It is one of the most dramatic of traffic collisions. It occurs at what most drivers think is a safe intersection controlled by traffic signals, and it is getting worse. Red Light Running is a serious and growing problem. As more and more American cities become urbanized, with the attendant increase in vehicular traffic, more of their intersections become suitable for traffic signals in order to efficiently and effectively control the movement of vehicles through intersections.

Regrettably, some vehicles, traveling at the posted speed or greater, enter the intersection after the signal has turned to the red phase. When there is another vehicle occupying this space having entered in the belief that theirs was the right of way, the issuing collision can result in serious injury or death.

The National Highway Traffic Safety Administration thru its Fatal Accident Reporting Systems (FARS) report that each year, more than 1.8 million intersection crashes occur. Of that total, well over 200,000 occurred as a result of red light running, causing approximately 950 deaths, and over 176,000 injuries.

FARS data indicates that on a national basis, fatal motor vehicle crashes at traffic controlled intersections increased 13.2 percent between 1993 and 2003, far outpacing the 6.6 percent rise in all other fatal crashes. In addition to the death and injury that this number represents, the economic loss as a result is estimated to be in excess of 14 billion dollars annually.

As reported by the Federal Highway Administration, red light running is a complex problem. There is no simple or single reason to explain why drivers run red lights. Many studies have been conducted to determine the potential causes for this violation in order to develop a uniform strategy for its prevention.

Since red light running is a violation of existing traffic laws in virtually every state in the country, law enforcement is considered as the most significant intervention, after all engineering and design elements have been exhausted. Along with the traditional methods of enforcement, law enforcement agencies, and their respective municipal or county governments have adopted a relatively new method to combat this problem, the use of automated enforcement systems, usually incorporating sensors and cameras to automatically identify a red light runner and subsequently issue a citation to either the registered owner of the vehicle, or in some states, to the driver captured on camera when they are able to identify the driver.

While the uses of automated traffic enforcement systems have met with some success, they present a variety of problems which have their use less than uniform throughout the country. Those problems range from the political to the practical.

From a political perspective, many agencies that have employed this approach have been motivated by the revenue generated as a result of such enforcement. While their stated goal is to reduce or eliminate red light running at selected intersections, the cost of installing and processing this type of automated violation system is considerable, and most agencies must rely on the revenue generated to offset the cost of such enforcement.

As a consequence community members typically eye this approach with great suspicion and distrust, preferring the more expensive and sporadic use of uniformed law enforcement officers to handle this assignment.

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In spite of the revenue generated by automated systems, in many cases as a result of equipment failure, inability to identify the driver, inability to identify the license plate of the vehicle in violation, and a variety of other such issues, make the cost of such enforcement prohibitive for many agencies, since the cost far outweigh the revenue. If the desired objective is achieved, that is the reduction in red light running at such monitored intersections, then the revenue is substantially reduced; thereby, making this approach even more expensive.

The biggest failure of this method of enforcement however is not in the political or practical problems resulting from this approach; it is the fact that this intervention occurs after the fact. That is to say, the violation which has the potential for injury or death has already occurred. It does not necessarily prevent a potentially disastrous collision, it merely captures the violator in the commission of the act.

Agencies which claim success with such automated enforcement reluctantly admit that in a number of cases, those motorists most likely to violate such traffic laws simply select another route to their destination, and avoid those intersections where cameras are located.

In virtually every study conducted among drivers to determine the most significant causes of such violations, the principal reason cited was the driver’s lack of awareness that a traffic signal existed, or that the driver saw the signal too late to safely stop the vehicle. This problem was identified as the number one reason such violations occur. It must be said that drivers polled for such
While there is no provision in the Federal Manual on Uniform Traffic Control Devices (MUTCD) there is a provision for testing any new innovation designed to improve existing traffic control systems. Two cities, Anaheim, California, and Houston, Texas both applied for and received permission to test this concept in order to determine the effectiveness of such an enhancement to existing traffic control systems.

In 1999, the city of Anaheim, California applied to and received permission to test this concept from the California Traffic Control Devices Committee (CTCDC) an advisory board to the California Department of Transportation. The site selected by the city of Anaheim was located at an intersection near the Disneyland Resort, and the site of numerous traffic collisions. One death occurred as a result of red light running.

The test took two years to complete and the end result was that the enhanced traffic signal significantly reduced red light running at this location. Following is an excerpt from the conclusion of that study which was submitted to the CTCDC in June of 2002.

The installation of the LED lights across the stop lines of the northbound and southbound Disneyland Drive has resulted in positive improvement in all of the effectiveness measures outlined for the test.

The most significant improvement is in the area of red light violations. The instance of vehicles running the red light has been significantly reduced from a rate of 8.94 violations per 1,000 vehicles to 2.40 violations after the installation of the devices. During the two year test period, there were no reported traffic accidents after the installation of the devices. This compares to six accidents in the 14 months prior to the installation of the devices. The devices also appear to be effective during daylight, dusk and nighttime light conditions.

The summary in the conclusions outlined a variety of concerns largely related to the brightness and durability of the devices, and the cost for installation and maintenance, all of which were corrected before the following study in Houston, Texas.

The Anaheim study’s final conclusion was that the installation was effective at reducing red light violations, reducing collisions, and increasing the adherence to the stop line limiting incursions into the intersection beyond the limit line.

Following the Anaheim Study, the city of Houston, Texas applied to the Texas Traffic Control Devices Committee in that state to test a similar application at a problematic location in that city. The location of the test in Houston was at a mid-block crosswalk controlled by a pedestrian actuated traffic signal requiring motorists to stop for the red light. The location was problematic because decorative lighting in the vicinity of this location seemed to reduce visibility of the traffic signal to motorists, not an uncommon problem in many locations nationwide.

Houston initiated their experiment by installing in roadway devices as outlined earlier in this article and ran the test from June of 2003 to October of 2004. Two “After Studies” were compared to the “Before Studies” to determine any change in conditions. The summary of findings in the Houston Study concluded that vehicular and pedestrian traffic safety has improved dramatically after the installation of the in roadway LED lights.

Among the advantages cited in the Houston Study were that running red light violations decreased dramatically, and compliance increased, and “stop over the Stop Bar” violations decreased as well.

No attempt is made here to detail the entire findings in these two studies; however both are available...
to any interested party by contacting LIGHTGUARD SYSTEMS, INC., at www.lightguardsystems.com who maintains copies of each study in their data base for such review as any agency deems appropriate.

While it may be premature to conclude that this innovation is the entire solution to the red light running problem, the fact that two independent studies at problematic locations concluded that a significant reduction in red light running resulted.

Two studies is probably insufficient to suggest that this is the remedy at every problematic location, however it certainly suggests that further testing is more than warranted, and agencies experiencing a high rate of red light running at “cluttered” intersections are certainly able to apply for permission to test and reach their own conclusions regarding this method of enhancing existing traffic control systems.

The manufacture of these tested devices, currently markets a pedestrian crosswalk warning system using similar technology and for which they received MUTCD approval. They are prepared to assist any agency desirous of expanding this experiment at a far more reasonable cost than the installation of automated enforcement systems. In fact, the combination of both at some intersections might be the most effective way of reducing injury and death where a city or county has been unable to effectively reduce the potential threat for such an event.

Since this approach is still in an experimental stage, there are a variety of options which can be considered along with this approach. For instance, the in roadway devices located closest to the right turn lane can remain in the flashing amber mode if the pedestrian walk signal is activated so any vehicle approaching an intersection intending to make a right turn is further alerted that a pedestrian may be crossing.

Only the imagination of a community’s traffic engineer currently limits the possibilities this innovation offers. If nothing else this article is intended to make such engineers aware that this preliminary testing suggests further exploration is warranted. The problem is serious enough that no potential option should be discounted until proven unacceptable.