to the IIHS, the current experience with frontal photography finds a very large loss of citations simply because police cannot clearly identify the driver. Glare, dirty windshields, sun visors, missing front plates, even deliberate concealment attempts by drivers have hindered driver identification such that the majority (over 60 percent) of offenders escape enforcement. In addition, motorcycles do not have front plates and, therefore, are effectively exempt from enforcement.

Most countries around the world operate their red light camera programs under the premise that the vehicle owner is responsible for a red light violation unless the owner names the driver. This system also eliminates the concerns about the privacy of individuals within the vehicle and the often difficult process of identifying a person who is not the registered owner of the vehicle.[39]

Insurance industry research indicates that 80 percent of vehicles observed running red lights are driven by their registered owner or residents of the same household.

Fines assessed by red light camera programs are set by each state or jurisdiction and range from $50 to $271 dollars.[37] Examples of fines include:

D.C.	$75
Virginia	$50
Maryland	$75
California	$271
Washington	$86
North Carolina	$50
Delaware	$75

The legislation usually sets a maximum period of time—often 15 days—between violation and mandatory notification. Some complaints have arisen about the lag time between when a violation is recorded and the ticket is mailed. Some of those ticketed have complained that they cannot provide a convincing defense because they cannot remember the alleged violation. In response to this, Constitutional lawyer Eugene Volokh offers, "You do have the constitutional right to put on your defense; but there's no constitutional right to be sued or prosecuted only for those things that you remember."[38]

Operators of red light cameras should be aware of any legislative time constraints imposed that establish a maximum time between the infraction and the receipt of a ticket. Any system and process chosen must allow the operators to stay within this time frame. A model law drafted by the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) recommends that the citation be mailed no later than two weeks after the alleged violation.

Sample state and local legislation. The Federal Highway Administration website has extensive information on red light camera programs, including sample legislation from the State of Maryland and from Toledo, Ohio. That information can be found by going to the FHWA home web page at *(http://safety.fhwa.dot.gov/fourthlevel/pro_res_srlr_camera.htm)*; follow the links to the Stop Red Light Running legislation page.

NCUTLO model law. An excellent guide for states is the model law drafted by the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO), whose traffic safety experts have taken into account the many issues surrounding photo enforcement laws. The model law is included here in its entirety as Appendix C and is available on the NCUTLO website at (http://*www.ncutlo.org)*.

Finding a Sponsor for Red Light Photo Enforcement Legislation. To improve intersection safety and reduce red light running crashes, it is important to build relationships with local, state and national elected officials. Representatives on the city or county council, in state legislatures and in the United States Congress want to know the concerns of their constituents. It is important to meet with them on a regular basis, keep them updated on local activities and programs and seek their support of red light photo enforcement programs.

When working to pass legislation at either the local, state or national level, the first step is to identify a sponsor. There are several options in choosing a sponsor for a red light camera bill. First, one can choose to approach his or her own elected official. Elected officials will likely be interested in the efforts of their constituents and may be willing to sponsor legislation to establish a red light photo enforcement program.

If another legislative sponsor or additional sponsors are needed, it is advisable to research members of the legislature who have an interest in traffic safety and/or enforcement issues. They likely have a history of sponsoring bills to improve safety on the roads and they may be natural supporters. It is important to consult with other local traffic safety advocates to identify those traffic safety leaders and enlist their help.

It is also a good idea to look for legislative sponsors that chair or are members of the legislative committee that must approve the bill before it can be considered by the full legislative body. By securing a bill sponsor who is in this position, you will gain an "inside track" on the bill's progress and chances for passage. If you are seeking passage of local legislation, it will be important to seek the support of the chairman of the city council. If you are working to pass state legislation, the Speaker of the House of Representatives, the Senate President, the majority and minority leaders, and the committee chairman are significant allies in your efforts and can improve your chances of legislative success.

For more information on the legislative process and how to develop a legislative campaign contact the National Campaign to Stop Red Light Running at *(http://www.stopredlightrunning.com)*.

Step 7:

Choose camera system and vendor(s) based on the jurisdiction's objectives, priorities, and resources

A red light camera program can be accomplished in several ways, from developing and operating the entire system in-house to complete outsourcing. Most municipalities contract with one or more vendors to install the camera system and to operate the back office processing. A police officer or authorized official reviews violation photos prior to a citation being mailed to the vehicle owner.

In addition to back office processing and citation review prior to issuance, vendor roles can include capital construction or engineering work.[40] Some jurisdictions use leased cameras and processing equipments.

Some jurisdictions limit their role to that of contract supervision, site selection and policy decisions. They contract with a vendor for installations, camera equipment, maintenance and operating personnel. There are a number of vendors offering a range of services and products for intersection safety. This gives jurisdictions choices and the flexibility to structure the implementation and management of photo enforcement systems.

Cost of camera system. The cameras cost about $50,000 to $60,000, with installation —including detectors, equipment cabinet and mounting pole—adding about $25,000. Camera costs are just one small part of the costs of the program, which includes processing, among other

HOWARD COUNTY, MARYLAND: STRONG PUBLIC-PRIVATE PARTNERSHIP & REGIONAL COORDINATION

Since it began four years ago, the red light program in Howard County, Maryland, has batted 1000: crashes and injuries dropped significantly and the program enjoys widespread public support. Howard County Police Lt. Glenn A. Hansen credits much of the success to a strong public-private partnership.

Hansen, who designed and implemented the program more than seven years ago, stresses the advantages of having a police-managed program with multiple contractors. The county operates the program through a public-private partnership, with the police department bearing ultimate overall responsibility. The program was designed for the police department to control every aspect of the operation while taking advantage of private company resources and expertise.

"We do not have a prime contractor," Hansen said. "We have one contractor for cameras and camera maintenance, and another vendor that supplies the computer software and hardware. Our police department is heavily involved in every step of the program."

As of March, 2002, the number of vehicles failing to stop at red light signals equipped with cameras in Howard County dropped by 78%. The number of crashes at every camera location also dropped, with the declines ranging from 21% to 37.5% and infractions and subsequent crashes at intersections monitored by cameras continue to decline.

The Howard County program also reflects the need and advantages of having a close relationship between the police department and traffic engineering. Howard County Police meet with professional traffic engineers to review and analyze high crash locations to determine what engineering changes could be initiated to reduce the incidence of crashes. If it is decided that an engineering change can address the problem, the selected engineering countermeasure is utilized. If no engineering countermeasure can be identified, then red light camera enforcement is considered for the site.

While the county's traffic engineering division helps evaluate camera systems and chooses locations to be monitored, it is the police department's responsibility to operate the cameras, process the film and prepare the notices of violation.

Howard County's red light camera operation takes place at the Regional Automated Enforcement Center in Columbia, Maryland, the largest facility of its type in the USA. The center, which has about 90 employees, processes red light violations on behalf of 16 partner law enforcement jurisdictions with 97 cameras operating throughout the State of Maryland. Included in that number are Howard County's 24 cameras, which rotate among 30 sites.

"Working together has helped each agency to save money," Hansen said. "It has reduced the need to duplicate efforts, and it has helped each agency benefit from the experience of others."

things. Jurisdictions should budget for personnel costs, including an authorized person to be the hands-on reviewer of photographs for citations. Monthly operating costs are approximately $5,000.[41] However, most vendors offer communities a monthly fixed fee for both equipment and processing rather than requiring any upfront payment from the jurisdiction. Monthly fees are based on the number of cameras installed and the final scope of work provided by the vendor.

Smaller jurisdictions and those with budgetary constraints can partner in a shared contract to reduce operating and processing costs *(see Prince George's County field note and Howard County profile)*.

In New York City, the vendor services the cameras, processes the film, and prepares the notices of violations under contract with New York City. The violation notices are reviewed and signed by a department of transportation member, who serves as a police department representative. The sheer volume of data that accumulates and must be available in the event of court trials requires establishment of a record keeping system with quick recovery capability. Although a small percentage of violations come to trial, the data for those that do must be available for the judge's perusal. In New York City, the photographs are digitized and stored on central computers and the judges have remote computer and monitor capability to retrieve and examine the data.

Pricing. While industry pricing arrangements vary, most jurisdictions are concerned about their red light camera programs being cast as revenue generators rather than as safety programs. To counteract that perception, more and more jurisdictions are moving away from fee-per-ticket arrangements based on ticket volume to a flexible fixed-fee arrangement.

A *flexible fixed-fee* that allows adjustment based on changing program needs helps build public confidence in the integrity of the program. Further, it allows for both the vendor and the jurisdictions to manage their program costs from year to year and to adapt the program to the changing needs of the jurisdiction.

When considering revenue generation and distribution, jurisdictions should

- Determine the amount of fines for a citation and the distribution among all parties.
- Determine the involvement of the vendors and the operators. Is a vendor reimbursed on a per ticket or flat-fee basis? Overcome any perception that the program is simply a revenue generator for the jurisdiction. One possibility is to dedicate all or a portion of income to traffic safety rather than the general fund.
- Prevent appearances of conflict of interest for government authority and contractor.

Step 8:

Implement the program using best management practices

Effective management requires a clear delineation of responsibilities and consistent communication between the agencies in charge of oversight. The importance of oversight cannot be overstated.

Vendor. For example, in most cities, the camera system vendor is responsible for the day-to-day operations and maintenance of the photo enforcement system, under the overall direction of the city police department. In this capacity, it is the responsibility of the vendor [42] to:

- Collect camera film and data for photo-enforced intersections

SAN DIEGO, CALIFORNIA: PROGRAM OVERSIGHT

In 2001, a highly publicized lawsuit over the use of red light cameras in San Diego, California resulted in a Superior Court ruling that eventually led to the dismissal of about 300 tickets. While camera opponents hailed the ruling as a victory, the judge specifically upheld the constitutionality of the camera program. The tickets were dismissed because of defects in how the program was operated. The judge stated the city should exercise more oversight and replace the fee for citation payment arrangement. (See Step 9: Predict, acknowledge and address public concerns) The judge's final ruling on the case found that, among other things, the selection of intersections for red light camera placement was a constitutional exercise of the city's power and that the vendor's access to Department of Motor Vehicle records was not a violation of the right to privacy.

ARLINGTON, VIRGINIA: REGIONAL COORDINATION

Although they operate independent red light camera programs, several cities in Northern Virginia, just outside Washington, D.C., try to coordinate various aspects of their programs, because traffic often flows from one city to the next. Along with frequent informal dialogues, programs in Northern Virginia maintain good communication by holding yearly meetings of all regional automated enforcement program managers to ensure that they are all on the same page. These meetings help coordinate program management issues, such as length of tolerance before the camera is triggered. The meetings also allow departments to share good management practices and problem solving.

Coordination among programs in close proximity to each other increases the public perception of each program's fairness. Captain Roy Austin of the Arlington Police Department sums up the importance of regional coordination, "It is very useful in dealing with the public to be able to say 'we all do it the same way.' One jurisdiction's problems cause your jurisdiction problems, too."

> "It is as true in police work as in the military that 'you cannot expect what you do not inspect.' Both regular and unannounced inspections, performance audits and financial audits are the only way to assure that the program is operating properly."
>
> *Earl M. Sweeney,*
> *The Police Chief, July 2002*

- Inspect camera and vehicle detection system operations
- Perform preventative maintenance and cleaning
- Identify defective equipment and make repairs or replace
- Process film and memory card data
- Identify violations
- Match violation to vehicle registered owner
- Prepare citations for police department review and approval
- Mail citations
- Answer telephone inquiries
- Schedule violator appointments
- Provide court-requested information and support court hearings
- Prepare monthly progress reports

The procedures and methods are designed to ensure the chain of evidence for each recorded violation so that backup data and documentation can be easily retrieved when needed. Internal quality control is maintained by a double blind internal review of each violation. Additionally, all citations prepared by the vendor are reviewed and approved by the police department before they are issued.[43]

Jurisdiction. It is important that the contracting agency procedures be comprehensive, clearly documented in writing, and followed without exception to the maximum extent possible. In particular, the procedures should address in detail:[44]

- Guidelines to be applied for issuing a citation that include a very specific definition of what constitutes a red light running violation;
- Citation review and approval requirements; and
- Quality assurance audits, to be conducted by trained traffic officers for randomly selected sample of recorded violations on a periodic basis.

Jurisdictions should also be mindful of the state's legal requirements for operating a red light camera program. These may include that:[45]

- Only a governmental agency in cooperation with a law enforcement agency may operate a red light camera program.
- Signs must clearly indicate the system's presence at each intersection or at all major entrances to the city or county.
- Yellow light time intervals must meet the state Department of Transportation's minimum standards.
- Photographs must be kept confidential and made available only to governmental and law enforcement agencies to pursue red light violations.

- The registered owner or any individual identified by the registered owner as the driver of the vehicle at the time of the violation must be permitted to review the photographic evidence.
- A citation must be delivered to the driver within 15 days from the date of the violation.

Local government. Public oversight and supervision is essential for successful camera programs. A July 2002, California statewide audit of red light camera programs recommends the following as appropriate red light camera program oversight by local governments:[46]

- Conduct at least one oversight visit to the vendor's facility
- Supply vendor with business rules
- Use controls to monitor whether vendors mail unauthorized or unapproved citations
- Include a specific contract provision making the misuse of photographs a breach of contract
- Include a general contract provision that ensures confidential records are kept confidential
- Limit the time vendors can keep confidential records relating to unenforced violations
- Periodically conduct technical inspections of red light camera intersections

Step 9:

Predict, acknowledge and address public concerns

Opposition to red light camera programs has focused on a number of issues (some previously discussed in this guide), including privacy, constitutional issues, distribution of ticket revenue, ticketing procedures, yellow light timing and program effectiveness. Careful consideration should be given to addressing each of those issues.

Privacy. Legal opinions have found that red light cameras do not violate a citizen's legal right to privacy[47] (for more on legal issues, see IIHS web page at *http://www.iihs.org/safety_facts/myths.htm*).

The right to drive a vehicle is coupled with the responsibility to abide by traffic signals. Driving is a regulated activity on public roads, and red light cameras are only triggered by vehicles (or motorists) that are breaking traffic laws. There is no expectation of privacy if you break the law.

Presumption of Innocence. Some opponents claim that with photo enforcement, owners are presumed guilty until proven innocent. As the Insurance Institute for Highway Safety notes on its web pages, photo enforcement does not violate the presumption of innocence, which attaches at trial, not before. Police and prosecutors are not bound by a presumption of innocence. Rather, ethics prevent them from charging a person unless there is sufficient evidence.

Photo enforcement laws provide that photographic evidence of a violation is sufficient to issue a citation to a registered owner. "The citation is merely a summons. The registered owner may present a defense in person or, in Virginia, by mailing in an affidavit stating under oath that he or she was not the driver at the time of the offense (Va. Code Ann. § 46.2-833.01(D)). In other states, an owner only has to identify the driver to rebut the presumption. It is difficult to imagine a presumption that is easier to rebut." (from IIHS web page *http://www. carsafety.org/safety_facts/myths.htm#3*)

Notification. Some opponents argue that if traffic offenders are to adequately defend themselves against a charge, they are entitled to immediate notice of the offense

> "Some argue that red light cameras violate a motorist's privacy rights, but they can actually be less invasive and less subjective than traditional law enforcement methods. Cameras photograph only the vehicle's license plate or the face of the driver, depending on a state's law, whereas a ticketing officer can see inside the vehicle. With the cameras, there is no subjectivity or privacy violation because whoever crosses the intersection after the light turns red will receive a citation."[48]
>
> *Advocates for Highway and Auto Safety*

rather than a citation that is delivered later by mail. In its response to that argument, the Insurance Institute for Highway Safety says that the Fourteenth Amendment of the U.S. Constitution provides that a person be given due process of law, and fundamental fairness requires that when a person is charged with an offense, he or she be given notice of exactly what offense is being charged and when and where it was allegedly committed. Absent a violation of any statute of limitations, there is no guarantee that a person will be charged contemporaneously with an offense.

"Traditional enforcement methods almost always provide relatively immediate notice of an offense during the stop and citation process, but there is nothing in the law providing traffic law offenders with special rights to notice. Furthermore, in some circumstances traditional enforcement methods do not provide immediate notice. An officer who observes a violation can cite the violator at a later time. In crash situations, citations often are issued after the investigation is completed, days or weeks after the crash." (from IIHS web page http://www.carsafety.org/safety_facts/myths.htm#4)

Revenue. Some opponents of photo enforcement view red light cameras as a revenue source rather than a safety tool. Many jurisdictions are combating that concern by moving to flexible fixed-fee payments to contractors (*see step 7*). That way there are no misconceptions that vendors have an incentive to increase citations, thereby increasing revenues.

When revenues exceed costs, many jurisdictions are reinvesting that money into the red light camera program or into other traffic safety initiatives.

As stated earlier (*under step 6*) jurisdictions should be attentive to revenue generation and distribution. They should

- Determine the amount of fines for a citation and the distribution among all of the parties
- Determine the involvement of the vendors and the operators. Is a vendor reimbursed on a per ticket or flat-fee basis? Overcome any perception that the program is simply a revenue generator for the jurisdiction. One way to do that is to dedicate income to traffic safety (rather than the general fund) as recommended by NCUTLO
- Prevent appearances of conflict of interest for government authority and contractor

Ticketing procedures. Some opponents complain that receiving tickets in the mail takes away their constitutional right to confront their accuser. However, as with parking tickets, all ticketed individuals are given the opportunity to testify in court and to provide a defense against the ticket.

Chief Ramsey of the Metropolitan Police Department, Washington, D.C., reiterates, "All individuals receiving tickets from red light cameras have the same rights to contest their citation as those who receive tickets from police officers, including the option of an in-person hearing to present their defense."

Some localities have addressed the issue of how to contest a violation by allowing a mail-in format for people to contest tickets. In Washington, D.C., to contest a ticket by mail the owner must return a sworn affidavit to the Automated Traffic Enforcement Office that waives their right to an in-person hearing and includes their evidence and testimony. For example, if the vehicle had been reported stolen at the time of the violation, the owner must submit a copy of the filed police report.

Increase in rear-end crashes. A few studies report an increase in rear-end crashes following the implementation of red light camera enforcement. That isn't surprising. The more people stop on red, the more rear end collisions there will be if motorists behind them are following too closely or not paying attention. This appears to be a temporary effect that will decrease or disappear once drivers become accustomed to cameras and change their driving behaviors. When you look at all crash types—in particular those involving injury—red light cameras lead to significant overall reductions in crashes, especially costly injury crashes.

Step 10:

Evaluate and monitor program's success

The NCUTLO model law recommends that within three years of the start of a red light camera program, a formal evaluation should be undertaken to determine if driver behavior has improved. To reduce the likelihood that changes in violation rates are due

to factors other than the red light camera program, "control sites" should be chosen that have the same characteristics of the camera-monitored intersection and are outside of the influence of camera enforcement (i.e., perhaps in another city whose residents are not exposed to mass media messages supporting camera activity).

The data provided by the evaluation can offer managers valuable insight on behavioral changes at intersections that result from photo red cameras and not other factors. Specifically, a well-chosen control location should have little change in red light running rates compared to a location with a camera or locations near active cameras. If control locations' red light running rates are changing, then conclusions that cameras are causing changes in red light running become more difficult to assert.

OXNARD, CALIFORNIA: POST-IMPLEMENTATION STUDY

Oxnard, California's red light enforcement program began in July 1997 with 11 camera enforcement sites. Because of its status as one of the first programs in the United States, researchers at the Insurance Institute for Highway Safety selected Oxnard as the site for a study on crash reductions from the use of red light camera enforcement. IIHS researchers analyzed crash data from the California Statewide Integrated Traffic Records System from before and after the cameras had been implemented in Oxnard. The study found a 29 percent reduction in injury crashes and 32 percent reduction in right angle collisions.

The Oxnard study set a model for post-implementation studies countrywide. The data from these studies serves to help cities gauge their program's effectiveness and allows the public to track the safety benefits of their local program.

It is important that any evaluation be conducted by researchers who understand experimental design and evaluation.

The National Cooperative Highway Research Program (Transportation Research Board) Synthesis 32-03: *Impact of Red Light Camera Enforcement on Crash Experience* provides detailed guidance on how communities can perform successful evaluation of their camera programs. The report is available from NCHRP in Fall 2002 and is also available on the FHWA Stop Red Light Running website at (*http://safety.fhwa.dot.gov/programs/srlr.htm).*

SUCCESSFUL RED LIGHT PROGRAMS OFTEN:

- Focus on traffic safety benefits
- Garner public awareness and acceptance through extensive education and communication about all aspects of the program
- Seek legislative, law enforcement and judicial support
- Learn from the experience of others
- Provide a high level of "customer service" by quick response to violator questions and concerns

APPENDIX A

Website Addresses for Red Light Camera Programs Featured in Program Profiles

- **Charlotte, North Carolina *Safe*Light Program**
  http://www.ci.charlotte.nc.us/citransportation/programs/safelight.htm
- **Boulder, Colorado**
  http://www.ci.boulder.co.us/publicworks/depts/trans/ntmp/radar/general.htm#about
- **Howard County, Maryland Red Light Camera Program**
  http://www.co.ho.md.us/redlight.htm
- **Mesa, Arizona**
  http://www.ci.mesa.az.us/police/traffic/photo_enforce.htm
- **Washington, D.C.**
  http://mpdc.dc.gov/info/traffic/redlight.shtm
- **Prince George's County, Maryland, City of Bowie**
  http://www.cityofbowie.org
- **San Diego, California**
  http://www.sannet.gov/police/help/traffic.shtml#photo
- **Oxnard, California**
  post implementation study is available by contacting the Insurance Institute for Highway Safety
  http://www.highwaysafety.org
- **Arlington and Alexandria, Virginia, and Toledo, Ohio**
  do not have websites for their red light camera programs. For more information on these programs, please contact the respective police departments.

Website Addresses for Selected Red Light Camera Programs in the United States

- **New York City:**
  http://nyc.gov/html/dot/html/faq/faq.html
- **San Francisco, California:**
  http://www.sfgov.org/dpt/redlight.htm
- **Los Angeles County, California:**
  http://www.lapdonline.org under Building Safer Communities
- **Wilmington, Delaware:**
  http://www.ci.wilmington.de.us/pressreleases/pr020506.htm
- **Fairfax, Virginia:**
  http://www.ci.fairfax.va.us/Police/PhotoRedLightEnforcement.htm
- **Portland, Oregon:**
  http://www.trans.ci.portland.or.us/traffic/enforcement/redlightcameras/redlight.htm

Other websites on Red Light Running

http://www.redmeansstop.org/

http://mrtraffic.com/ticketcamera.htm

http://www.photocop.com/red-light.htm

http://www.TrafficCalming.org/

APPENDIX B

Organized Initiatives to Stop Red Light Running

Public awareness and opposition to red light running has led to several national and local initiatives. Among them:

• **National Campaign to Stop Red Light Running (***which prepared this guide***),** a national advocacy group guided by an independent National Advisory Board that includes leaders from the fields of traffic safety, law enforcement, transportation, engineering, health care and emergency medicine, as well as crash victims. More information on the Campaign and the safety benefits of red light cameras can be found at *(http://www.stopredlightrunning.com).*

• Federal Highway Administration's **Stop Red Light Running Program.** Begun in 1995, it is designed to educate the public on the dangers of red light running and increase enforcement efforts at a grassroots, community level. The American Trauma Society has worked with the FHWA to deliver the program nationwide. Since its inception, the program has been piloted in numerous communities and each year sponsors National Stop on Red Week, a week dedicated to educating Americans about the dangers of running red lights. During the first full week of September every year, National Stop on Red Week is scheduled from Saturday to Friday. It is established by the FHWA, DaimlerChrysler Corporation and the American Trauma Society. *See the FHWA's web page at http://safety.fhwa. dot.gov/programs/srlr.htm for extensive information about red light running and the national program.*

• **Red Means Stop Coalition,** a Phoenix, Arizona, non profit organization established in 1999, is an excellent example of a local initiative. Three families founded the Red Means Stop Coalition as a result of the tragedies they experienced when family members were hit by red light runners. Arizona is ranked as the worst state in the nation for red light running crashes and Phoenix leads the nation in red light running fatalities. Red Means Stop has successfully built a strong grassroots presence in Phoenix and across the state and has established relationships with government leaders, corporations, legislators, law enforcement, and members of the community.

The Red Means Stop Coalition has successfully worked with traffic safety advocates to pass legislation that strengthens penalties for red light running violators and establishes the "Governor's Traffic Safety Advisory Council." Additionally, Red Means Stop worked with Governor Jane Hull and nine city mayors to establish March as Red Light Running Awareness Month in Arizona. You can learn more about the Red Means Stop Coalition at (*http://www.redmeansstop.org).*

APPENDIX C

NCUTLO's Automated Traffic Law Enforcement Model Law

The objective of automated traffic law enforcement is reduced traffic crashes and improved adherence to traffic laws through the use of photographic and electronic technology as a substitute for traditional traffic law enforcement. This type of enforcement should be used at high crash sites, at other high-risk locations, or in situations where traffic law enforcement personnel cannot be utilized, either due to the pressing needs of other law enforcement activities or where inherent on-site safety problems make traditional law enforcement difficult.

Automated traffic law enforcement is not intended to replace traditional law enforcement personnel nor to mitigate safety problems caused by deficient road design, construction or maintenance. Rather, it provides enforcement at times and locations when police manpower is unavailable or its use raises safety concerns.

The model law imposes only a civil fine for traffic law violations enforced via automated traffic law enforcement system and relies on an initial presumption of guilt. This approach is not new as it is typically utilized for the enforcement of parking law violations. As with parking violations, traffic law violations resulting from automated traffic law enforcement are not recorded in drivers' licensing files for possible point assessment or licensing action. Indeed, any attempt to unfavorably influence guilty persons' driving privileges, through the use of this system, could raise due process of law concerns.

This model law contains provisions to insure that automated traffic law enforcement is not used as a revenue generator. Compensation paid for an automated traffic law system is to be based only on the value of the equipment or the services provided. Compensation for services or equipment is not to be based on the revenue generated by the system.

To help further this goal and improve highway safety, this model law provides that revenue derived from automated traffic law enforcement may be utilized solely to fund highway safety functions.

Automated Traffic Law Enforcement Model Law

1. Legislative Purpose
This legislation authorizes automated traffic law enforcement at high crash or other high-risk locations where on-site traffic law enforcement personnel cannot be utilized, either because of insufficient manpower or inherent on-site difficulties with enforcement by police officers. The objective of automated traffic law enforcement is reduced traffic crashes resulting from improved adherence to traffic laws achieved by effective deterrence of potential violators which could not be achieved by traditional law enforcement methods.

Automated traffic law enforcement is not intended to replace traditional law enforcement personnel, nor is it intended to mitigate problems caused by deficient road design, construction or maintenance. Rather, it provides enforcement at times and locations when police manpower is unavailable, difficult to utilize safely, or needed for other priorities.

2. Applicability of Law
The State, a county, or a municipality may utilize an automated traffic law enforcement system to detect traffic violations under State or local law, subject to the conditions and limitations specified in this Act.

3. Limitations on Use of Automated Enforcement
Automated traffic law enforcement systems may be utilized only at locations with high incidences of violations or with high crash rates due to violations, where it is impractical or unsafe to utilize traditional enforcement, or where traditional enforcement has failed to deter violators. In determining deployment of automated traffic law systems, the judgment of the administering agency, when using due diligence in evaluating the suitability of potential deployment sites, including consideration of site violations and crash data, shall be controlling on where and when to install automatic traffic law enforcement systems.

Before issuing citations based on surveillance by an automated traffic law enforcement system, a traffic engineering analysis of the proposed site shall be conducted to verify that the location meets highway safety standards. An automated traffic law system may not be used as a means of combating deficiencies in roadway design or environment.

4. Citation and Warning Notice
(a) An agency shall mail to the owner pursuant to this section, citation, which shall include:

(1) The name and address of the registered owner of the vehicle;

(2) The registration number of the motor vehicle involved in the violation;

(3) The violation charged;

(4) The location where the violation occurred;

(5) The date and time of the violation;

(6) A copy of the recorded images;

(7) The amount of the civil penalty imposed and the date by which the civil penalty should be paid;

(8) A signed statement by a technician employed by the agency that, based on inspection of recorded images, the motor vehicle was being operated in violation of a traffic control device;

(9) A statement that recorded images are evidence of a violation of a traffic control device;

(10) Information advising the person alleged to be liable under this Act:

(A) Of the manner, time, and place in which liability as alleged in the citation may be contested; and

(B) Warning that failure to pay the civil penalty or to contest liability in a timely manner is an admission of liability and may result in denial of renewal of vehicle registration.

(C) Except as provided in §7 (f) (2), a citation issued under this section shall be mailed no later than 2 weeks after the alleged violation.

(b) An owner who receives a citation pursuant to the provisions of this Act may:

(1) Pay the civil penalty;

(2) Elect to stand trial for the alleged violation; or

(3) Specify the person who was operating the vehicle at the time of the violation, including the operator's name and current address.

5. Violations
Unless the driver of the motor vehicle received a citation from a police officer at the time of the violation, the motor vehicle owner, or the driver if subsection 7 (f) (2) is applicable, is subject to a civil penalty not exceeding $([1]) if the motor vehicle is recorded by an automated traffic law enforcement system. A violation for which a civil penalty is imposed under this Act is not a moving violation for the purpose of assessing points and may not be recorded on the driving record of the owner or driver of the vehicle.

6. Failure to Pay Penalty or Contest Violation
If a person charged with a traffic violation as a result of automated traffic law enforcement does not pay the civil penalty resulting from that violation, the department of motor vehicles may refuse to reregister any motor vehicles owned by that person.

7. Rules of Evidence and Defenses
(a) (1) Based on inspection of recorded images produced by an automated traffic law enforcement system, a citation or copy thereof alleging that the violation occurred and signed by a duly authorized agent of the agency shall be evidence of the facts contained therein and shall be admissible in any proceeding alleging a violation under this section.

(2) Adjudication of liability shall be based on a preponderance of evidence.

(b) The court may consider in defense of a violation:

(1) That the motor vehicle or registration plates of the motor vehicle were stolen before the violation occurred and not under the control of or in the possession of the owner at the time of the violation;

(2) Evidence satisfactory to the court that the person named in the citation was not operating the vehicle at the time of the violation;

(3) With respect to an alleged red light violation, the driver of the vehicle passed through the intersection when the light was red:

(A) In order to yield the right-of-way to an emergency vehicle; or

(B) As part of a funeral procession;

(C) The vehicle had not illegally crossed the required stopping point.

(4) Any other evidence or issues that the Court deems pertinent.

(c) In order to demonstrate that the motor vehicle or the registration plates were stolen before the violation occurred and were not under the control of possession of the owner at the time of the violation, the owner must submit proof that a police report concerning the stolen motor vehicle or registration plates was filed in a timely manner.

(d) In order to demonstrate that the person named in the citation was not the violator, the person so named in the citation shall provide evidence satisfactory to the Court, specifying the person who was operating the vehicle at the time of the violation, including the operator's name and current address.

(e) If the person named in the citation is an owner of a commercial vehicle with a registered gross weight of 10,000 pounds or more, a tractor vehicle, a trailer operated in combination with a tractor vehicle or a passenger bus, in order to demonstrate that he or she was not the violator that person shall, in a letter mailed to the Court by certified mail return receipt requested:

1 Insert maximum fine amount

(A) Swear that the person named in the citation was not operating the vehicle at the time of the violation; and

(B) Provide the name, address, and driver's license identification number of the person who was operating the vehicle at the time of the violation.

(f) (1) If the court finds that the person named in the citation was not operating the vehicle at the time of the violation or receives evidence identifying the person who was driving the vehicle at the time of the violation, the clerk of the court shall provide to the agency issuing the citation a copy of the evidence identifying who was operating the vehicle at the time of the violation.

(2) Upon receipt of evidence from the court that a person other than the one initially charged was operating the vehicle at the time of the violation, an agency may issue a citation to that other person so identified. A citation issued under this paragraph shall be mailed no later than 2 weeks after receipt of the evidence from the court.

8. Public information

A public information campaign must precede the issuance of citations using an automated traffic law enforcement system. An integral part of an automated traffic law enforcement program is a community-wide information campaign to inform the driving public. This public information campaign shall continue throughout the life of automated traffic law enforcement program and may be funded from revenues derived from the program. The goal of the automated traffic law enforcement program is reduced traffic crashes achieved by deterrence of violations, not the issuance of citations or the generation of revenues.

9. Payment for Automated Traffic Enforcement System

The compensation paid for an automated traffic law system shall be based on the value of the equipment or the services provided. It may not be based on the revenue generated by the system.

10. Use of Revenues Derived from Automated Enforcement

No portion of any fine collected through the use of automated traffic law system may be utilized as general revenue of the implementing jurisdiction. Revenue derived from automated traffic law enforcement shall be utilized solely to fund highway safety functions and projects, which may include automated enforcement programs costs. Automated enforcement program costs that may be funded by revenues derived from citation fines are limited to equipment acquisition, installation and replacement, program administration, public information campaigns and education, and periodic program evaluations of compliance, public awareness and impacts on highway safety.

11. Adoption of Implementing Procedures

In consultation with local governments, the chief judge[2] of the (insert name of the appropriate state, county or municipal court) shall adopt procedures for the issuance of citations, the trial of civil violations, and the collection of civil penalties under this Act. Thresholds established for determining violations and protocols for establishing acceptable evidence of committed violations shall be established and documented by the public agency responsible for administering the automated enforcement program. This authority may not be delegated to equipment vendors, service providers or other private sector institutions or employees.

12. Program Evaluation

Within three years of the establishment of an automated traffic law enforcement program, the implementing jurisdiction shall initiate a formal evaluation of the program to determine if driver behavior has improved. That evaluation shall be completed within (one year).

2 States may wish to designate another official or agency to adopt such procedures. The National Committee urges that these procedures be developed well before the program is begun to assure the opportunity for timely input on the procedures by interested parties.

13. Definitions

(a) "Agency" means any public organization of the State[3] or a political subdivision that is authorized to issue citations for a violation of State[4] vehicle law or of local traffic laws or regulations.

(b) "Automated traffic law enforcement system," means a device with one or more sensors working in conjunction with:

(1) A red light signal to produce recorded images of motor vehicles entering an intersection against a red signal indication; or
(2) A speed measuring device[5] to produce recorded images of motor vehicles traveling at a prohibited rate of speed; or
(3) A device to produce recorded images of motor vehicles violating railroad grade crossing signals; or
(4) Any other traffic control device if the failure to comply with it constitutes (Insert appropriate language from the state code which enumerates safety-related moving violations).

(c) "Automated traffic law enforcement program" means the utilization of one or more automated traffic law enforcement systems to issue citations for civil violations of traffic law.

(d) The "Manual on Uniform Traffic Control Devices" means the national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel in accordance with 23 U.S.C. 109(d) and 402(a).

(e) "Owner" means the registered owner of a motor vehicle or a lessee of a motor vehicle under a lease of 6 months or more.

(f) (1) "Recorded images" means images recorded by an automated traffic law enforcement system on:

(A) Two or more photographs;
(B) Two or more microphotographs;
(C) Two or more electronic images; or
(D) A videotape;

(2) Showing the motor vehicle, and on at least one image or portion of tape, clearly identifying the registration plate number of the motor vehicle.

(g) A "traffic control device" means any sign, signal, marking, channelizing and other device in conformance with the Manual on Uniform Traffic Control Devices and used to regulate, warn or guide traffic, placed on, over, or adjacent to a street, highway, roadway, pedestrian facility, or bicycle path by authority of a public body or official having jurisdiction.

3 States may wish to substitute the name of the state for the word "state."
4 States may wish to substitute the name of the state for the word "state."
5 States may wish to provide a definition of speed measuring devices which explicitly identifies those devices used in the state which are legally-accepted as speed measuring devices.

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