

Red Light Camera Defense Team

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PRELIMINARY REPORT

The Impact of Yellow Light Phase Timing on the Red Light Camera Program in San Diego, California

I. INTRODUCTION

The following report is a summary of the preliminary results of a study on the 19 operational red light camera intersections in the City of San Diego, California. The study was conducted by the Red Light Camera Defense Team upon reviewing more than 5,000 court documents and other public records. The information provided below was obtained from the City of San Diego Transportation Department Traffic Engineering Division, the San Diego Police Department, and the San Diego City Attorney's Office.

A. PURPOSE

The purpose of the study was to examine the existence and impact of decreases and/or increases in yellow light phase duration before and during the operation of the red light camera program in order to determine whether the program is primarily operated for safety or revenue generation. Accident history, alleged violation volume, and citation volume data were also considered in assessing the appropriateness of the current program.

B. METHOD

To conduct the study, data was reviewed from the following documents: (1) signal phase timing charts; (2) intersection blueprints; (3) violation/citation volume records; (4) engineering and speed surveys; and (5) other public records.

C. SUMMARY OF RESULTS

The preliminary results of the study indicate that the red light camera program in San Diego is operated primarily for revenue generation purposes, rather than for public safety. It appears from the available data that Lockheed Martin IMS, the private company that operates the program, selected intersections for placement of red light cameras where the traffic volume was high and the yellow light was unreasonably short, rather than basing its selection decision on the number of accidents at each intersection.

In fact, it does not appear that accident history played a significant role in the selection of the intersections because none of the intersections chosen for computer-enforcement were listed as high accident intersections by the city in the years that the cameras were being installed. The available data adds further support to the contention that in order to increase revenue, the red light camera program in San Diego trapped thousands of people driving by placing cameras only at intersections with unreasonably short yellow lights, actually causing citizens to run the red lights and subjecting them to criminal prosecution.

II. ANALYSIS

Empirical studies indicate that longer yellow lights allow people more time to react to changing light cycles. Consequently, placing computerized, law enforcement devices at intersections with short yellow lights can obviously result in more red light citations than can computer-enforcement devices placed at intersections with longer yellow lights. It is the effect of the short yellow light on apparent red light running that the red light camera program in San Diego has seized upon in order to maximize revenue.

The reason why short yellow lights create a trap for people driving is that short yellow lights create an “impossible to stop” zone in which a certain percentage of people approaching an intersection become caught in the dilemma of not being able to stop safely before the light turns red, and not being able to cross into the intersection without technically running a red light. Federal traffic control standards require that a traffic control device give drivers adequate time for a proper response. Acceptable traffic engineering standards require that a yellow light be long enough to allow drivers sufficient time to stop their vehicle safely at the limit line before the traffic light changes from yellow to red. There are different methods of calculating appropriate yellow light time based on factors like road grade and approach speed. The recent traffic engineering practice has been to determine approach speed by using the posted speed limit rather than the 85th percentile speed (the speed at which 85 percent of people are thought to be driving). However, it is more appropriate to base these calculations on the speed at which people are actually driving toward the intersection. The faster the approach speed and the shorter the yellow light, the greater the likelihood that people driving will be caught in the “impossible to stop” zone and forced to run the red light.

Data from public records suggests that the operators of the red light camera program in San Diego exploited the “impossible to stop” zone by selecting intersections for computer-enforcement that have relatively high speeds and short yellow lights. This situation is not unlike the age-old law enforcement technique of “sitting-in” described in the “Selective Traffic Enforcement Manual” by the International Association of Chiefs of Police, Inc. (January 1972). The technique of “sitting-in” is explained in the manual’s introduction as follows:

Sitting-in usually occurs at locations which, in police jargon, are referred to as “duck ponds” or “cherry patches”. The sitting-in practices are particularly objectionable when two or more enforcement units group together to work an intersection which generates frequent driver violations. Usually, where this situation occurs, the officers are doing nothing more than reaping the harvest of inadequate or poor traffic engineering. These

locations frequently encourage noncompliance by the motorist to traffic signals or turning regulations. Very often, however, the real culprit is faulty traffic engineering rather than the driver. Poor positioning of signals and channelization deficiencies are characteristically present at the “duck ponds”.

It appears that the red light camera program in San Diego is nothing more than a modern day, computerized version of the age-old law enforcement technique known as “sitting-in” where police officers seized on poor traffic engineering practices to ensure high citation rates. But, in this case, it isn’t police officers who are doing the “sitting-in” so much as it is the private company that operates the program. By placing cameras at intersections where drivers are actually forced to run the red lights due to seemingly poor traffic engineering practices, the company that operates the program ensured that the program would generate millions of dollars in revenue each year.

The following observations were made by analyzing the available data from the city’s 19 operational red light camera intersections:

1. None of the intersections selected for installation of the devices between 1998 and 2000 were listed as high accident intersections by the city between 1997 and 1999, despite the city’s claimed plan to select only intersections for computer-enforcement with a history of high accidents. (*See*, Attachments “1” to “4”).
2. Intersections were selected by the private company that operates the program because they had extremely short yellow light cycle durations. Among the intersection selection criteria listed, the following conditions were found: (1) short light cycle lengths; (2) amber light cycle less than 4.0 seconds; (3) green phase exceeds red phase; (4) high traffic volume; and (5) downhill approaches. (*See*, Attachment “5”).
3. Records indicate that numerous intersections were rejected for computer-enforcement because the yellow light was deemed “too long,” resulting in low violation volume. Other reasons given for rejecting potential intersections for computer-enforcement were that the “timing of lights clears out traffic” and that there was “no traffic on yellow” thereby reducing the potential for alleged violations. Another reason given for rejection of potential intersections was “low traffic volume” (*See*, Attachment “6” and “7”).
4. After the red light program began in San Diego, at least two intersections had their yellow light phases shortened by a full second before the computer-enforcement devices were installed. The intersections were: (1) Grand Avenue and Mission Bay Drive; and (2) Mira Mesa and Scranton Road.
5. Red light cameras were placed at 15 intersections with yellow light times that were less than 4.0 seconds long, even though approach speeds were in excess of 40 miles an hour at more than half of the intersections.

6. Red light cameras were placed at 11 intersections where the yellow light was only 3.0 seconds long. Approach speeds at those intersections ranged between 35 and 50 miles an hour, which would require considerably more than 3.0 seconds of yellow light time.
7. After installation of the cameras, subsequent time increases in the relevant yellow light phase at various intersections caused the number of alleged violations to drop by more than 94% at the intersection of Grand Avenue and Mission Bay Drive where the yellow light was increased from 3.0 seconds to 4.7 seconds. Even smaller increases in yellow light durations of half a second or less caused the number of alleged violations to drop by more than 55%. Another intersection had alleged violations drop by 12% from less than half a second increase in yellow light time. The approach speed at both of these intersections exceeded 40 miles an hour.
8. After installation of the computer-enforced devices at some intersections, the city subsequently increased the yellow light times from between 0.2 to 0.9 seconds at all the adjacent yellow lights in the intersection, but left unchanged the 3.0 second yellow light which was connected to the red light camera computer. For example, at the intersection of Black Mountain and Mira Mesa, where approach speeds are about 40 miles an hour, all the adjacent yellow lights were increased by up to nine tenths of a second while the yellow light connected to the camera remained unchanged at 3.0 second.
9. All the intersections appear to have high traffic volumes. By targeting intersections where volume is heavy and approach speeds are higher than 25 miles an hour, attaching a camera to a short yellow light would likely create substantial revenue for the operating company that receives \$70 from each \$271 fine paid. For instance, the program appears to capture an average of more than 10,000 alleged violations per month. The intersection at North Harbor and Grape Street, located in the populated line of traffic from the city's major airport, has only a 3.0 second yellow light but is has an approach speed of 40 miles an hour. Consequently, it captures an average of more than 3,000 alleged violations each month.

III. CONCLUSION

The Red Light Camera Defense Team believes that a program for safety should first attempt to increase the duration of the yellow lights at problematic intersections before implementing a computerized, privatized, revenue-generating law enforcement program against its citizens. The preliminary study reported above indicates that Lockheed Martin IMS and the City of San Diego are operating the program primarily to generate revenue rather than for public safety. The evidence supports this conclusion and sheds serious doubt as to the true motivations behind the red light camera program in San Diego. The information referenced above can be found in Appendix "A", and also in Attachments "1" to "7".