

# **A Detailed Analysis of the Red Light Camera Program in Menlo Park, CA**

## **By Jay Beeber, Executive Director, Safer Streets L.A., Member ITE**

### **Background**

Safer Streets L.A. is a grassroots organization dedicated to furthering the interests of the motoring public through the adoption of scientifically sound and sensible transportation and traffic laws. We believe that accurate information and critical thinking are crucial to implementing sound public policy. Towards that end, we strive to provide the public and elected representatives with well researched and verifiable data. Our goal is to counter long-held misconceptions and misinformation with solid facts in order to promote scientifically based solutions to motorist and pedestrian safety issues. Safer Streets L.A. provides this information on a voluntary basis and is not paid to interact with elected officials.

Our goal in forwarding you the following information is to provide you with an alternative viewpoint on the use of photo enforcement in Menlo Park, California. We hope that this information proves useful in your deliberations as to whether or not to continue the red light camera program.

### **About the Author**

Jay Beeber is the Executive Director of Safer Streets L.A. and a research fellow with the Reason Foundation concentrating on traffic safety and enforcement. He also serves on the City of Los Angeles' Pedestrian Advisory Committee and has written numerous scientific studies on traffic related safety issues. Most recently, he has been appointed to a subcommittee of the California Traffic Control Devices Committee to study changes in the way traffic signals are timed in the state of California.

### **Introduction**

The following is a detailed discussion of the Red Light Camera (RLC) Program in Menlo Park, California. The report is organized in a similar fashion to the Staff Report #: 13-140 submitted by the Menlo Park Police Department for the City Council Meeting of August 20, 2013.

Included in this report is an analysis of Red Light Related (RLR) collisions at the three Red Light Camera equipped intersections in Menlo Park, as well as a discussion of violation statistics and the economic impacts of photo enforcement and a discussion of potential engineering alternatives. In addition, some comments on the proposed 5 year contract are provided. Accident statistics were compiled from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database. The SWITRS database serves as a means to collect and process data gathered from collision scenes by multiple police agencies throughout the state. The most recent complete year for which data is available is 2011, although some Caltrans data for state routes may still be missing. No relevant data is yet available through this database for 2012, although local police agencies may have more up-to-date information. However, the available data is sufficient to draw valid conclusions regarding the effectiveness of the City of Menlo Park's program.

The most important measure of the effectiveness of a RLC program is whether or not there has been a statistically significant reduction in red light running collisions at intersections where the cameras were installed. Therefore, any analysis of the collision history must focus solely on collisions *caused by* red light running rather than on a particular *type* of collision (e.g. head on, sideswipe, broadside (T-bone), etc.) or on "collisions" in general. However, in attempting to evaluate Menlo Park's red light camera

program, the staff report mistakenly provides an analysis of broadside collisions, rather than an analysis of collisions caused by red light running. This is an important distinction, as broadside collisions and red light running collisions are not one and the same. Not all broadside collisions are caused by red light running and not all collisions that are caused by red light running result in a broadside collision.

Therefore, rather than looking at broadside collisions, our analysis of Menlo Park's red light camera program considers only actual red light running collisions, i.e collisions where the cause of the accident was a red light running violation. In the SWITRS database, these are crashes in which the primary collision factor is listed as a violation of CVC 21453A (solid red light violation) or 21453C (left turn arrow violation).

Additionally, it is more accurate to review collision data separately for each individual intersection where red light cameras are employed, rather than combine the statistics for all red light camera intersections as the staff report does.

Finally, care must be taken when drawing specific conclusions regarding the effectiveness of red light camera enforcement, as numerous factors may determine whether red light running collisions have increased or decreased from year to year over the study period, including traffic volume, signal timing changes, weather, driver impairment, distraction, and fatigue, etc.

### **Generalized Comments**

Surprisingly, the staff report, which advocates approval of a multi-year contract for a red light camera program at a cost of almost \$1.3 million, contains only three short paragraphs on the supposed safety benefits achieved during the previous 5 years of the program. In general, the staff report fails to provide sufficient detail about changes in actual red light related collisions and includes generalized conclusions not necessarily supported by the data. The staff report also leaves out important information relevant to any decision regarding whether on not to continue the red light camera program.

What shall become apparent is that, contrary to claims made in the staff report, Menlo Park's red light camera program has not resulted in an improvement in safety and continuation of the program is not justified. Specifically:

1. At the El Camino photo enforced intersections, there was no red light running collision problem prior to installation of the cameras. Therefore the use of red light cameras at these locations was not justified and no safety improvement has been achieved.
2. At the Bayfront Expressway camera enforced intersection, the change in the number red light running collisions cannot be shown to be statistically significant due to the small number of collisions both before and after the cameras were installed (average change of 1 collision per year). Furthermore, any improvement in the collision rate was likely due to an increase in the amber signal time, not the presence of the red light cameras.
3. After adjusting for external factors affecting the number of issued citations (e.g. changes in signal timing), the data show that there was no overall reduction in violations over the 5 years of the program due to the presence of the cameras. At the Bayfront location, the citation rate increased slightly and at the El Camino locations the violation rate remained relatively constant.
4. Although red light running collisions have not decreased due to the cameras, rear end collisions have increased, resulting in a reduction in safety on the city's roadways.

## **Analysis**

We will defer our comments about the proposed new contract and state legislation and begin our discussion with an analysis of the collision statistics.

### **Traffic Accident Statistics**

The discussion in the staff report of pre-camera and post-camera traffic collisions along the El Camino Real corridor is meaningless as it includes an analysis of all types of collisions, not just those related to red light running. Numerous factors contribute to the overall increase or decrease in traffic collisions and attributing any change in all types of collisions to the presence of red light ticketing cameras at a mere three intersections in the city does not constitute a proper scientific analysis. As stated above, the proper analysis of the effectiveness of photo enforcement must concentrate only on the types of collisions that can reasonably be expected to be affected by the presence of the cameras. We therefore now provide that analysis. Since, as stated above, the SWITRS database is only current through the end of 2011, we chose to base our analysis on the three year period before and after each camera location went live in 2008. This provides six full years of data which should be sufficient to draw relevant conclusions. It should be noted however, that expanding the study period beyond the chosen three year period does not change the results of the analysis.

### **El Camino Real @ Glenwood/Valparaiso**

Photo enforcement began at this intersection in September 2008. Therefore, we chose September 2005 through August 2008 for the 3 year before period and September 2008 through August 2011 for the 3 year after period. Notably, there were no red light related collisions during either the three years before or the three years after the cameras were installed. The last red light related collision at this intersection occurred in 2004 and there had not been any red light related collisions for almost a full 4 years prior to installation of the cameras. Since this location did not have a red light running collision problem, red light camera enforcement was not justified and the presence of the cameras did not improve safety. However, as the staff report noted, rear end collisions increased at photo enforced intersections after the cameras were installed. Therefore, it can be argued that rather than improving safety, the cameras may have had the opposite effect.

### **El Camino Real @ Ravenswood/Menlo Ave**

Photo enforcement began at this intersection in August 2008. Therefore, we chose August 2005 through July 2008 for the 3 year before period and August 2008 through July 2011 for the 3 year after period. Notably, there was only one red light related collision during the three year period before the cameras were installed. This collision occurred in December 2005, almost 3 full years before photo enforcement began. Since this location did not have a red light running collision problem, red light camera enforcement was not justified and the presence of the cameras did not improve safety. However, as the staff report noted, rear end collisions increased at photo enforced intersections after the cameras were installed. Therefore, it can be argued that rather than improving safety, the cameras may have had the opposite effect.

### **Bayfront Expressway @ Willow Rd.**

Photo enforcement began at this intersection in May 2008. Therefore, we chose May 2005 through April 2008 for the 3 year before period and May 2008 through April 2011 for the 3 year after period. During the 3 year before period there were an average of two red light related collisions at this

intersection per year. In the 3 year after period there was an average of one red light related collision at this intersection per year. The small sample size (relatively small numbers of collisions) renders any statistical analysis meaningless as extremely small changes are magnified leading to skewed results. Furthermore, numerous other factors may contribute to changes in collision rates such as other engineering countermeasures which may have been implemented at the location, traffic volume, weather, and simple random fluctuations, etc.

For example, in July 2010, Caltrans increased the yellow time for the left turn phase from 3.0 to 3.5 seconds. Notably, three collisions had occurred in the two year period between the time camera enforcement began and this timing change was implemented. In contrast, there have been no collisions since the yellow time was increased. It is therefore likely that any improvement in safety seen at this intersection was at least in part (or perhaps entirely) due to the implementation of this proven engineering countermeasure.

In addition, the after period for the analysis coincidentally falls exactly during the period of the recent economic recession. Traffic volumes in California and across the nation fell significantly following the economic crash in the fall of 2008 as the recession took hold and unemployment rose. This alone could account for the change seen in collisions at this location.

Furthermore, a more detailed analysis of the red light related collisions which occurred in the before period suggests that at least a few were not the type of collisions which might reasonably be expected to be influenced by red light camera enforcement. The theory behind red light camera enforcement is that the threat of a costly citation will discourage drivers from “pushing the yellow” into the red phase. No evidence exists that red light camera enforcement has any effect on collision caused by other behaviors such as impairment, distraction, or fatigue or other factors such as inclement weather. Collisions caused by these factors are often the most deadly and occur long after the light has turned red. They are entirely different than a collision that might be caused by a driver who enters the intersection moments after the beginning of the red phase.

In an analysis of the possible effectiveness of red light cameras, one should only include in the before period collisions that could reasonably be expected to be prevented by the presence of the cameras. Therefore, collisions known or suspected of being caused by impairment, distraction, fatigue, inclement weather, etc. may be excluded from the analysis to provide a more accurate analysis. Of the six collisions occurring in the three year before period, one is known to have been the fatality caused by a driver under the influence of narcotics who made a left turn from the through lanes across the left turn lanes and across oncoming traffic. While this is categorized as a red light running collision, clearly it was not the typical situation of a driver “pushing the yellow” and other factors, such as a DUI were involved. Likewise, another collision during the before period was a hit and run occurring late at night. Since many hit and runs are the result of impaired drivers who flee the scene of the accident to avoid the additional penalties of a DUI charge, it is possible that this collision was also caused by driver impairment. If these two collisions are removed from the analysis, then there were only 4 collisions in the before period and three in the after period. This is a difference of only 1 collision in a three year period for an average change of .33 collisions.

Due to the small number of collisions in the data set, other factors which may have affected the collision rate such as traffic volume and signal timing changes, and the presence of collisions in the before period that are generally not expected to be affected by red light camera enforcement, any assertion that the red light camera enforcement has improved safety at this intersection cannot be scientifically supported.

## Reduction in Accident Severity

The staff report, in justifying the use of the cameras, suggests that there has been an overall net reduction in accident severity, including fewer serious injuries, at photo enforced intersections. However, the report makes this claim without providing any supporting data or statistics. The report simply states that T-bone collisions decreased (a claim which is unsupported based on the information provided in attachment B) and rear end collisions increased, representing a trade-off of a more serious type of collision for a less serious one. Without the actual relative increase or decrease in the number of these types of collisions or how severe each of these collisions actually were, it is impossible to determine whether or not there was a net improvement in safety.

In order to answer this question, we looked at the severity of all collisions at the intersection of Bayfront Expressway and Willow Rd. from 2001 through 2011. The SWITRS database provides this information divided into five categories: Fatalities, Severe Injuries, Other Visible Injuries, Complaint of Pain, and Property Damage Only (no injury). In order to calculate an average "collision severity index" we assigned each collision a "collision intensity index number" from zero to 4 depending on the increasing degree of injury. We then averaged the collision intensity index numbers to arrive at an average severity index for both the period before the cameras were installed and after.

We calculate a collision severity index of 0.653 for the roughly 7.5 year period before the cameras were installed. Limiting the before period to the three year period before the cameras were installed provides a similar collision severity index of 0.682. In contrast, the collision severity index for the roughly 3 year period after the cameras were installed calculates to 0.926, a 37% increase in overall collision severity at this intersection. These results show that contrary to the staff report's claim, collision severity did not decrease in the presence of the cameras and may actually have increased significantly.

## Issued Citations

The staff report claims that red light violations peaked in 2009 with the first complete year of RLC enforcement and that the decrease in citations since 2009 indicates that driver awareness and adherence to the red light enforcement is effective. However, the staff report fails to disclose a number of factors which directly contributed to the decrease in citations. Furthermore, according to the chart in Attachment C, after an initial decrease in 2010, most locations saw an increase in 2011. As different factors may have contributed to the changes in citations at individual intersections, we shall examine each location separately.

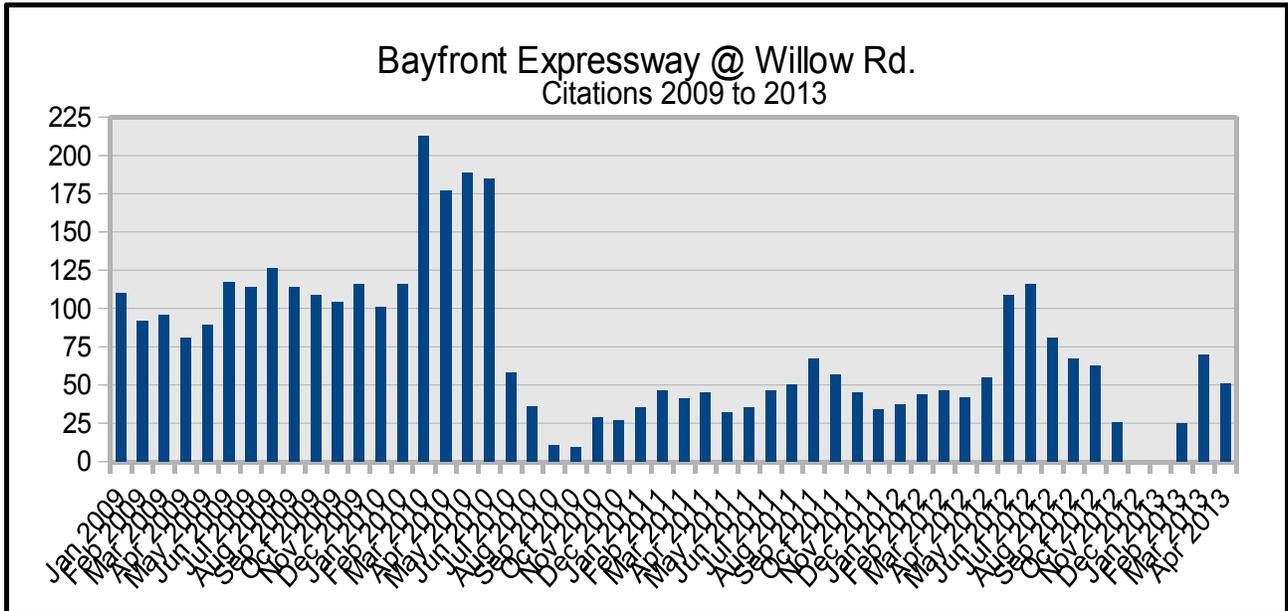
### **Bayfront Expressway @ Willow Rd.**

Signal timing changes as well as other adjustments to the red light camera system's operations caused huge fluctuations in citation rates at this location over the 5 program years. Analyzing the monthly citation data available at <http://highwayrobbery.net/redlightcamsdocsMenloParkMain.html> which compiles the data directly from the monthly Redflex Management Reports shows that citations in 2009 held at a fairly constant average of about 105 per month. Then, between February and March 2010 citations increased by 68% at this location to an average of 176 per month. Huge spikes in citation rates of this type over such a short time period cannot be due to changes in driver behavior or fluctuations in traffic volume. An increase of this nature can only be due to some change in the operation of the red light camera system or signal operation. Council members may wish to inquire as to what may have caused the substantial increase in citations at this time.

As stated previously, in July 2010, Caltrans increased the yellow signal time for the left turn movement at this intersection from the state mandated minimum of 3.0 seconds to 3.5 seconds. This minor timing

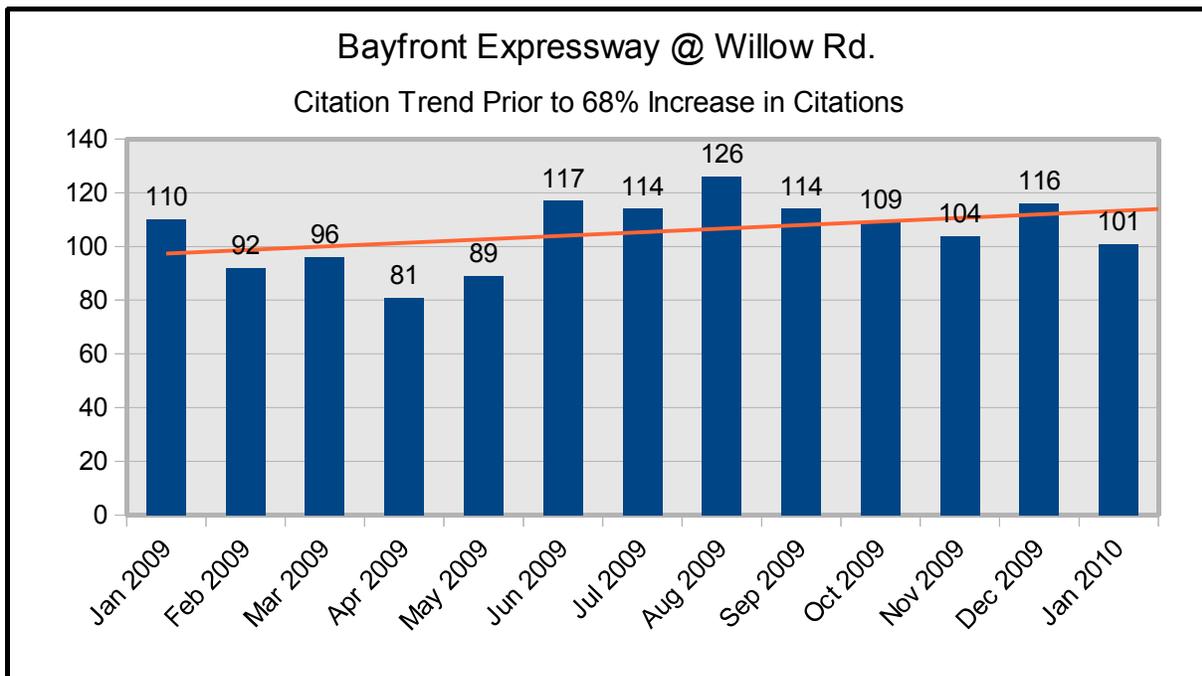
change effectively reduced the number of citations by about 76% to an average of about 42 citations per month. Again, sometime between May and June 2012, a change was made to the system at this location causing another increase in citations of about 87%.

The following chart show the monthly citation rate over time at this location. Note the sizable increase in citations in March 2009 and June 2012, and the sizable decrease in citations after the signal timing change in July 2010.

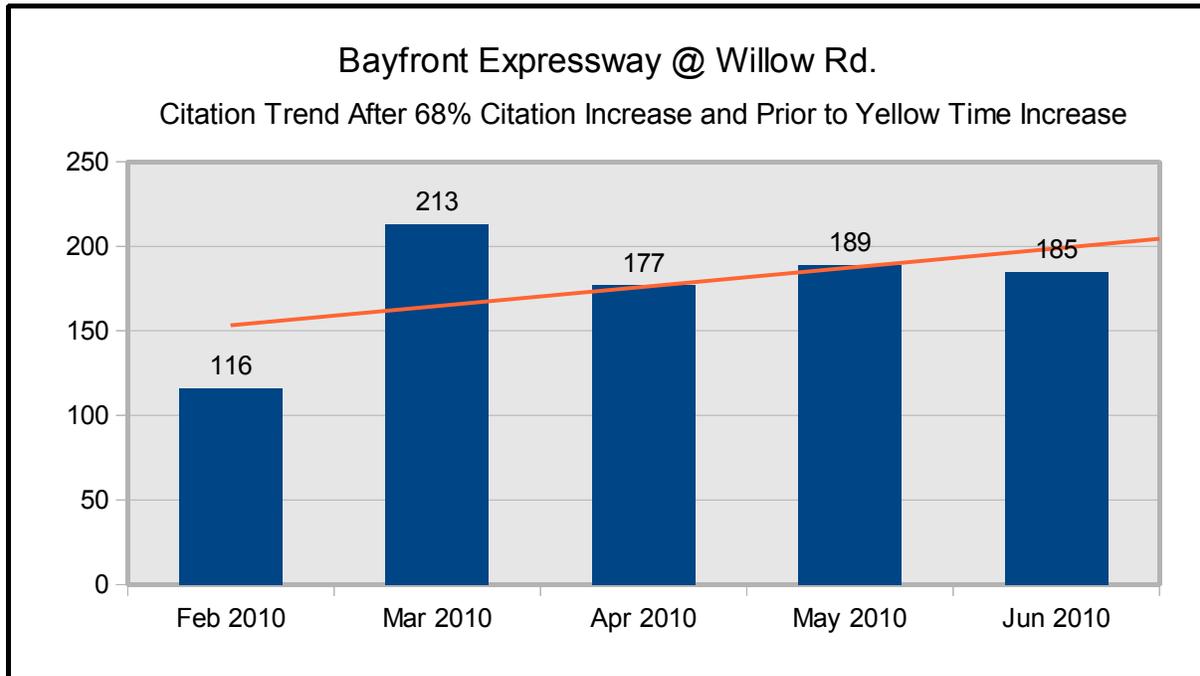


The following series of charts show the citation trend between the three dates when the citation rate changed due to external factors. Note that within each period, the citation rate actually trends upward, contradicting the claim that photo enforcement was successful in changing driver behavior.

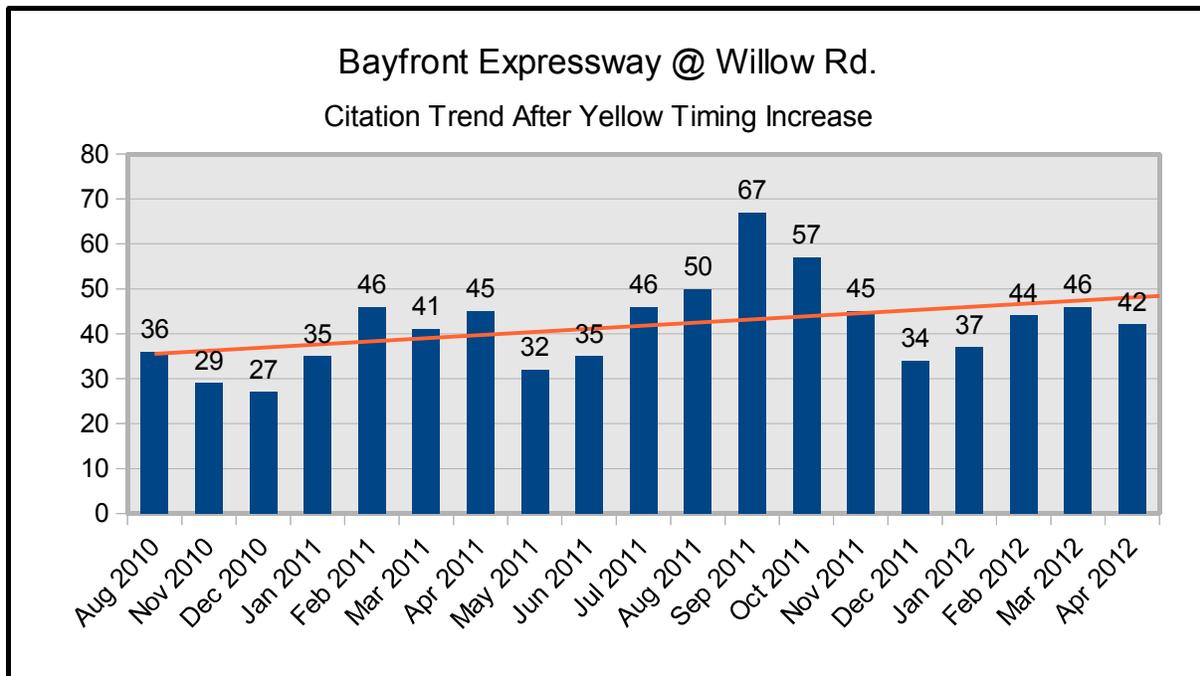
Below: Time period 1- Jan 2009 until spike in violations in Feb/March 2010



Below: Time Period 2 - After spike in violations in Feb/March 2010 and prior to decrease in violations in August 2010 due to increase signal timing.



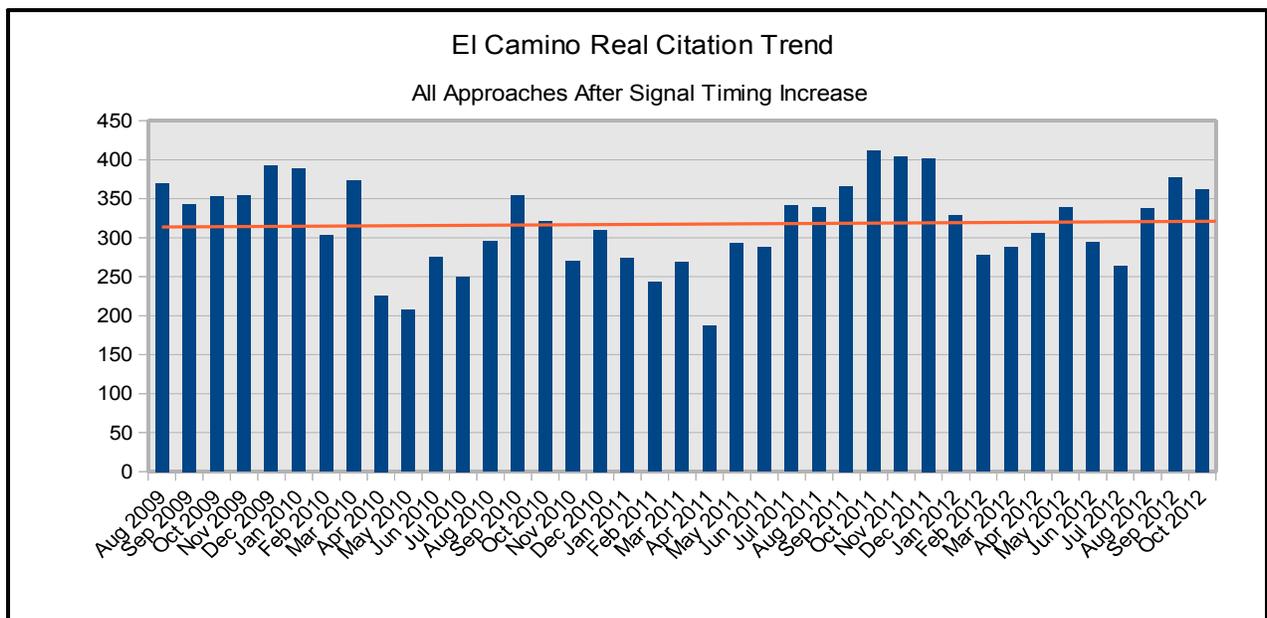
Below: Time Period 3 - After decrease in violations in August 2010 due to increase signal timing and prior to second spike in violations in May 2012.



As can be seen from this detailed analysis of monthly citation data, other factors other than the presence of the red light cameras were responsible for the changes in citation rates seen at this location. Furthermore, a slight upward trend in citations can be seen once the data is separated into the appropriate time periods. Therefore, the staff report's claim that a decrease in citations is indicative of the effectiveness of the red light camera enforcement is not borne out by the evidence and is a misinterpretation of the data.

## El Camino Real Travel Corridor

Since the three intersection approaches monitored by red light cameras on El Camino Real are in close proximity (two approaches are at the same intersection), it can be useful to view the citation data in the aggregate. Again, using the Redflex provided data available at the link above, we charted the monthly citation data. We were also informed by staff of the Menlo Park Transportation Division that the yellow signal time at the photo enforced intersections on El Camino Real were increased by 0.2 second in July 2009. As was the case at Bayfront and Willow, this seemingly minor change immediately resulted in an approximate 38% decrease in violations at the three photo monitored approaches from an average of 492 citations per month to an average of 307 citations per month. Therefore in evaluating any change in citation trends that might be attributable to the red light cameras, an assessment can only be made beginning after the increase in signal timing was implemented. In addition, we learned that due to repaving along El Camino Real, the cameras were inoperable during the final few months of 2012 through the first few months of 2013. Therefore, in order to get an accurate picture of how the citation rate may have changed over time simply due to the possible deterrent effect of red light camera enforcement, we charted the monthly citation data for the period of August 2009 (the first full month of ticketing after the signal timing change was implemented) through October 2012 (the last full month prior to the disruption in ticketing due to construction). The results appear in the chart below.



As can be seen from the above chart, while the number of citations fluctuates from month to month, the overall citation rate as represented by the red trend line remains constant. Therefore, as we saw previously at the photo enforced intersection of Bayfront and Willow, the data does not support the claim that red light camera enforcement has had any beneficial effect on driver behavior as represented by a decrease in citations over time. In fact, it can be argued that any positive effect on the violation rate since the red light program began has been entirely due to an increase in the yellow signal time that was implemented at the intersections, not the presence of the cameras.

## Violator Characteristics

The staff report suggests that since 97% of violators cited for RLC violations are one-time offenders, this indicates that driver education is occurring. However, being caught by a red light camera is a somewhat random event as the vast majority of violations are inadvertent, occurring in the first fraction of a second after the light turns red. Therefore, most citizens who are issued red light camera tickets

have otherwise clean driving records and are relatively safe and conscientious drivers. The red light camera ticket is likely the only ticket they have received in decades of driving and odds are it will be their only ticket for many years to come. Therefore, it is to be expected that first time violators make up the bulk of the red light camera citations issued and it is extremely unlikely that this indicates that driver education is occurring. However, if drivers are being educated, they are likely learning a lesson other than that which is intended. First, drivers hit with a \$500 fine for being a fraction of a second late crossing the limit line or for making a slow rolling right turn learn to distrust the police and the government officials which have imposed this enforcement scheme upon them. Next, drivers learn to avoid the cities which use this heavy handed form of excessive traffic enforcement. Finally, drivers learn to avoid the intersections where photo enforcement is present or to speed up or slam on their brakes when faced with the onset of the yellow phase when they are near the “indecision zone” on their approach to the intersection. None of these “lessons” are necessarily beneficial to society, but they are being taught to drivers in the hundreds of thousands every year in California.

Similarly, the fact that 90% of citations are issued to vehicle owners who do not reside in Menlo Park tells us nothing about the effectiveness of the cameras. Since the vast majority of vehicles passing through the major transportation corridors of El Camino Real and Bayfront Expressway are likely driven by those who do not reside in Menlo Park, it is to be entirely expected that the vast majority of tickets would go to non-residents. Also, as can be seen from the table in the staff report, the percentage of tickets being issued to Menlo Park residents has remained constant throughout the years of the program. Certainly, Menlo Park residents would be more likely to be aware of the presence of the cameras than those not residing in the city. If the cameras actually had the deterrent effect claimed, then the percentage of citations going to Menlo Park residents would be expected to decrease over time, not stay the same. It is also important to note that although the majority of the tickets may go to non-residents, those aren't total strangers. They're folks who work, shop, and visit friends and family in Menlo Park. Excessive enforcement through the use of red light cameras sends the negative message to these folk that Menlo Park is not a particularly welcoming city.

### Support for Chilco Camera

The staff report provides only one short paragraph with dubious justification for adding an enforcement camera at the intersection of Bayfront Expressway and Chilco St. Had the authors of the report intended to be completely forthcoming to the Council regarding the need for this camera installation, they would have provided significantly more information to allow the members to make an informed decision. We therefore provide the facts that should have been included in the original report.

The staff report goes to great lengths to justify the need for camera enforcement at this location by referencing one collision which occurred in 2011. No other collision history is provided and once the complete picture of the accident referenced in the report is reviewed, it becomes obvious that this collision likely did not involve a red light running event or was not the type of collision which could have been prevented using red light camera enforcement.

Using the SWITRS database, we were able to determine that the incident in question occurred as a 64 year old male bicyclist attempted to cross eastbound across Bayfront Expressway at the intersection of Chilco St. when he was struck by a vehicle driven by a 59 year old male traveling northbound on Bayfront. This means that the collision occurred as the bicyclist was towards the end of his crossing maneuver. The database also tells us that the collision occurred on the northbound side of the highway, two feet south of the intersection. This indicates that the bicyclist may have deviated from the confines of the intersection into the northbound travel lanes. It is notable that the accident investigators did not assign blame to either the bicyclist or the motorist.

Taking these facts into account, there are a number of possible scenarios which could have caused this accident. First, the bicyclist could have tried to cross the intersection against the red light. In this case, photo enforcement would have had no effect in preventing the collision as camera enforcement is only targeted at motor vehicles and, in any case, anyone who would make the reckless decision to cross a busy highway against a red light is unlikely to be in the frame of mind to have his behavior modified by the threat of automated enforcement.

Alternatively, the bicyclist could have begun crossing during the end of the green phase. In this case, it is possible that due to his advanced age, the green phase could have ended prior to him completing his crossing maneuver. The motorist would then have been presented with a green light as he approached the intersection and might not have been able to avoid the bicyclist still within the roadway. In this case, neither party would necessarily have been at fault.

A similar scenario would have occurred if the bicyclist began crossing during the yellow phase. Since the rules of the road for motorists also apply to bicyclists, technically it would have been permissible for the bicyclist to begin crossing during the yellow phase so long as he entered the intersection prior to the onset of the red phase, although it would obviously have been unwise to do so.

Finally, it is possible that the motorist ran a red light while the bicyclist was legally crossing the intersection. However, even if this was the case, photo enforcement if present, would have been unlikely to have prevented the accident for the following reasons. If the bicyclist began crossing sometime during the green phase, it would have taken him some period of time to cross the southbound lanes and reach the location of impact on the northbound side of the median. This means that the signal for the northbound lanes would have been red for quite a while before the collision occurred. Clearly, this could not have been a case of the motorist “pushing the yellow” and causing an accident. As explained earlier, drivers who violate a stale red light are likely unaware of the signal. This can be due to a number of factors including impairment, distraction, fatigue, inclement weather, sun glare, etc. Collisions caused by these types of factors cannot reasonably be expected to be affected by red light camera enforcement.

As has been shown, the staff report's claim that, “It was clear that either the bicyclist or the motorist ran a red light” is not necessarily true as numerous other explanations for the collision are likely to be correct. Since the accident investigators could not accurately place blame for the collision on either party (perhaps because neither party was at fault) this accident cannot be used to justify red light camera enforcement at this intersection. Public policy should not be made based on conjecture or that “maybe something might have possibly occurred”.

Likewise, the superficial collision history for this intersection presented in the staff report does not justify the implementation of photo enforcement. The staff report claims that there have been 20 collisions in the intersection since 2008. The report references all types of collisions and does not state the type of collisions or their cause. As explained previously, justification for red light camera enforcement can only be based on an elevated collision history of red light running collisions. The fact that other types of collisions caused by other factors have occurred at a particular location is meaningless. In other words, implementing red light camera enforcement to prevent collisions not caused by red light running would be like treating a broken leg with chemotherapy, something no rational person would ever advocate for. Yet in this case, this is exactly what the staff report recommends.

We reviewed the SWITRS database for the eleven year period 2001 through 2011, the most recent data available. Between 2008 and 2011, there were 14 collisions within 100 feet of the intersection. None were caused by red light running. The vast majority of the collisions, 10 of the 14, were rear end

collisions caused primarily by drivers traveling too fast for conditions, following too closely, or slamming on their brakes. Most resulted in only minor injury or property damage only. As the staff report itself admits, rear end collisions are exacerbated in the presence of red light camera enforcement. Therefore, if photo enforcement is implemented at this location, it is likely that collisions will increase, making the public less safe. Additionally, between 2001 and 2011, there were 49 collisions at this intersection with only one collision caused by a motorist running a red light, occurring in 2002 (one additional collision was caused by a 14 year old bicyclist disobeying the red signal).

Contrary to the staff report's claim, red light violations are not a significant problem at this location as there was only 1 collision of this type in an eleven year period and no collisions of this type since 2002.

In fact, the results of the “test hang” to measure red light violations at this intersection show that the vast majority of violations occurring at this intersection are for slow rolling right turns, not the more dangerous straight through or left turn violations that photo enforcement is supposedly meant to target. The following data chart appears in an email exchange between Menlo Park Police and the camera vendor (the full email exchange is attached to the end of this document):

| <b>Menlo Park, CA Video Survey Results 03/26/13</b> |         |                              |          |    |         |     |       |
|---|---------|------------------------------|----------|----|---------|-----|-------|
| 12 Hour Survey                                      |         |                              |          |    |         |     |       |
| City  | Date    | Cross Street                 | Approach | LT | Through | RT  | Total |
| Menlo Park, CA                                      | 3/11/13 | Bayfront Expressway & Chilco | NB       | 1  | 5       | 0   | 6     |
|   |         | Bayfront Expressway & Chilco | SB       | 0  | 2       | 90  | 92    |
|   |         | Bayfront Expressway & Chilco | EB       | 5  | 0       | 114 | 119   |

As can be seen, rolling right turns from Chilco onto Bayfront and from Bayfront onto Chilco make up 97% of the violations at this location. Since there is no pedestrian crossing across Chilco, and the database is completely devoid of any collisions having occurred due to these types of maneuvers, no principled argument can be made that these violations pose a hazard to other roadway users. In fact, considering the large numbers of rolling right turns which apparently are occurring each and every day at his intersection (over 75,000 per year), yet which have failed to cause any accidents, it can reasonably be argued that the evidence supports the fact that these types of violations do not pose any significant risk and therefore should not be targeted with automated enforcement carrying penalties of upwards of \$500.

Also, we encourage council members to review the entire text of this email exchange as it is clear that Police Department staff was aware that photo enforcement at this location would primarily target rolling right turns yet failed to include this information in the staff report. Also, it appears from the discussion that safety concerns took a back seat to concerns about whether the number of violations (and therefore the revenue) from installing cameras at this location would be “sustainable”. It is also important to note that the Redflex representative, a former police officer from Fremont California, provides an assurance that the camera enforcement would continue to produce “consistent numbers”, a tacit admission that photo enforcement of this type does not appreciably change driver behavior over the long term.

We would like to point out, however, that if one does wish to eliminate these violations, all that is necessary is to install green right turn arrows (or the newly approved flashing yellow arrows) which would illuminate during the red phase allowing drivers to permissibly turn right on red without stopping. This location is the perfect candidate for this type of signalization as the right turn from southbound Bayfront onto westbound Chilco can safely be made during the entire red phase since this is a “T” intersection and there is no cross traffic which can enter onto westbound Chilco while the traffic on Chilco has the green light. Likewise, the right turn on red from eastbound Chilco onto

southbound Bayfront can safely be made during the protected left phase for traffic tuning left from northbound Bayfront onto westbound Chilco as no U-turn is permitted at that location. At other times during the red phase for Chilco, drivers can be presented with a flashing yellow arrow which requires them to yield to any traffic approaching on southbound Bayfront. Unquestionably, motorists recognize that their right turns on red are for the most part protected movements and this is likely why we see so many rolling right turns at this location without incident.

One final consideration should be noted about installing automated enforcement at this location. Bayfront Expressway is a state road and this intersection is controlled by Caltrans. Should the city wish to install red light cameras, it would require the issuance of an encroachment permit. The encroachment permit process requires evidence that red light running is a major cause of collisions prior to a permit being issued. Considering the data presented above, it is highly unlikely that Caltrans would issue a permit at this location and city staff could likely expend a great deal of time pursuing an action that would not be approved.

### IMPACT ON CITY RESOURCES

As with many analyses of the effects of red light cameras on a city's finances, the staff report fails to consider some of the broader issues associated with the economic impact of this type of excessive enforcement. According to the staff report, the net income to the city from the red light camera program for fiscal year 2012 - 2013 was approximately \$67,000. However, what has not been taken into account is that in order to generate that revenue, over \$1.1 million in tickets were paid in fines (32.4% of the total fine revenue paid resulted in \$362,000 in fine revenue back to the city). The vast majority of those fines went to the State, County, camera vendor and staff expenses. Only a very small portion is returned to the city's general fund. This is all money not available to be spent in local business and to grow the local economy. In effect, over a million dollars was removed from the local economy in the last year alone. Over the five years of the program that number is about \$7.4 million. In addition, some portion of motorists hit with a red light camera citation will also accrue a point on their license resulting in a large increase in their auto insurance premiums. These additional insurance fees alone likely total in the millions of dollars per year and are also unavailable to be spent locally.

Even harder to quantify is the economic loss to the city due to visitors avoiding the town due to the presence of the red light cameras. Once burned by a \$500 red light camera ticket for a slow rolling right turn or fraction of a second late-into-red violation, many visitors and shoppers vow never to return to a city which they believe is engaged in unfair and heavy-handed enforcement of traffic laws. In all, while it is difficult to assign a dollar figure, the economic loss to the City of Menlo Park from the red light camera program is undoubtedly substantially more than the \$67,000 the city received in net income in the past fiscal year.

### Recent Legislation Affecting Red Light Camera Enforcement

The legislation referenced in the staff report that would require the addition of one second to the amber time period at red light camera enforced intersections, AB612, unanimously passed the State Assembly this past spring. The legislation is currently being held in the Senate Transportation Committee pending a review of amber signal timing protocols for the entire state by the California Traffic Control Devices Committee. As stated earlier, this author is a member of the subcommittee which will be reporting back on this issue. It is highly likely that some change will be made to signal timing protocols either through administrative changes to the California Manual on Uniform Traffic Control Devices or through the aforementioned legislation. Furthermore, Caltrans can unilaterally increase the amber time at intersections under their control (as can the City of Menlo Park) absent any legislative or administrative changes at the state level. Since increases in the amber time have universally been

shown to decrease the incidence of red light running (and improve intersection safety), these changes could have an impact on the number of citations issued and cause the City to subsidize the red light camera program from the general fund. Therefore, great care should be taken when entering into any long term red light camera contract. We address this issue in more detail below.

While it is beyond the scope of this report to detail all of the evidence of the safety benefits gained through moderately increasing the amber signal time, we would be happy to provide that information if requested. For the purposes of this discussion we will simply state that the concerns expressed in the staff report from the Menlo Park Transportation Division are unfounded and based on conjecture and supposition, not factual data. In fact, strong evidence exists that adding small increments to the amber time in no way disrupts synchronized corridors. As mentioned above, the yellow time was increased at the El Camino Real locations in 2009 and the Bayfront location in 2010, apparently with no ill effects on corridor synchronization. Further, research has shown that increasing the yellow time does not encourage drivers to enter further into the amber phase or cause problems at other intersections:

*“The data show that the percentage of last-to-cross vehicles clearing the intersection ( $T + 0.2$ ) seconds or more past the yellow onset was not appreciably changed by the extension of the yellow phase.”*

**The Influence of the Time Duration of Yellow Traffic Signals on Driver Response,**  
Stimpson/Zador/Tarnoff, ITE Journal (November 1980)

*“Research has consistently shown that drivers do not, in fact, adapt to the length of the yellow.”*

**Determining Vehicle Change Intervals – A Proposed Recommended Practice,**  
Institute of Transportation Engineers (1985)

We conclude this discussion with a short list of instances where the extension of the amber phase has resulted in significant reductions in red light running. We could also add to this list the intersection of Bayfront Expressway and Willow Rd. in Menlo Park which, as noted earlier, experienced a 76% reduction in the citation rate immediately after the left turn amber signal phase was increased by a mere 0.5 second.

Arnold, Missouri - **72% to 86% decrease** in red light running violations after MoDot increased yellow times.

Fremont, California - **80% decrease** in red light running violations after Caltrans increased yellow time by 0.7 second above state minimum at one intersection.

Loma Linda, California - **93% decrease** in citations after city increased yellow time by 1.0 second above state minimum.

Redlands, California - **88% decrease** in violations after city increased yellow time by 0.9 second above statutory minimum.

Fairfax County, VA - **93% reduction** in violations after yellow time increased by 1.5 seconds above statutory minimum at US50 & Fair Ridge Dr. **72% reduction** in violations after yellow time increased by 0.5 second above statutory minimum at RT7 & Towlson Rd.

Virginia Beach, Va - **63% reduction** in violations after yellow time increased by 0.5 second above statutory minimum

State of Georgia - **72% - 81% reduction** in violations after state legislation mandated an additional 1.0 second be added to the amber phase at all photo enforced intersections.

## Proposed Amended and Restated Agreement

Although we strongly urge the Menlo Park City Council not to enter into a new contract with Redflex and instead disband the red light camera program, we recognize that despite all the information contained in this report detailing the lack of a quantifiable improvement in safety and the negative consequences of photo enforcement, the council may still decide to continue running the program. We would therefore be remiss if we did not comment on the proposed contract and point out some of the provision contained within which are adverse to the city's interests.

1. Under one provision of the contract, the city may terminate the contract within 30 days upon a vote of 4/5 of the Council. It is unclear as to why the city should be required to obtain a 4/5 vote of the council in order to terminate this contract when presumably most, if not all, other city business can be accomplished with a simple majority vote. This provision is obviously an attempt by the camera vendor to create an unnecessarily high barrier to canceling the contract and is only of benefit to the vendor.

In addition, it appears that should the city exercise this option, Redflex would be entitled to a cancellation fee, even for current installations. In effect, the city would be obligating itself to pay a fee to cancel a contract in the future which may be canceled now without penalty. Initial red light camera contracts often include a penalty for early termination to recoup the unamortized original costs of installing the camera equipment. Contract renewals, however, often do not include these penalties as the vendor has already recouped these expenses. Last year the City of Hawthorne renegotiated their Redflex contract to include the provision to cancel with thirty days notice upon a simple majority vote of the City Council with no cancellation fee. Menlo Park should be able to negotiate similar provisions.

**Recommendation** - Eliminate the 4/5 vote requirement to cancel the contract in favor of a simple majority vote with no cancellation fee for existing locations.

2. The contract allows the city to terminate the agreement if the “California Legislature adopts or enacts any law that prohibits or otherwise impacts or limits the continued operation of photo red light enforcement systems”. However, as explained above, changes which could impact the operation of red light enforcement systems may come in a form other than laws enacted by the legislature. **Recommendation** - To afford the city full protection under this provision, the language should be expanded to allow for termination should any change be made to California laws, rules, or regulations which impact photo red light enforcement systems.

3. While the contract price for existing locations would be reduced by 15% to \$5397.50 per approach per month, this is still a higher fee than that being paid by some other jurisdictions. Examples: **Bakersfield \$3133, Baldwin Park \$2659, Covina \$2200, Davis \$2500, Del Mar \$1578, El Cajon \$3344, Escondido \$2833, Garden Grove \$2279, Hawthorne \$2800, MTA/Metro \$2200, Montebello \$2500, Oceanside \$3052, Oxnard \$2733, San Francisco \$3434, South Gate \$2800, Solana Beach \$2364, and Ventura \$2106.** (Redflex cities in bold)  
**Recommendation** - Renegotiate the contract renewal to obtain the most favorable pricing for the city.

## **Concluding Remarks**

No quantifiable evidence exists that the red light camera program in Menlo Park has achieved its stated goal of improving roadway safety. At the intersections currently being enforced on El Camino Real, no red light running collision problem existed prior to installation of the cameras and therefore the implementation of photo enforcement at these locations was not justified and represents excessive enforcement. At the Bayfront Expressway location, a fairly minor reduction in collisions may have occurred which was likely due entirely to an increase in the amber signal time. In addition, based on the lack of a decrease in citations between the dates when the citation rate changed due to external factors, it can reasonably be inferred that no improvement in driver behavior has been achieved at red light camera intersections. Finally, as outlined in the staff report, rear end collisions have increased resulting in a net negative impact on safety in the city.

### **Contact the Author:**

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Research Fellow, Reason Foundation  
Member - ITE  
505-500-4790  
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---

**From:** Kaufman, Sharon A [mailto:sharon.kaufman@menlopark.org]  
**Sent:** ...  
**To:** ...  
**Subject:** FW: Survey at Bayfront and Chilco

**Sgt. Sharon Kaufman**  
**Traffic Sergeant**  
**Menlo Park Police Department**  
**701 Laurel St.**  
**Menlo Park, CA 94025**  
**650-...**  
**@menlopark.org**

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**From:** Mark Riggs [mailto:mark.riggs@redflex.com]  
**Sent:** Thursday, March 14, 2013 2:42 PM  
**To:** Kaufman, Sharon A  
**Cc:** Chuck Uhler; Ray Torrez  
**Subject:** RE: Survey at Bayfront and Chilco

Sgt. Kaufman,

I just checked on the status of this survey and wanted to give you an update. Yesterday (03/13/2013) the survey equipment was installed and captured video at the intersection of Bayfront and Chilco from 0600-1800 hours. Our tech will pick up the gear and transfer the video back to Arizona for analysis. We should have the results of the survey about 3 weeks from now. We will provide you a DVD with all the data, some selected video clips, and Powerpoint slides covering the survey results.

I hope this time line works for you.

Thanks

**Mark Riggs**  
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Redflex Traffic Systems  
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**From:** Kaufman, Sharon A [mailto:sharon.kaufman@menlopark.org]

**Sent:** Thursday, February 28, 2013 12:50 PM  
**To:** Mark Riggs  
**Subject:** RE: Survey at Bayfront and Chilco

Thank you

**Sgt. Sharon Kaufman**  
**Traffic Sergeant**  
**Menlo Park Police Department**  
**701 Laurel St.**  
**Menlo Park, CA 94025**  
**650-**  
**[@menlopark.org](mailto:sharon.kaufman@menlopark.org)**

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**From:** Mark Riggs [[mailto: mark.riggs@redflex.com](mailto:mark.riggs@redflex.com)]  
**Sent:** Thursday, February 28, 2013 11:20 AM  
**To:** Kaufman, Sharon A  
**Cc:** Chuck Uhler; Ray Torrez  
**Subject:** Survey at Bayfront and Chilco

Sgt. Kaufman,

We received a tentative date for the survey at Bayfront and Chilco to be 03/13/2013. This is the tentative date. Once the date is confirmed I will pass that information along.

Thanks

**Mark Riggs**  
Account Representative  
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**From:** Kaufman, Sharon A [mailto:[sharon.kaufman@menlopark.org](mailto:sharon.kaufman@menlopark.org)]  
**Sent:**  
**To:**  
**Subject:** FW: Video Survey Results - Menlo Park, CA

**Sgt. Sharon Kaufman**  
**Traffic Sergeant**  
**Menlo Park Police Department**  
**701 Laurel St.**  
**Menlo Park, CA 94025**  
**650**  
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---

**From:** Mark Riggs [mailto:[mark.riggs@redflex.com](mailto:mark.riggs@redflex.com)]  
**Sent:** Thursday, March 28, 2013 9:06 AM  
**To:** Kaufman, Sharon A  
**Cc:** Ray Torrez  
**Subject:** RE: Video Survey Results - Menlo Park, CA

Sgt. Kaufman,

The normal process for a new approach is the first few months there will be high numbers then it will begin to decline and stabilize. Where it stops is anyone's guess due to all of the variables involved. I can say that most intersections that have right turns enforced continue to produce consistent numbers.

Sorry that I could not be more definitive.

On another note, did Shahzad get his dismissal of that citation completed ok? Let me know if he was able to change the status of that cite.

Thanks

**Mark Riggs**  
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**From:** Kaufman, Sharon A [mailto:[sharon.kaufman@menlopark.org](mailto:sharon.kaufman@menlopark.org)]  
**Sent:** Thursday, March 28, 2013 8:52 AM  
**To:** Mark Riggs  
**Cc:** Bertini, David C  
**Subject:** RE: Video Survey Results - Menlo Park, CA

My only questions is since most of the violations are right turns, how long would that be sustainable? Once behavior changes will we see a drastic reduction in the number of citations/violations?

**Sgt. Sharon Kaufman**  
**Traffic Sergeant**  
**Menlo Park Police Department**  
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**From:** Mark Riggs [[mailto: @redflex.com](mailto:@redflex.com)]  
**Sent:** Wednesday, March 27, 2013 4:11 PM  
**To:** Kaufman, Sharon A  
**Cc:** Ray Torrez  
**Subject:** FW: Video Survey Results - Menlo Park, CA

Sgt. Kaufman,

We just received the Survey Results for Bayfront Expressway and Chilco. Of the three directions the approach highlighted in yellow is what the team feels would be the best direction to monitor. Let me know if you agree with their assessment. If you prefer the other direction we can change the recommendation. Southbound and Eastbound are pretty similar in results. The next step for Redflex is to take the recommended direction of the approach to our committee to get approval to move forward to the next steps. Before we do that I wanted to get your opinion.

| <b>Menlo Park, CA Video Survey Results 03/26/13</b> |         |                              |          |    |         |     |       |
|---|---------|------------------------------|----------|----|---------|-----|-------|
| 12 Hour Survey                                      |         |                              |          |    |         |     |       |
| City  | Date    | Cross Street                 | Approach | LT | Through | RT  | Total |
| Menlo Park, CA                                      | 3/11/13 | Bayfront Expressway & Chilco | NB       | 1  | 5       | 0   | 6     |
|   |         | Bayfront Expressway & Chilco | SB       | 0  | 2       | 90  | 92    |
|   |         | Bayfront Expressway & Chilco | EB       | 5  | 0       | 114 | 119   |

Let me know.

Thanks,

**Mark Riggs**  
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