



Council Meeting: September 14, 2010

SUBJECT: Red Light Camera Intersection Monitoring Systems in the City of Sunnyvale (Study Issue)

REPORT IN BRIEF

The purpose of this report is to review and evaluate the feasibility of implementing a Red Light Camera (RLC) enforcement program for selected intersections within the City of Sunnyvale. This report provides information on the technical, operational and fiscal feasibility of RLC systems, as well as information on the most recent court decisions governing the use of RLC systems.

Staff recommends that Council direct staff to monitor ongoing legal challenges and legislative actions and report back upon resolution, or in any case, no later than September of 2011.

BACKGROUND

Red-light running is a serious intersection safety issue across the nation. According to the National Highway Traffic Safety Administration's (NHTSA) analysis of 2008 statistics, there were more than 2.3 million reported intersection-related collisions, resulting in more than 7,770 fatalities and approximately 733,000 injury crashes. Red light running related collisions alone resulted in 883 deaths and approximately 165,000 injuries nationwide.

An analysis of collisions in the City of Sunnyvale between January 1, 2005 and February 4, 2010 showed that DPS documented 5227 collisions; 547, or approximately 10%, of these collisions were the result of a light violation at an intersection. Of the 547 accidents, 43% (236) were injury collisions resulting in two fatalities and 327 reported injuries.

In response to Council and community concern, Councilmembers Whittum and Chu requested DPS staff study the feasibility of an RLC enforcement program in the City of Sunnyvale (Attachment A, Study Issue Paper DPS 10-01). Staff has prepared a detailed report designed to provide Council with information relative to:

- Issue Analysis and Legislative Requirements
- Technical Feasibility
- Operational Feasibility
- Fiscal Feasibility

EXISTING POLICY

Police Services Sub-Element

Goal 4.1A.5a: Provide traffic enforcement to deter traffic violations.

Goal 4.1A.5h: Participate in prevention and enforcement activities directed at minimizing personal injury in traffic collisions.

DISCUSSION

According to California Vehicle Code Section 21452(a), a red light violation occurs when a vehicle crosses the established limit line at an intersection after the traffic signal turns red. RLC enforcement has proven to be a strong deterrent to these types of violations. The Federal Highway Administration (FHWA) and NHTSA have provided position guidance on RLC systems. In part, both agencies support a comprehensive approach to intersection safety that incorporates engineering, education, and enforcement countermeasures to prevent red-light running and improve intersection safety. Red-light camera systems can be a very effective countermeasure to prevent red-light running.

In California, photo enforcement by RLC systems have been authorized since 1996. California Vehicle Code Sections 21455.5, 21455.6, 21455.7 and 40520 outline the following requirements for RLC systems:

1. Identification of system with signs visible to traffic approaching from all directions or posting of signs at all major entrances to the City.
2. Ensure system location meets the specific criteria outlined in the Traffic Manual of the Department of Transportation for minimum yellow light change intervals.
3. Issuance of warning notices to violators and public service announcements for a period of thirty (30) days in advance of the utilization of an automated enforcement system(s).
4. Only a government agency, in cooperation with a law enforcement agency, may operate an automated enforcement system.
5. Holding of a public hearing on the proposed use of an automated enforcement system prior to a jurisdiction entering into a contract for the use of such a system.

Staff has contacted the Superior Court of Santa Clara County and asked for a judicial opinion on the use of RLC systems. The court does not have a position at this time. However, there is nothing at this time that would prevent a violation of 21453(a) CVC captured by an RLC system from being prosecuted in the courts of Santa Clara County. City staff would need to coordinate closely with the Traffic

Court of Santa Clara County to ensure the proper court process is put into place prior to the implementation of any RLC system.

Technical Specification and Operational Consideration Discussion

Staff has spent a considerable amount of time researching the technical and operational aspects of RLC systems. This research has involved site visits to agencies utilizing RLC systems, presentations from a vendor of RLC systems, attending a user group meeting involving agencies from all over California and internet research.

All of the RLC systems in use today are designed to supplement conventional law enforcement traffic safety operations by accurately identifying violations without the presence of a police officer at the intersection being monitored. DPS currently uses a combination of Public Safety Officers assigned to the Traffic Safety Unit and Patrol Operations to monitor red light violations in intersections throughout the City. Although DPS attempts to provide a significant presence at high collision rate intersections, emergency calls for service and higher priority traffic safety operations, such as speed enforcement campaigns, often draw resources away from intersections. It should be noted that DPS often deploys available resources to high collision areas to focus on the leading causes of intersection collisions in the City of Sunnyvale; unsafe speed, improper turning and light violations respectively. DPS believes the ability to monitor selected intersections via the use of RLC systems could significantly enhance the efficiency of DPS' traffic safety enforcement and education operations throughout the City.

Technical specifications of the RLC system are specific to each manufacturer and/or vendor. However, all of the systems operate using the same basic technology. A series of sensors and digital cameras are placed around the intersection, often times utilizing existing infrastructure including signal poles and power supplies. The sensors become active upon the initiation of the red signal phase. If a vehicle crosses the limit line during the red phase of the signals, a series of cameras activate to capture the violation. The more robust systems can capture four or more lanes of travel. In addition to the through traffic, these systems can be designed to capture drivers failing to come to a complete stop prior to making a right turn on a red signal. These violations are particularly dangerous to pedestrians at intersections.

The RLC system will produce a series of high resolution digital photographs that are designed to capture the violation, the license plate of the violating vehicle and the driver's facial image. Some systems also produce full motion video of the violation. In addition to the photographs and videos, the system records the date, time, speed of the vehicle and the elapsed time of both the yellow and red signal phases.

After a violation is captured by the RLC system, the images are uploaded to a vendor maintained server through a secure internet connection. At this point it is the responsibility of the law enforcement agency to view the violation and begin

the necessary processing. DPS staff made a site visit to the City of Fremont and conducted a fact finding exercise to learn more about the responsibilities of the law enforcement agency and the administrative process needed to maintain a successful RLC program. Fremont's operational model is also common to other agencies utilizing RLC systems. It should be noted that there are currently no operational RLC systems in Santa Clara County, thus no benchmarking was conducted in Santa Clara County.

The City of Fremont has maintained an RLC program since August of 2000. The program is managed through the Police Department. There are currently 10 intersections monitored by RLC. The City of Fremont is under contract with Redflex Traffic Systems as the provider of the RLC systems. Since 2000, the systems in Fremont have captured approximately 121,000 red light incidents. In 2009, the 10 Fremont systems captured over 19,500 red light incidents resulting in 10,516 citations (the reason for the difference between violations captured and citations issued will be discussed in the following paragraphs). During staff's site visit to Fremont, DPS staff was very interested in determining the process used to administer a program generating this volume.

As previously mentioned, once a violation is captured it is the responsibility of law enforcement to process the event. The Fremont Police Department has dedicated staff within their Community Engagement Unit, similar to the Community Safety Services Bureau within DPS, to administer the program. 50% of a civilian manager's allocated hours are used to oversee the entire program. Prior to a citation being issued to a violator, a police officer, or other qualified law enforcement employee, must review the evidence collected by the RLC system (digital photograph) and determine the validity of the evidence. This review is conducted by accessing the photo storage system through a secure internet connection. If the photo evidence supports the violation, the incident is referred forward for court processing by the Community Services Officer position at Fremont P.D. Incidents that do not have the requisite supporting evidence are rejected. Two part-time positions are utilized to accomplish this task. Currently the Fremont Police Department contracts with several retired police officers to review the RLC evidence. In 2009, Fremont P.D. rejected approximately 8,900 captured incidents for lack of evidence (difference between 19,500 captured incidents and 10,516 issued citations).

When a captured event is deemed to be prosecutable, all evidence is sent to the law enforcement agency. At Fremont P.D., a full-time Community Service Officer position is utilized to prepare all citations for court. This position must:

- Prepare all court documents and file the citation with the Traffic Court in Alameda County
- Testify in court, as needed, if citation is appealed
- Hold office hours to meet with citizens that request a meeting

- Address information requests as needed

This staffing model is utilized to process approximately 10,500 citations annually. 50% of the civilian manager position, 80% of the Community Service Officer position and 100% of the part-time positions are funded through the distribution of fines collected after the adjudication of a red light violation. Total program administrative costs for FY 09/10 in the City of Fremont were approximately \$442,000. Staff believes that this staffing model has viability at DPS.

It is difficult at this time to predict the volume of citations that would be generated by a system implemented in the City of Sunnyvale, and the staff time that would be needed to administer the program. However, utilizing the Fremont annual totals as a baseline, each RLC location may produce approximately 87 citations per month. DPS believes that with minimal reorganization, administrative duties could be assigned to existing staff if the program were limited to one or two monitored intersections. RLC monitoring at additional locations would most likely require the addition of staff to DPS' Budgeted Position Allocation.

Other Discussion

The primary goals of any RLC system in the City of Sunnyvale would be to reduce collisions associated with light violations at intersections, enhance overall driver safety awareness and improve the efficiency of law enforcement traffic safety operations. Various studies seem to indicate that RLC systems can improve safety by reducing intersection related collisions. The following analysis points have been compiled from the "National Campaign to Stop Red Light Running" database:

- In New Orleans, LA, red light cameras led to an 85% drop in red light running (2009).
- In Council Bluffs, IA, red light cameras led to a 90% reduction in red light running crashes. Cameras led to a 40% reduction in red light running crashes in Davenport (2007).
- A Texas A&M Texas Transportation Institute study found traffic crashes at red light camera locations across Texas decreased by approximately 30%. Right angle crashes, which usually produce the most deaths and injuries, dropped by 43% (2008).
- An Insurance Institute for Highway Safety study of the Philadelphia, PA red light camera program tracked signal violation rates at intersections before and after extending the yellow light sequence, and again after RLC enforcement had been in effect for about a year. Lengthening the yellow light reduced signal violations by 36%. The cameras reduced the remaining violations by 96% (2007).

- A review of 10 U.S. and international red light camera research studies, conducted by the respected Cochrane Collaboration, found “red-light cameras are effective in reducing total casualty crashes. In the best conducted of these studies, the reduction was nearly 30%” (2005).
- A multi-year study of the red light camera program in Virginia Beach found red light running violations more than tripled after the law permitting the city to use red light cameras was allowed to expire in 2005. Results showed that red light cameras provided a strong deterrent against red light running and that once the cameras were turned off, aggressive drivers returned to their old habits (2007).
- Columbus, OH, saw violations at its first two red light camera intersections drop from 1,684 in March 2006 to 477 in August 2006, a 71% decrease. There was only one crash at the two intersections, which each recorded between five and 14 crashes per year before the cameras were installed (2006).
- An Orange County, CA, government report found that one year after red light camera installation, crashes at monitored intersections dropped by 46.7% in Garden Grove, 28.2% in Costa Mesa, 16.2% in Santa Ana, 12.1% in San Juan Capistrano and 5.7% in Fullerton (Orange County Grand Jury, 2004-2005).

Locally, a report by a San Mateo County Civil Grand Jury on the use of RLC systems in San Mateo County was released on June 7, 2010. In this report, the Grand Jury found that the camera technology provides an effective method for enforcing a vehicle code violation that has a high probability of causing an accident and that the use of RLC is cost-effective and financially viable when compared to utilizing police officers to perform equivalent enforcement.

However, the Grand Jury found several areas of concern with regards to RLC program methodology, protocols and court consideration. In short, the Grand Jury concluded that there are no protocols established in San Mateo County for evaluating possible infractions captured by the RLC systems and determining which events will be issued citations, thus making court decisions difficult and undermining the public trust in the systems. Additionally, the Grand Jury found that although cities have claimed the goal of the RLC is to reduce intersection collisions, there fails to be a consistent and standardized reporting and evaluation process to determine if the RLC at any particular intersection, is in fact, reducing the accident rate. While at the same time, each RLC program seems to represent a significant source of funding for cities.

This Grand Jury report does not specifically point out recent RLC issues involving cities in San Mateo County. Staff is aware of errors made in the administration of the system in South San Francisco that has resulted in the dismissal of all

citations issued via RLC between August 15, 2009 and January 27, 2010. South San Francisco, along with the State of California and the County of San Mateo, may refund in excess of \$3.1 million to alleged violators. In the City of Burlingame, the single RLC has been deactivated due to the program being unable to pay for itself.

Although the data collected in various studies seems to point to the benefits of RLC systems, some of the studies, and the very use of RLC enforcement itself, are not without controversy.

Some studies have concluded that collisions have actually increased at some RLC monitored intersections. A study funded by the FHWA of seven U.S. cities utilizing RLC systems found that although broadside intersection collisions were reduced by 25%; rear-end collisions increased by 15%. This is most likely due to drivers that are approaching an RLC monitored intersection slamming on their breaks prior to the red phase activation and then being rear-ended by the vehicle following behind. This study is careful to point out that not all jurisdictions have experienced this increase and that although rear-end collisions increased, overall injuries decreased.

Since the authorization of RLC enforcement in California in 1996, RLC systems have come under frequent legal challenge from accused violators, and in some cases, their legal counsel. In 2001, a group of 400+ citizens banded together to challenge the City of San Diego's RLC system. This challenge showed potentially significant administrative and technical issues with the system, and pointed out that the systems seemed to be in place for the sole purpose of generating revenue and not improving traffic safety. As a result of this effort, the San Diego system, as well as several others, were taken off-line for evaluation and/or modification, or abandoned altogether. Locally, officials in Cupertino stopped their camera program in January 2004 after three years of use. Although they initially planned on using seven cameras, four were installed in that period and only two were fully operational, with the other two plagued by technical glitches. Cupertino ended up spending about \$200,000 more each year to operate the program than the revenues it generated.

In 2004, Assembly Bill 1022 (AB 1022) made significant changes to the vehicle code regulating RLC systems. These changes are currently codified in the California Vehicle Code sections discussed on page two of this report. Armed with this clear direction from the Legislature of California, and multiple studies pointing to the safety benefits of RLC systems, cities throughout California have chosen to utilize RLC systems. There are approximately 70 communities in California utilizing RLC monitoring.

However, legal challenges to the programs have persisted. Some of these challenges may be significant to the on-going viability of RLC monitoring and enforcement. Additionally, pending legislation could impact RLC usage.

A recent challenge to RLC systems, and potentially one of the most significant, is a decision from Orange County, CA. The Appellate Court in Orange County entered a ruling on May 21, 2010, in the matter of the State of California vs. KHALED (case no. 30-2009-304893). The court held that the evidence presented by the prosecution, digital image(s) of an alleged red light violation, was mistakenly allowed into evidence by the lower court. The Appellate Court considered the images to be hearsay evidence and thus inadmissible. The Appellate Court reversed the conviction of KHALED and directed the charge be dismissed. This case is binding on courts in Orange County, but not in other county courts throughout the state. However, the KHALED case can be used in other counties as guidance in determining a ruling for similar cases.

It is unclear at this time the extent of the impact this will have on systems currently in operation. However, the City of Santa Ana, the city that issued the original citation to KHALED, is in the process of expanding its RLC program. Santa Ana has developed a protocol to provide expert testimony at trial to support the introduction of digital images captured by RLC. DPS, in conjunction with the Office of the City Attorney (OCA), will continue to monitor this situation.

The California Legislature is currently working with two bills related to RLC systems and enforcement. Senate Bill 1362 (SB 1362) sponsored by Senator Joe Simitian (D-Palo Alto) would require that cities using red light cameras establish policies and procedures to better ensure that citations are properly and appropriately issued, and that motorists can effectively challenge incorrectly administered tickets. Specifically, the legislation would:

- Require cities to document how installing cameras will reduce accidents, and make the justifications they use accessible to the public
- Invalidate tickets not reviewed by a sworn police officer
- Set stricter standards for how drivers accused of violations are notified of the citations
- End use of so-called "snitch tickets" that ask drivers to identify the person photographed by the cameras
- Require signs at all intersections where red-light cameras are in use

This bill passed the Senate on June 2, 2010 and will be sent to the Assembly.

Assembly Bill 909 (AB 909), sponsored by Assemblymember Jerry Hill (D-San Mateo), would decrease the fine amount for a violation of 21453(b) CVC (right turn on red) from the current \$100 to \$35. It is unclear as to what impact this bill will have on RLC systems; however, cities that utilize systems with the capability to capture "right turn on red" violations do issue a significant number of citations for this violation. As of July 15, 2010, this bill has been modified

twice and has now been ordered to a third reading. DPS, in conjunction with OCA, will continue to monitor these bills.

FISCAL IMPACT

There are two primary costs associated with RLC enforcement:

1. System hardware and infrastructure
2. Program administration.

The costs of the RLC system infrastructure vary between cities. However, the majority of cities researched by DPS staff seem to utilize similar vendor contract methodology and pricing. In most cases, cities incur no upfront costs for the analysis of selected intersections, engineering of the selected systems, requisite permits, and hardware installation. Rather, cities pay a fixed fee each month for each monitored intersection. These fees range from \$4,800 to \$8,600 per month, per intersection. This fee represents a payment of \$288,000 to \$516,000 to a selected vendor over the life of the typical five year contract.

Although California law expressly prohibits a city from entering into any agreement by which payment to a vendor is based on the number of citations issued by a RLC system, cities can utilize fines and fees collected from traffic citations in general to pay a fixed monthly fee for an RLC system. All of the cities researched for this report appear to have structured contractual agreements that identify fines and fees collected as a result of citations issued by the RLC system as the revenue source for the fixed monthly fee charged by the vendor. Additionally, some of the contracts attempt to build in cost neutrality that allows a city to seek relief from the contractual obligations if fines and fees from traffic citations fall below a level that will support the fixed monthly fee.

As mentioned previously in this report, staff will be needed to administer any RLC system. Program administration consists of, but is not limited to:

1. Management oversight
2. Image review processes
3. Citation issuance
4. Court testimony and follow-up

The City of Fremont in FY 09/10 allocated \$202,420 in personnel costs and program wide allocations to their RLC program. An additional \$240,000 was allocated to the monthly vendor fee. Total FY 09/10 RLC system expenditures were projected to be \$442,541. Total revenue projection from fines and fees collected through the issuance of citations was projected to be at \$1.2 million. The fine in Santa Clara County associated with a citation issued by DPS for a

violation of 21453(a) CVC is \$466. The City of Sunnyvale currently receives 28% of this amount, or \$131.

Currently there is no identified revenue source in the FY 10/11 or FY 11/12 DPS operating budget that will support a RLC program. The ability of the City of Sunnyvale to sustain a RLC system will need to involve the analysis of potential additional traffic fine revenue as a funding source for the payment of costs associated with any proposed system. Using an average system cost of \$6,000 per month, per intersection approach, each system would need to capture approximately 45 prosecutable violations each month, with additional citations needed to cover for the approximately 30% (+/-) of citations that go unpaid by violators. Based on all of the research data collected by DPS, on average, each approach would need to produce 2 adjudicated (violation convicted/fee collected) citations per day to be cost neutral.

Should Council choose to select the recommended Alternative 2, DPS and other City staff will work together to further identify potential revenue sources, potential costs and any potential vendor contract structure that would explore the cost neutrality of any system.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, in the Council Chambers lobby, in the Office of the City Clerk, at the Library, Senior Center, Community Center, and Department of Public Safety; posting the agenda and report on the City's Web site; and making the report available at the Library and the Office of the City Clerk.

ALTERNATIVES

1. Direct staff to further study the issue and report back to Council. During this period, staff will monitor the on-going legal challenges and legislative actions and report back upon resolution, or in any case no later than September of 2011.
2. Direct City staff to execute a Request for Proposals for RLC and DPS staff to begin the implementation planning process for up to five (5) RLC enforced intersections.
3. Do not support RLC monitoring and enforcement in the City of Sunnyvale.

RECOMMENDATION

Staff recommends Alternative #1; Direct DPS staff to further study the issue and report back to Council in FY 11/12. Although DPS is confident that intersection safety could be improved through the use of RLC systems, there currently are significant legal challenges and political hurdles to overcome. By continuing to monitor the systems currently in operation, and the challenges facing the municipalities using them, staff believes that DPS can provide more clarity to the policy decision required by Council.

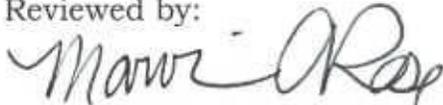
Reviewed by:



Don Johnson, Director, Public Safety

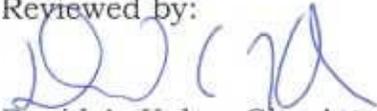
Prepared by: Doug Moretto, Captain

Reviewed by:



Marvin A. Rose, Director, Public Works

Reviewed by:



David A. Kahn, City Attorney

Approved by:



Gary M. Luebbers
City Manager

Attachments

- A. Study Issue Paper 2009, DPS 10-01

Proposed 2010 Council Study Issue

DPS10-01 Photo Red Light Enforcement

Lead Department Public Safety
Element or Sub-element Public safety Law Enforcement Sub-Element
New or Previous New
Status Pending **History** 1 year ago None 2 years ago None

1. What are the key elements of the issue? What precipitated it?

Photo red light enforcement has become a widely accepted traffic enforcement tool utilized by many cities and counties across the country to reduce accidents at intersections. Photo red light enforcement is a technique in which a camera photographs a vehicle that enters an intersection after the traffic light has turned red; a human reviewer validates the potential violation; and if appropriate, the reviewer sends a citation for red light running to the vehicle's registered owner.

The study will evaluate three critical areas related to photo red light enforcement programs in other jurisdictions that have implemented programs. Technical feasibility (confirm the program meets legal standards and is accepted by Santa Clara County Courts), fiscal feasibility (whether program revenues and costs are in balance), and operational feasibility (whether the program is likely to improve safety).

2. How does this relate to the General Plan or existing City Policy?

Public Safety Law Enforcement Sub-Element 4.1A.5a: Provide traffic enforcement to deter traffic violations
4.1A.5h: Participate in prevention and enforcement activities directed at minimizing personal injury in traffic collisions.

3. Origin of issue

Council Member(s) Whittum, Chu
General Plan
City Staff
Public
Board or Commission none

4. Multiple Year Project? No **Planned Completion Year** 2010

5. Expected participation involved in the study issue process?

Does Council need to approve a work plan? No

Does this issue require review by a Board/Commission? No

If so, which?

Is a Council Study Session anticipated? No

What is the public participation process?

A public hearing conducted by Council. Public contact will be made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, in the Council Chambers lobby, in the Office of the City Clerk, at the Library, Senior Center, Community Center, and Department of Public Safety; posting the agenda and report on the City's Web site; and making the report available at the Library and the Office of the City Clerk.

6. Cost of Study

Operating Budget Program covering costs

Project Budget covering costs

Budget modification \$ amount needed for study

Explain below what the additional funding will be used for

7. Potential fiscal impact to implement recommendations in the Study approved by Council

Capital expenditure range None

Operating expenditure range None

New revenues/savings range None

Explain impact briefly

8. Staff Recommendation

Staff Recommendation For Study

If 'For Study' or 'Against Study', explain

Staff believes its important to evaluate this option as an additional enforcement tool. This option adds the ability to monitor intersections without adding personnel and to potentially reduce the number of accidents directly related to red light running and speed.

9. Estimated consultant hours for completion of the study issue

Managers	Role	Manager	Hours			
Lead	Fitzgerald, Kelly		Mgr CY1:	60	Mgr CY2:	0
			Staff CY1:	0	Staff CY2:	0
Support	Moretto, Douglas		Mgr CY1:	40	Mgr CY2:	0
			Staff CY1:	0	Staff CY2:	0
Interdep	Witthaus, Jack		Mgr CY1:	10	Mgr CY2:	0

Staff CY1: 0 Staff CY2: 0

Total Hours CY1: 110

Total Hours CY2: 0

Note: If staff's recommendation is 'For Study' or 'Against Study', the Director should note the relative importance of this Study to other major projects that the Department is currently working on or that are soon to begin, and the impact on existing services/priorities.

Reviewed by



Department Director

11/10/09

Date

Approved by



City Manager

11/11/09

Date

Addendum

A. Board / Commission Recommendation

Issue Created Too Late for B/C Ranking

Board or Commission	Rank Rank	Rank 1 year ago	Rank 2 years ago
Arts Commission			
Bicycle and Pedestrian Advisory Committee			
Board of Building Code Appeals			
Board of Library Trustees			
Child Care Advisory Board			
Heritage Preservation Commission			
Housing and Human Services Commission			
Parks and Recreation Commission			
Personnel Board			
Planning Commission			

Board or Commission ranking comments

B. Council

Council Rank (no rank yet)
Start Date (blank)
Work Plan Review Date (blank)
Study Session Date (blank)
RTC Date 12/31/2010
Actual Complete Date (blank)
Staff Contact