SAFER STREETS IN LOS ANGELES: Response to LAPD Response to City Controller's Audit

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At the Police Commission meeting on December 14, 2010, the LAPD presented Report BPC #10-0480, dated November 30, 2010, relative to the City Council Motion (Hahn) relative to the City Controller's Audit of the Photo Red Light Program (City Council File Nos. 10-1502 & 10-1117-S1). Members of the LAPD including Assistant Chief Michel Moore, Lt. Ron Katona, and Sgt. Matt McWillie along with LADOT representative Pauline Chan appeared before the Commission to answer questions.

This report is in response to the LAPD report and testimony.

The LAPD has continued to promote the Photo Red-Light Program regardless of the fact that there are more effective and less costly solutions available to improve safety at signalized intersections in Los Angeles. Specifically, the LAPD makes certain claims and proffers conclusions about the PRLP that are highly questionable and/or unsupportable.

In this report, we follow the format of the LAPD Report. Text from the report appears in bold italics. Our response follows.

PART 1: THE PHOTO RED LIGHT PROGRAM'S IMPACT ON PUBLIC SAFETY

With the operation of 32 PRL intersections, the Department's PRLP more than quadrupled the number of citations issued from 14,000 to 59,000 citations annually.

This is an increase of 45,000 citations annually. Note, however, that according to statistics provided to us by the LAPD, 75% of violations at PRL intersections are given for rolling right turns. Therefore, of the additional 45,000 citations issued annually through the City's Photo Red-Light Program (PRLP), virtually all are due to citing rolling right turns (59,000 x 75% = 44,250), behavior which the PRLP was never meant to curtail, which statistically results in a miniscule risk to other drivers and pedestrians, and which certainly does not warrant an annual expenditure of millions of taxpayer dollars. The balance of the citations goes to motorists who miss the end of the yellow signal phase by a fraction of a second, a technical violation that is most likely due to the yellow phase being set to the posted speed limit rather than the actual speed of traffic approaching the intersection. Using the posted speed limit to calculate the yellow phase creates a dilemma zone for motorists traveling at the 85th percentile speed of traffic and virtually assures that some drivers will inadvertently violate the red. This astronomical increase in enforcement does not make our roads safer. It does, however, clog our court system with unnecessary cases while costing the City millions of dollars annually. It should be viewed as an indictment of the program, not a badge of honor.

…the PRLP also serves as a high visibility public awareness campaign, putting drivers on notice that the City of Los Angeles does not tolerate red light running.

Unfortunately, what this program actually does is engender disrespect for our public officials and the LAPD. Most citizens realize that the vast majority of motorists who get photo red light tickets are cited for technical violations rather than dangerous behavior warranting a $500 fine. As the Appellate Court said in People vs. Goulet, *"Traffic rules account for most of the contact by average citizens with law enforcement and the courts. Enforcement of laws which are widely perceived as unreasonable and unfair generates disrespect and even contempt toward those who make and enforce those laws."* It is unfortunate that the LAPD is promoting a program that is counterproductive to the goal of increasing public support for the Department and City government in general.

The Department believes that the increased driver compliance that accompanies better enforcement leads to a decrease in traffic related accidents.

The LAPD provides no evidence that this type of enforcement has lead to increased driver compliance. On the contrary, according to statements by the LAPD over the last few years, the number of violations has actually increased at PRL intersections, which belies the claim of increased driver compliance. Furthermore, as discussed in detail below, there is no evidence to show that increased driver compliance due to the PRLP has led to a decrease in traffic accidents.

The Department traffic collision analysis has shown an overall decrease in red light collisions at PRL intersections since their deployment.

Untrue for the most recent years of the program. According to data provided by the LAPD for the City Controller's audit (Exhibit 3 below), red light collisions at PRL intersections increased by over 53% between 2008 and 2009.

Exhibit 3

LAPD Traffic Collision Statistics related to the Automated Photo Red Light Program
Citywide Totals, based on the 32 Program Intersections

			LAPD Primary Collision Factor, considered "cause" of the Collision							
Year	Total T/C	% Change	Red Light 21453A	% Change	Left Turn 21801A	% Change	Speed 22350	% Change	FTC 21703	% Change
2004	376	N/A	107	N/A	122	N/A	107	N/A	40	N/A
2005	351	-6.6%	99	-7.5%	113	-7.4%	112	4.7%	27	-32.5%
2006	297	-15.4%	69	-30.3%	98	-13.3%	110	-1.8%	20	-25.9%
2007	302	1.7%	50	-27.5%	104	6.1%	111	0.9%	37	85.0%
2008	338	11.9%	30	-40.0%	130	25.0%	135	21.6%	43	16.2%
2009	322	-4.7%	46	53.3%	116	-10.8%	119	-11.9%	41	-4.7%
Total	**1,986**	**-9.2%**	**401**	**-63.1%**	**683**	**4.7%**	**694**	**16.0%**	**208**	**25.4%**

Note: % Change by year compares T/C counts to those in the prior year. The Total % Change over the five year period was calculated as the sum of T/Cs in 2004 and 2005, compared to sum of T/Cs in 2008 and 2009.

From 2004 to 2009, the Department noted an overall 63 percent decrease in red light related traffic collisions at PRL intersections, as well as an overall decrease of 10 percent in all types of collisions.

This 63% figure is wholly unreliable and cannot be used to show that photo enforcement has been effective for the following reasons:

1. The decrease noted is not for the entire period "*from 2004 to 2009"* as claimed. This statistic only holds when comparing accidents categorized by the LAPD as "red-light related" (where a driver was cited for a violation of vehicle code 21453A) for the years 2004 and 2005 vs. 2008 and 2009. As noted above, the LAPD report and testimony before the Police Commission fails to disclose that these same types of accidents increased by over 53% at PRL intersections between 2008 and 2009.

2. Although the LAPD claims that any reduction in accidents seen at PRL intersections is entirely due to the presence of red light cameras, the facts suggest otherwise. As the City Controller's audit correctly points out, "LAPD does not consider all factors in reporting the program's results… attributing these results solely to automated enforcement is questionable". The LAPD is engaging in the classic fallacy known as *Post hoc ergo propter hoc*, Latin for "after this, therefore because of this", or in contemporary language, "since that event followed this one, that event must have been caused by this one". Competent researchers know that correlation does not prove causation. As will be shown, this is especially true when analyzing accident statistics at PRL intersections where numerous other factors can affect the number of accidents.

Since a properly designed independent study employing scientific methods and controls was not performed at PRL intersections, the LAPD's claims of success cannot be supported. In fact, when other likely explanations for changes in accident totals are considered, the effectiveness of the PRL program becomes highly suspect.

Other Possible Causes for a Reduction in Accidents

A. Concurrent with the installation of the current photo red-light system, the yellow signal timing at all photo red-light intersections was increased to comply with the minimum requirements set out in California law. In addition, the LADOT instituted an all-red phase at PRL intersections as well. At intersections where these changes were implemented, one would expect to see a significant reduction in red light related accidents, exactly as the LAPD claims has occurred. Again, as noted in the Controller's audit, "That change alone (likely) made the intersections safer", not the installation of red light cameras. Increasing the yellow signal timing and implementing an all-red phase has reduced accidents at signalized intersections. An adjustment in the yellow and red phases to account for the actual speed of traffic approaching high risk intersections will further increase safety throughout the city and eliminate the need for costly photo enforcement.

B. As the Controller's audit also revealed,

> "A general reduction in collisions could have been the result of there being fewer cars on the road, due to a significant increase in fuel prices. We noted over a ten-month period, average gas prices rose by 64%. We also noted there was a 4.6% decline in statewide fuel consumption that year (2008), as well as a 2.6% decline in traffic volume on State highways in LA County."

The price of oil nearly tripled from $50 to $147 from early 2007 to 2008. Within months of fuel prices hitting record highs in the summer of 2008, the current financial crisis began to take hold, further reducing traffic volume. As the audit succinctly notes,

> "Fluctuations in traffic volume can directly influence the number of traffic collisions, but LAPD indicated they were not monitoring traffic volume - either citywide or at PRL intersections".

Experts in traffic collision analysis, including the LADOT Risk Management Division, use traffic volume to calculate accident *rates* (typically per million vehicles entering the intersection), as opposed to simply comparing raw numbers of accidents. Without adjusting for fluctuations in traffic volume, calculating changes in the absolute number or percentage of accidents tells us little about whether red light cameras have increased safety.

C. In the two years the LAPD chose for their "before" statistics, 2004 and 2005, the Los Angeles area experienced one of the harshest winters on record. The winter of 2004 - 2005 was the second worst "el Niño" winter in terms of severe weather with a total rainfall of approximately 38 inches, almost 22 inches above the average. Rainfall totals of this magnitude had not been seen in L.A. since the winter of 1883-1884. In contrast, the winters since 2005 have all witnessed lower than average rainfall. Any police officer or traffic safety expert will attest to the fact that increased rainfall leads to increased accidents, especially in Los Angeles where drivers are unaccustomed to these treacherous conditions. As an example, the following is an excerpt from a CBS2 news report from December 20, 2010:

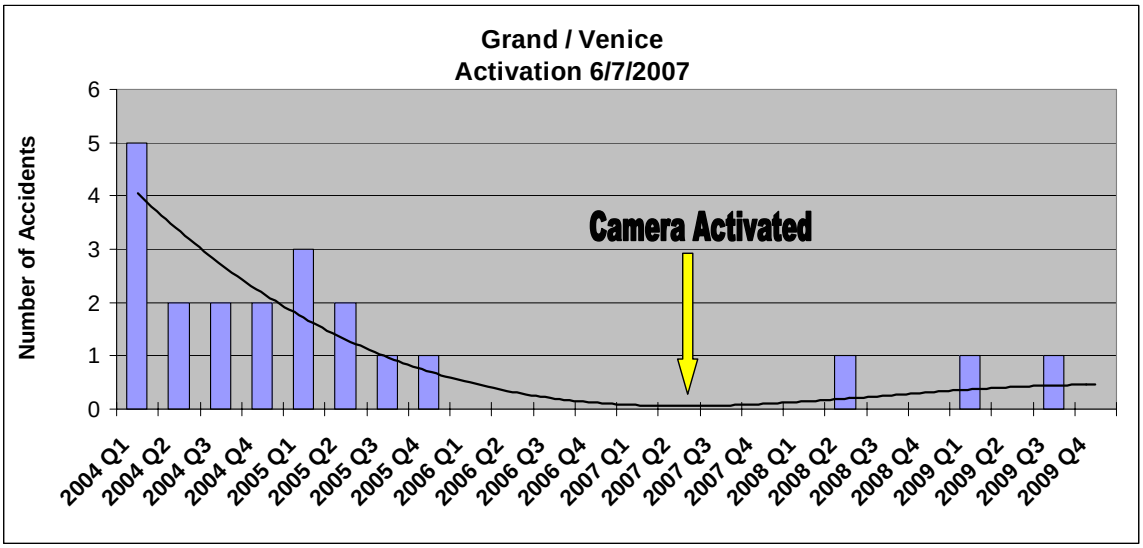
> Rain continued to pelt the Southland on Monday, causing power outages and a significant rise in traffic collisions, along with breaking rainfall records for this date in several locations in Los Angeles County…. About 175 crashes were logged between 9 a.m. and 3 p.m… compared to 53 in the same period last Monday when roadways were dry (a 230% increase).

It is therefore no surprise that accident rates from one of the rainiest winters on record are higher than in subsequent years.

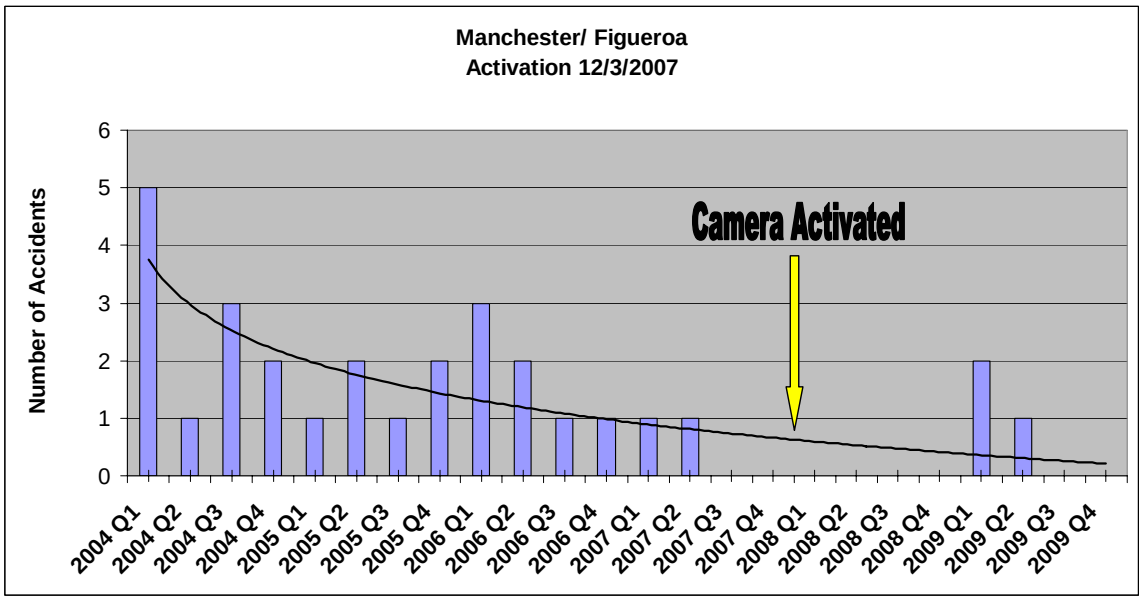
<u>Alternative Analysis</u>

While it is difficult to pinpoint exactly what may have caused any reduction in red-light related accidents at photo enforced intersections, a further analysis of accident data suggests that it is <u>not</u> due the installation of red-light cameras. We reviewed accident statistics for the years in question using data obtained from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database. We found that

although the years 2004 and 2005 generally showed what appeared to be a higher than average number of collisions at these intersections, by 2006 the accident rate had begun to decline. This is significant in light of the fact that photo enforcement at PRL intersections was rolled out in stages between mid-2006 and the end of 2007. For the years 2004 through 2009 (the same years the LAPD used for their statistics), we counted red-light related accidents in each quarter at the two intersections with the largest numbers of red-light related accidents prior to camera installation. The results appear below.



The intersection of Grand and Venice exhibited a cluster of accidents in 2004 and 2005, but by 2006 the accident rate had dropped to zero. Photo enforcement was activated on 6/7/2007, more than a year and a half after safety had improved at this location. Therefore, the reduction in accidents seen at this location cannot possibly be due to the installation of red-light cameras. Without further information from LADOT, we can't determine exactly what caused the reduction in accidents (we suspect it was a signal timing change or other engineering improvement) but, due to the timing involved, it is impossible to conclude that it resulted from photo enforcement. Using the same flawed methodology employed by the LAPD to obtain their 63% statistic (comparing 2004 and 2005 vs. 2008 and 2009), this intersection would show an 83.3% reduction in collisions. However, since this reduction occurred long before the cameras were installed and cannot possibly be the result of photo enforcement, we now know that using this comparison provides inaccurate and misleading results. This is a prime example of why using generalized statistics can lead to incorrect conclusions. The LAPD counts this intersection as one of its successes, but considering the data presented here, no principled argument can be made that photo enforcement caused any reduction in accidents seen at this location.



At the intersection of Manchester and Figueroa a similar trend can be seen. Slightly elevated numbers of accidents existed from 2004 through early 2006. But by mid-2006 accidents had begun to decline, diminishing to about one per quarter through mid 2007 with no accidents in the last half of the year. The cameras were activated at the end of 2007, again *after* the accident rate had dropped significantly and had continued trending downward for an extended period of time. While not as dramatic as the Venice/Grand example, it is still clear that cameras could not be the cause of the decrease in accidents at this location as they were activated after the decrease and downward trend had already occurred.

In summary, the LAPD is selectively reporting a 63% reduction in red light related accidents while ignoring other data which shows an increase in red light related collisions during the period when red light cameras were in place. Furthermore, the LAPD is willfully ignoring other factors that likely account for any reduction in accidents seen at photo enforced intersections such as changes to the signal timing, fluctuations in traffic volume and significant weather effects. The City Controller concurs, stating,

> "Without considering the context of citywide traffic collisions… or other factors such as changes in traffic volume or weather conditions, the reported program results measured as the change in the number of traffic collisions at PRL intersections may not be adequately attributed to the program".

The LAPD fails to address this criticism in their response.

Additionally, there have been no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement, from 2004-2006).

As with the contrived 63% reduction in overall accidents, this statistic cannot be used to prove the success of the Photo Red-Light Program. At the invitation of Sgt. Matt McWillie, head of the PRL Program, we reviewed the accident reports for the five fatality accidents referenced above. Upon examination it became clear that none of these accidents were of the type that could reasonably be expected to be prevented by photo red-light enforcement. In fact, two of the five accidents were clearly not even red-light related.

Details of the Five Fatal Accidents Used to Justify the LAPD Safety Claims

Accident #1 – 1/21/2004 Victory Blvd. and Laurel Canyon
Accident was caused by DUI, not a driver trying to beat the red light. Also, at the time of the accident, this intersection was being enforced with a photo red-light system administered by the previous vendor, ACS. This was not a fatality that occurred "prior to PRL enforcement", but rather a fatality that occurred during PRL enforcement with a *prior system*. Furthermore, as this type of accident makes clear, photo enforcement cannot prevent crashes caused by drunk drivers. Unquestionably, the red-light camera had no effect on whether this drunk driver ran the red light, as is the case with virtually all serious collisions that occur when drivers enter the intersection well into the red phase due to impairment, distraction or fatigue. This accident cannot be included in the "before" statistics as it was caused by a drunk driver and occurred at an intersection that was being photo enforced with a red-light camera.

Accident #2 – 2/9/2004 Western/MLK
Accident was caused by a pedestrian under the influence of drugs j-walking a bicycle across the street late at night. Furthermore, the accident occurred 33 feet beyond the intersection, not at the intersection itself. Witnesses stated the driver entered the intersection on yellow. This was not an accident caused by a red light runner. LAPD stated that they included this as "red-light related", because they believed that "*it was possible*" that the driver sped up to make it through the intersection before the light turned red, although they had no direct evidence for that assumption and the bicyclist was deemed at fault for the accident. Therefore, this accident cannot be included in the "before" statistics as it did not occur within the intersection and was not caused by red light running but rather by a pedestrian j-walking. Photo enforcement would have had no effect on preventing this accident.

Accident #3 – 6/23/2005 Beverly/Western
Pedestrian was struck in the crosswalk by a sanitation truck making a right turn from Beverly onto Western. The pedestrian was crossing Western. Witnesses claimed the truck had a green light. This is the logical conclusion as the pedestrian also would have had a green light to cross Western, accounting for his presence in the crosswalk. This accident was most likely caused by the truck driver failing to yield to the pedestrian possibly due to

an obstructed view from the garbage truck. The truck driver was cited for failing to yield to a pedestrian in a crosswalk, not a red light violation. This accident cannot be included in the "before" statistics as it was not caused by red light running. Photo enforcement would have made no difference in preventing this accident.

Accident #4 – 3/5/2005 Venice/Grand
A sixteen-year-old driver ran the light long after it was red. According to statements of those involved, this accident was caused by driver inattention. This accident cannot be included in the "before" statistics as it was caused primarily by a distracted, inexperienced driver, not intentional red light running. Photo enforcement has no effect on preventing this type of accident.

Accident #5 – 4/6/2006 Manchester/Figueroa
Accident occurred just after midnight. The driver claimed she was tired and didn't remember whether the light was red. This accident was most likely caused by driver fatigue. This accident cannot be included in the "before" statistics as it was caused by a fatigued driver, not intentional red light running. Photo enforcement has no effect on preventing this type of accident.

When the details of each accident are considered, it becomes clear to any impartial observer that using these five accidents to suggest that the City's photo red-light program has saved lives is not intellectually honest. For example, regardless of the fact that the LAPD was fully aware that the fatality at Victory and Laurel Canyon occurred at an intersection where a red-light camera was in use at the time of the collision, the LAPD chose to categorize this accident as a "before the cameras" fatality. It was not. It was a "before ***the current set*** of cameras" fatality. An unbiased study would never have included this accident in the "before" statistical group and no reasonable argument can be made for doing so since there was a red-light camera in operation and the accident was caused by a drunk driver.

In regards to the accident involving the sanitation truck, it's extremely unlikely that a red light violation occurred. The evidence in the accident report strongly suggests that the light was green at the time of the incident. The pedestrian and the garbage truck were both initially traveling in the same direction and it is unlikely they both ignored a red signal. Moreover, neither the driver nor the pedestrian was cited for violating the red. What most likely occurred was that the pedestrian stepped into the crosswalk on a green light and the truck driver began his right turn at approximately the same moment and just didn't see him. An unfortunate event, but not the type of accident that can be prevented using red light cameras. When we asked why the LAPD included this accident, the officer who compiled the statistics responded that, similar to the bicyclist accident at Western and MLK, he did so because "there was a chance the light *might have been red*". "Might have been" and "it was possible" aren't the proper criteria to use when deciding whether or not to include a particular data set in a before and after study. Since the LAPD knows that there is no evidence that a red light violation occurred, neither this accident nor the bicyclist accident should have been used to suggest that red-light cameras have prevented fatalities at photo enforced intersections, yet the LAPD continues to do so.

Finally, the two accidents caused by driver fatigue and distraction occurred well into the red phase, providing further evidence that the most dangerous red-light running accidents are not due to drivers trying to beat the light and thus can't be remedied by installing photo enforcement. The photo enforcement approach to curtailing the incidence of red-light running is solely intended to influence those drivers who willfully ignore or try to beat the red light. No one has ever suggested that red light cameras should be installed to prevent accidents caused by fatigued or distracted drivers. If the LAPD had intended to provide an honest analysis of the photo red light program, they certainly wouldn't have included accidents caused by distraction or fatigue.

The reduction in red light related traffic collisions is consistent with numerous published studies of PRLPs by research scientists who have conducted extensive statistical analysis far beyond law enforcement capabilities.

In virtually every instance where those studies have been peer reviewed, serious questions have been raised as to the validity of the results. In many cases, the research was conducted by parties that had a financial stake in the outcome of the results including red light camera companies and members of the insurance industry such as the Insurance Institute for Highway Safety, who benefit from increased premiums charged to drivers who accrue points on their licenses as a result of citations issued through photo enforcement. In other cases, the methodology was flawed since the researchers failed to control for other factors that would have had a positive effect on accident rates such as reductions in traffic volume and engineering improvements that were implemented at the time the cameras were installed.

In contrast, numerous studies done by qualified research engineers have shown little to no overall benefit from the introduction of red light cameras. For example, a report by the Virginia Transportation Research Council, a division of the Virginia DOT, documenting the safety impact of red light cameras based on 7 years of crash data found the results from photo enforcement varied significantly by intersection and by jurisdiction, but that overall, "The cameras were associated with an increase in total crashes" and "The cameras were associated with an increase in the frequency of injury crashes". Similarly, a 2008 University of South Florida report found that "Comprehensive studies conclude cameras actually increase crashes and injuries, providing a safety argument not to install them", and a 2004 North Carolina A&T University study reported, "Our findings are more pessimistic, finding no change in angle accidents and large increases in rear-end crashes and many other types of crashes relative to other intersections".

Surely the LAPD is aware of studies that do not support the use of photo red-light enforcement, yet they have specifically ignored these studies and have chosen to discuss only those studies that support their position.

…a meta-analysis on the effectiveness of red light cameras was recently published in the Journal of the Institute of Transportation Engineers Effectiveness of Red Light Cameras, Brian Bochner and Troy Walden, ITE Journal, May 2010. This study analyzed hundreds of PRL intersections over various time frames from dozens of different localities and concluded that "red light cameras substantially reduce red light violation rates" and "reduce crashes that result from red light running." It also concluded that red light cameras "usually reduce crash severity by virtue of reducing the more severe right angle crashes."

First, this report is simply a review of other existing studies and provides no original data or analysis. Second, it references only data which supports the effectiveness of red light cameras and completely ignores any opposing viewpoint. Third, according to the authors, "the authors of this summary drew the information from published or internet summaries and did not have access to the actual data". Summaries alone do not provide sufficient information upon which to base a scientific report. Basic protocol dictates that prior to including references from a study in a research paper, the full text of that study should be reviewed to ensure that data and conclusions are not taken out of context. Fourth, the authors provide this additional caveat about the data they reference, "It also should be noted that many results are based on observations of small numbers of intersections for varying periods…" This suggests that many of the studies reviewed for this paper may not be robust enough to draw significant conclusions. Fifth, a number of the studies referenced were prepared by the jurisdictions and departments employing this type of enforcement, rather than peer reviewed, independent studies.

While there are numerous other reasons to fault this study, such as the inclusion of unsupportable claims and factual errors, we will simply note that this is hardly the type of comprehensive study one might hope for in support of photo enforcement and we caution against relying too heavily on its claims. We will however, point out one passage that the LAPD failed to include in their summary of this report. The paper concludes, "Red-light cameras are to aid enforcement and <u>should not be considered a substitute for proper traffic engineering of signalized intersections</u>". (emphasis added)

Location-specific statistics are monitored in terms of general trends, primarily to watch for unintended consequences, such as a dramatic spike in rear-end traffic collisions (which the City has not experienced).

It is unclear what the LAPD considers a "dramatic spike" in rear-end traffic collisions; however, the statistics provided by the LAPD for the Controller's audit (Exhibit 3 above) contradicts this statement. Crashes at PRL intersections in which the primary collision factor was FTC (following too close), most likely a rear-end collision, increased 85% between 2006 and 2007 and increased an additional 16.2% from 2007 to 2008. For the comparison of the years 2004 and 2005 vs. 2008 and 2009, the increase was 25.4%. The LAPD claims there has been no increase in rear-end collisions, but their own data suggests otherwise.

PART 3: INTERSECTION SELECTION

The audit notes that City Council emphasized the importance of placing at least one PRL in each Council District. The Department sought to accommodate the Council, while still prioritizing public safety, by selecting the most "accident-prone" intersections in their respective districts.

It is unclear how the LAPD and the LADOT determined the most "accident-prone" intersections, but in many instances red-light cameras were installed at intersections with few or no red-light related accidents in the years leading up their installation. For example, at the intersection of Whittier & Lorena there was a total of **one** red-light related accident in the three year period prior to the activation of photo enforcement in May 2007. Likewise, at the intersection of Wilshire & Westwood there were **two** red-light related accidents in the three year period prior to the activation of the cameras and **no accidents** for two years prior to activation. A similar lack of red-light related accidents existed at other PRL intersections prior to camera activation. At Florence & Figueroa there was **one** accident prior to camera installation and at La Brea & Rodeo there were **two**. The cost of employing red-light cameras is approximately $8000.00 *per month* at each intersection. That amount is expected to increase significantly under a new contract as the installation costs will be borne by the vendor and amortized over the life of the contract. Spending this amount of taxpayer dollars at intersections where no red-light running problem exists is irresponsible and unwarranted. Prior to signing any new PRL contract, the LADOT must spell out exactly what constitutes an "accident-prone" intersection with regard to an excessive *rate* of accidents of the type red-light cameras are meant to address. Once any high risk intersection is identified, the City must then explore all relevant engineering countermeasures including but not limited to increasing the yellow and all-red signal phases to reduce the accident rate. Targeting an intersection for photo enforcement without doing the proper statistical analysis and engineering studies simply continues a policy that has resulted in an immense waste of City resources.

CONCLUSION/RECOMMENDATIONS

In their response to the City Controller's audit, the LAPD has continued to defend the City's Photo Red-Light Program even though its effectiveness is highly questionable. In this report we have presented an alternative viewpoint to that being advanced by the LAPD. In each instance where the LAPD has offered evidence that the installation of red light cameras has resulted in reduced accidents, we have shown serious deficiencies in their conclusions. The LAPD claims a 63% reduction in accidents due to photo enforcement. We have shown that the 63% statistic was obtained using flawed methodology and that the LAPD has ignored other, more likely explanations for any reductions seen at PRL intersections. The LAPD claims that the PRLP has been successful since there were no fatalities at PRL intersections after the cameras were installed whereas there were five fatalities in the years prior to installation. We have

shown that none of those five fatalities can honestly be used to compare safety at PRL intersections before and after the cameras were installed.

It is unclear whether the Department has intended to mislead City officials by using dubious statistics and omitting pertinent information from their report, but when the police become advocates for public policy, especially a policy that affects hundreds of thousands of citizens and costs the public millions of dollars annually, they have an obligation to be as accurate and unbiased as possible. Sound public policy can only be made when all options are presented and evaluated. Towards that end, we offer the following recommendations:

1. The RFP for a new Photo Red-Light Program should be put on hold while the City examines possible alternatives to costly photo enforcement.

2. The LADOT should immediately begin the process of evaluating intersections that might have a higher than expected red-light running accident rate. There is no reason to wait until after the RFP process is completed to begin evaluating intersections for safety improvements. We offer our assistance in making this assessment of intersection safety.

3. If any intersections are found where a red-light running *accident* problem exists, the LADOT should ensure that the yellow signal timing is set using the ITE kinematic formula for the 85^{th} percentile speed of free flow traffic approaching the intersection with a possible additional .5 to 1 second for an added margin of safety.

4. The LADOT should further ensure that the all-red phase is set using the ITE kinematic formula for the actual width of the intersection and speed of vehicles attempting to clear the intersection. For added safety where deemed necessary, an additional .5 seconds may be added to the all-red phase to account for any drivers who misjudge and enter the intersection in the first few tenths of a second after the light has turned red.

5. The LADOT should consider any other engineering countermeasures that could realistically be implemented to improve safety, such as posting additional signage or implementing a protected left turn, while taking into account time and budgetary constraints.

6. After a sufficient period of time, the LADOT should re-evaluate these intersections to determine if the countermeasures have improved safety to a satisfactory degree. If safety has not improved sufficiently, additional measures can be considered.

7. The City of L.A. should <u>not</u> enter into a contract for a new Photo Red-Light Program unless and until all engineering solutions have been implemented and failed to produce the desired results. There is no urgency in signing a new contract as this option will always be available in the future if it is deemed necessary.