

DATE ISSUED: September 11, 2002

REPORT NO. 02-203

ATTENTION: Honorable Mayor and City Council
Docket of September 17, 2002

SUBJECT: Red Light Photo Enforcement Program

REFERENCE: Manager's Report Nos. 96-08, 96-136 and 98-114.

SUMMARY

Issue – Should the Red Light Photo Enforcement Program be Reinstated?

Manager's Recommendations

1. Reinstatement of the Red Light Photo Enforcement Program with the changes recommended in the report.
2. Authorize the City Manager to renegotiate the contract with Affiliated Computer Services (ACS).

Other Recommendation – None.

Fiscal Impact – Undetermined at this time. City staff costs to operate the program are estimated at \$405,000 for the Transportation Department, \$1,000,000 for the Police Department, with an additional cost of \$211,000 for City Attorney services. Revenues are also undetermined at this time and will depend on the financial arrangement between the vendor and the City.

BACKGROUND

In 1996, the State of California enacted California Vehicle Code Section 21455.5 (Attachment 1) authorizing implementation of Automated Red Light Photo Enforcement Programs. On July 8, 1996, the City Council adopted Resolution Number R-287600, which authorized the City Manager to negotiate and enter into an agreement for a pilot automated enforcement program. In May 1998, the City of San Diego (the City) entered into a contractual agreement with U.S. Public Technologies, Inc. (USPT) to provide services for a five-year pilot program ending April 2003. The contract called for USPT to supply and install 16 cameras and their housings at mutually agreed upon intersections and maintain system operations at no cost to the City (Attachment 2). In August 1998, the City of San Diego began implementing the program. Prior to implementation, the Police Department conducted a public opinion survey. The survey found that nearly 90 percent of those individuals polled supported the use of a photo enforcement program in the City of San Diego.

In February 2000, the number of camera installations authorized in the contract increased from 16 to 32; however, the total number of operational camera installations in the City of San Diego has never exceeded 19 intersections.

The maximum fine, established by the State of California, is \$271 per citation. According to the terms of the current contract, the vendor receives \$70 or 50 percent of whatever the City receives, whichever is less, thereby eliminating any financial risk to the City. On a fully collected fine, the City receives \$143, of which \$70 goes to the vendor. The remaining \$128 is divided between various governmental entities (Attachment 3).

USPT was purchased by Lockheed Martin and subsequently sold to Affiliated Computer Services (ACS). ACS maintained responsibility for purchasing, preparing, loading, unloading and developing the film at each camera site. They identified the registered owners of vehicles from photographs taken of license plates and with information obtained through California Department of Motor Vehicle (DMV) access and prepared and mailed citations after approval by the Police Department's red light photo enforcement staff.

The Police Department's Traffic Division managed the program. A team of one police sergeant and six officers were responsible for the daily operations. Additionally, fourteen motorcycle officers, an accident investigations bureau officer, and a police code compliance officer provided court testimony as subject matter experts when citations were challenged in court.

In June 2001, the Chief of Police, because of concerns raised by his Red Light Photo Enforcement Program staff, halted the operation of the program pending an audit conducted by PB Farradyne, Inc., an independent auditor hired by the City to review the program. The Red Light Photo Enforcement Program staff raised concerns about the internal camera settings and the loop placement and measurements at the intersections.

After the program was halted, photo red light enforcement staff researched several programs throughout the country to evaluate their effectiveness and reliability. Staff findings were consistent with subsequent technical recommendations made in the final audit report by P.B. Farradyne, as well as the State Audit findings. The primary difference between the San Diego

system and others throughout the country was the location of the camera activation loops.

In August 2001, Superior Court Judge Ronald Styn, in a consolidated case of nearly three hundred citations, ruled favorably on the constitutionality of the program. However, he then excluded most of the evidence presented, ruling that the City's failure to operate the system as required by law, combined with the contingent fee arrangement, made the evidence before him unreliable and therefore inadmissible.

DISCUSSION

Since the program ceased operation, the City has received the results of two separate independent audits. In January 2002, PB Farradyne Inc. released the *City of San Diego Photo Enforcement System Review Final Report* (Attachment 4) to the Police Department. Also, in July 2002, the Bureau of State Audits released its findings on a statewide audit of the implementation, application, and efficiency of automated enforcement systems (Attachment 5). Both audits made several recommendations to improve the program. In addition, both audits found that a properly operated photo enforcement system would prevent red light violations and reduce the possibility of collisions that result from running a red light.

The Farradyne audit made a variety of recommendations to improve the current program. The audit recommended implementing the improvements, maintaining the Red Light Enforcement Program at the current 19 locations, and expanding to additional intersections. Additionally, the report found that all citations issued to date under the program had been issued properly. The report also found a 20-24 percent reduction in red light violations at intersections where the cameras had been operational for six months. Significant reductions in the number of collisions attributable to red light running were also found. However, the audit did find an unintended consequence of the program -- increases in the number of rear-end collisions at intersections where cameras had been installed.

The Bureau of State Audits concluded that red light running was a serious traffic problem and found that accidents related to motorist running red lights "have generally decreased where local government has employed cameras." In fact, the state audit found that during the four months immediately following the suspension of the San Diego program, "accidents caused by red light violations increased citywide by 14 percent."

Both audit reports recommended that the program be continued after making the recommended changes to the system. The recommendations are summarized below along with a staff response describing how the changes would be implemented.

- 1. Recommendation:** Move the camera activation loops behind the limit lines and establish a written policy regarding pitch measurements.

Response: Moving the activation loops behind the limit lines will eliminate the need for officers to conduct mathematical calculations in order to determine where the violator's vehicle was in relation to the limit line. This will increase the reliability of the system and significantly reduce the time officers are required to testify in court. This change will

also allow the first photo to depict the vehicle on the approach side of limit line versus while the vehicle is already in the intersection, effectively eliminating the frequent argument that the driver entered on the yellow light and not the red. The camera detection loops will need to be relocated behind the stop line at 18 locations. Camera settings at these locations will also need to be adjusted accordingly. The Transportation Department would be responsible for this evaluation process.

The system still will rely on speed measurement in order to activate the system when a violation occurs. The “pitch” in the photo enforcement system is defined as “the average distance between the two set of loops used for vehicle detection and speed measurement.” The Audit Report identifies a number of problems related to this measurement and recommends that a pitch policy be developed. The pitch policy should ensure that the pitch measurements are done to the advantage of motorists. For that reason, it is recommended that the pitch measurement that yields the lowest speed under any circumstances is the one that should be used. Regardless of the specific pitch measurement, the loops should be calibrated post-installation in order to establish speed calculations. The Transportation Department will implement this policy when establishing pitch measurements at photo-enforced locations.

Also, to further eliminate any possibility of error, the City of San Diego will use a minimum red light grace period of 0.5 seconds before a photo is taken of the offending vehicle, meaning the camera will not activate until the red light has been red for 0.5 second.

2. **Recommendation:** The Police Department should conduct more rigorous oversight of the vendor by making periodic visits to review their operations and develop business rules for vendors to follow when screening violations. These procedures should clearly document internal processes and methods for dealing with citation guidelines, citation review and approval requirements, and quality assurance audits. The Police Department should ensure that only citations they have approved are sent out.

Response: The SDPD Photo Red Light Enforcement Unit has recently developed a comprehensive set of business rules (Attachment 6), which includes periodic office and on-site vendor inspections. Office inspections will be designed to monitor vendor operations and to confirm that legal and contractual obligations are met. Film will be randomly pulled and reviewed to confirm that correct images were printed and mailed. Security and established retention periods for photographic evidence and DMV information will be randomly checked. A new chain of custody evidence form was designed to track photographic evidence from camera to court.

The Transportation Department will maintain oversight and management of all issues relating to the program concerning engineering and equipment operations.

3. **Recommendation:** Add an additional camera to intersections to photograph the violator behind the limit line and capture the red phase of the signal lights.

Response: Each photo-enforced intersection will need to have a rear-view camera installed. The addition of a rear camera at each intersection will allow the rear license plate to be captured in the photo. Rear-view cameras may not be possible at some intersections because of the geographical outlay of the intersection. The Transportation Department will be responsible for resolving this issue with ACS and other contractors.

4. **Recommendation:** Add additional advanced warning signs to alert drivers that they are approaching a photo-enforced intersection. Additional signage may reduce the number of rear-end collisions at the intersections.

Response: The addition of advanced warning signs for all approaches at photo red light enforced intersections will be completed by the Transportation Department as recommended by the audit reports.

5. **Recommendation:** The Transportation Department and the Police Department should work closely in developing a comprehensive methodology for the deployment of photo enforcement cameras in the City, building on the Transportation Department's on-going Traffic Safety Improvement Program. This would include identifying and implementing engineering solutions to enhance safety before installing red light photo enforcement and developing criteria for intersection selection. The selection process should consider a variety of criteria including high-accident street locations that are state owned when considering where to place red light cameras.

Response: When implementing the program throughout the City, established criteria will be used to determine the intersections that will be photo-enforced. The criteria will be based on several variables, with traffic safety being the primary concern. The criteria will include: crash history, traffic citation history, traffic volume (high volume intersections have a greater likelihood of collisions), traffic speed (the greater the speed, the more likely a red-light violation which may result in catastrophic collision), and other factors including such things as the location of schools in the area.

Annually, Traffic Engineering Division staff and the Police Department will identify and review existing locations based on established criteria. Staff will evaluate these locations to determine the most appropriate sites for photo enforcement. Each proposed camera location will be studied, and staff will implement any engineering measures anticipated to enhance intersection safety. The locations will then be monitored to determine if the improvements achieved the desired result. This information will be analyzed along with information from City intersections to determine potential red light camera installations.

6. **Recommendation:** Ensure that the City requires future installations be done in accordance with the City's plan check, permitting and inspection process, and that "as built" plans be prepared and maintained by a registered professional engineer. Also, to help maintain the integrity and accuracy of their systems, local governments should conduct periodic inspections of red light camera intersections and consider contracting with independent engineering firms to conduct technical reviews of the camera settings and system calibrations.

Response: The identified contractor will be required to procure the services of a registered professional engineer to design for new installations and modifications to existing locations. All changes to any location where photo enforcement is located will be subject to the City's plan check process, ensuring that all plan checking, permitting, inspections, and "as-built" plans are completed. The Transportation Department will coordinate with the vendors in order to insure that the appropriate devices are shown in the plans, and may assist other departments during the design and review process. After installation, periodic inspection of the intersections will be conducted to insure integrity and accuracy of the systems.

7. **Recommendation:** Specify periods for destroying confidential information relating to non-issued red light citations and strengthen the language within contracts with vendors to include explicit wording to protect the confidentiality of photographs and information obtained from the DMV database.

Response: Rejected citations will be maintained for 120 days, at which time the images will be destroyed. Issued citations will be retained for two years before they are destroyed. There will be periodic checks at the vendor's office to verify that citations are properly disposed.

Photo red light enforcement officers will periodically check the vendor's use of DMV access to verify compliance with the contract regarding confidentiality of photographs and information. Confidential information obtained from the DMV for the administration or enforcement of this program shall be held confidential, and will not be used for any other purpose. In addition, the vendor will require each employee to sign a confidentiality contract that has a penalty clause with sanctions that could include termination if any confidential DMV information is used for reasons other than citation processing and court purposes. Any new contract between the vendor and the City will include appropriate confidentiality provisions.

8. **Recommendation:** Adjust all yellow light intervals at photo-enforced intersections to be in compliance with the California Department of Transportation (Caltrans) Traffic Manual and use the results from speed surveys to establish yellow light time intervals.

Response: Staff will use results from speed surveys conducted at all intersections to establish the yellow time interval (even if the actual posted speed would dictate a shorter yellow time) and will comply at a minimum with Caltrans' standards for establishing the yellow time interval.

Yellow Light Timing Policy

A significant area of controversy has been the City's policy concerning the timing of the yellow lights at traffic signals. Both audit reports found the City's policy to be consistent with state and national standards.

The primary purpose of the yellow light interval is to warn motorists of an impending change to

the red light interval. The functional purpose of the yellow interval is to reduce the probability of drivers finding themselves in a situation where they are too close to the stop line to safely stop, but do not have enough time to safely (without accelerating) cross the stop line during the yellow interval. This situation is commonly known in traffic engineering as the “dilemma zone.” To avoid creating a “dilemma zone,” the distance traveled during the yellow interval (without acceleration) must be equal to the distance a vehicle needs to safely and comfortably come to a stop.

California Vehicle Code Section 21455.7 (Attachment 8) requires that minimum yellow light intervals at photo-enforced intersections must comply with the Caltrans’ Traffic Manual. The City will use this manual to determine yellow times at all signalized intersections. It should be noted that Caltrans’ yellow intervals do not take into account the approach grade of the street. Staff will increase the yellow time to account for longer braking times needed on down slopes.

Although not required by law, but to further ensure overall traffic safety, the Traffic Engineering Division also uses “all-red” intervals at all signalized intersections. An all-red interval is the period of time where every signal in all directions is red. This period is typically used for enhanced safety, and provides additional time for vehicles that have already entered the intersection to finish clearing the intersection. The California Vehicle Code allows a vehicle that has entered the intersection on a yellow signal to clear the intersection during the red signal. The City of San Diego uses a minimum of 1.0-second all-red interval. At intersections where there is a history of accidents, the approach speeds are high, or the intersection geometry is unusual, traffic engineers may consider longer all-red intervals of up to 2.0 seconds.

Additionally, should the council approve the proposed recommendations, the City of San Diego will begin conducting speed surveys on all approaches at photo-enforced intersections and use the information to set the yellow intervals.

It has been suggested that intersections could be safer by simply lengthening the yellow light interval. However, in the field of traffic engineering, it is well established that yellow intervals must neither be too long nor too short. The Manual on Uniform Traffic Control Devices published by the Federal Highway Administration recommends a yellow interval of no less than three seconds, and no more than six seconds, depending on a variety of factors, including but not limited to such things as the speed of the approaching traffic and the slope of the approach into the intersection. Every intersection has its own optimum yellow interval depending on the existing factors. If a yellow interval is too short, there is an increased risk of rear-end collisions as well as an increased risk of vehicles being caught in the “dilemma zone” and therefore more likely to enter the intersection late, risking a right angle crash. In addition, if a yellow interval is too long, drivers will become accustomed to challenging the yellow intervals and subsequently will run more red lights. Moreover, a yellow interval beyond the accepted range could cause unnecessary delays at congested intersections.

Given concerns raised regarding yellow light intervals, and in an effort to ensure public trust, City policy will be to always use the maximum accepted yellow interval at each intersection. The minimum yellow interval throughout the City will be extended to 3.4 seconds from its current setting of 3.0 seconds. This, in conjunction with the .5 second red light grace period before

camera activation, ensures that any driver within the city of San Diego will have at a minimum nearly four full seconds in which to stop prior to receiving a photo red light citation. It should be noted that California Vehicle Code Section 22450 prohibits all vehicles from entering an intersection at any point during a red light phase. If officers witness a violation they are responsible to take appropriate action regardless of whether a camera would function.

RECOMMENDATIONS

After a thorough review of the findings of two independent audits and after conducting a comprehensive analysis of similar programs throughout the state as well as nation, both the City Manager and the San Diego Police Department continue to believe that a red light photo enforcement program will enhance the safety of our citizens. Also, with the implementation of the proposed recommendations, the public can be assured that the program will run accurately and target only those motorists who violate the law.

Therefore, the Manager recommends that the changes outlined in this report be adopted and that the Red Light Photo Enforcement Program be reinstated. The recommended changes to be implemented include:

- moving the camera activation loops behind the limit lines
- requiring future installations be done in accordance with the City's plan check process
- adding an additional camera to obtain a rear view of the vehicle where feasible (providing a photograph of the vehicle in the actual intersection while the light is red)
- adding additional warning signs in advance of the intersection
- identifying and implementing engineering solutions to enhance safety to the extent possible - prior to installing a camera at an intersection
- conducting a more rigorous oversight of the vendor; destroying confidential information in established time period; maintaining confidentiality of photographs and DMV information
- use of speed surveys to establish consistent yellow clearance intervals at photo-enforced locations.

It is also recommended that a bi-annual report be presented to the Public Safety and Neighborhood Services Committee on the status of the program.

In conjunction with the reinstatement of the Red Light Photo Enforcement Program, there also will be an extensive public outreach effort that will explain the purpose and benefits of the red light cameras and answer questions from the public.

Additionally, it is recommended the Manager renegotiate the contract with the current vendor, Affiliated Computer Services (ACS). Finally, it is recommended that the current fee arrangement, which presently includes a fee split with the vendor based on the number of recorded violations, be restructured to eliminate any perceived conflict of interest. The final negotiated agreement and contract will be brought back before Council for review and approval.

This is expected to take approximately 30 days. Once approval of a new contract is given, camera operation could begin within 60 days

ALTERNATIVES

1. Do not restart the Red Light Photo Enforcement Program. This is not recommended since photo enforcement is a viable program that has been found to increase traffic safety in our City.

Respectfully submitted,

David Bejarano
Chief of Police, Police Department

Approved: P. Lamont Ewell
Assistant City Manager

D. Cruz Gonzalez
Director, Transportation Department

UBERUAGA/WAM

Note: Only Attachment No. 7 is available in electronic format. All other attachments are available for review in the Office of the City Clerk.

- Attachments:
1. California Vehicle Code Section 21455.5
 2. Agreement - City of San Diego / U.S. Public Technologies
 3. Fine Forfeiture Split
 4. P.B. Farradyne Audit Report
 5. Bureau of State Audits Report - *Red Light Cameras Statewide*
 6. SDPD Business Rules Relating to Red Light Photo Enforcement
 7. [City of San Diego Policies and Procedures for Timing Yellow and All-Red Intervals at Traffic Signals](#)
 8. California Vehicle Code Section 21455.7