

3-28-15

Re: March 30 meeting, item 14, red light cameras

Honorable Councilmembers:

On page two of the staff report the first bulleted question is, why other cities have closed their systems. To that question, which came from the council itself, staff replied in generalities and did not acknowledge the elephant in the room: *Whether the cameras actually produced a safer environment in those cities.* Staff's claim of a huge reduction in accidents in Ventura is at odds with the authorities in many other cities who have reported little or no reduction. (To see what they said, read the "Candor" attachment to my September 2014 email to you, copy below.) Thus, I repeat my recommendation that you get Ventura's accident stats run by an independent professional with credentials in statistics.

Continuing on the subject of closings, it now appears that the *rate* of closings is increasing: Santa Ana and Victorville will shut down in June, Santa Clarita will shut down on March 31, Stockton shut down in February, Oceanside shut down in November, Davis shut down in October, and Modesto's program continues to be suspended.

The council's second question was about the post-closing impact in other cities. While over sixty California cities have removed their cameras, staff chose to discuss only one of those, and it looks like staff got their information about that city from newspaper clippings.

The third bulleted item reads, "Can the *term* of the ATES contract be improved?" while the minutes of the 2014 meeting use the word *terms*. Both need to be addressed.

Term: On the positive side, the proposed new contract changes the term so that the two two-year extensions will be optional, not automatic as was proposed in September. The negative side is a novel provision, not found in any other red light camera contract in California, which requires a term extension if ticket revenue is low. That provision is quite complex, but staff has not provided an example of another city, anywhere, where such a provision is in use, much less proven. Per the staff report, the provision will penalize the City unless there is an increase in ticketing - which staff says can be attained by relocating some cameras - but staff fails to discuss the following sea changes that will inevitably push down the number of tickets the City can issue.

- a. There's no mention of CalTrans' Nov. 7, 2014 revision to the California MUTCD, which mandates longer yellow lights and will reduce straight through violations, which are about 60% of Ventura's tickets. (The annual report Reflex filed with the Judicial Council on behalf of the City - copy attached - says that in 2013, 60% of Ventura's tickets were for straight through violations. For more info about the MUTCD revision, see Defect # 2, on my site.)

b. There is a growing cloud over heavy right turn enforcement. The 2013 annual report says that Ventura issued 621 tickets for right turns. A recent addition to that cloud was a remarkable statement found in a Dec. 26, 2014 Wall Street Journal interview of an industry leader: "Mr. [James] Saunders [then-president of RedFlex, resignation tendered March 23, 2015] suggests jurisdictions refrain from issuing a [rolling right] ticket except when a pedestrian is in the crosswalk." The headline was, "Can the Red-Light Camera Be Saved? - Money-hungry politicians discredit a hopeful safety innovation." (A Jan. 22, 2015 column in the Dallas Morning News confirmed the statement The Journal had attributed to Saunders: "When I asked Redflex spokeswoman Jody Ryan about her boss' comments urging cities to lighten up on rolling reds, she answered, *"It only makes sense that Jim is going to say, 'Look, we need people to be thoughtful about how they are implementing these programs and how they are issuing citations.'* It wasn't that shocking.")

c. Staff's financial forecast also omits any mention of the engineering work the nearby City of Santa Clarita has done over the last year, which has dramatically reduced left turn violations there - and which is repeatable in Ventura where left turns are 27% of all tickets. Details about the changes in Santa Clarita are available at [highwayrobbery \[dot\] net](#) and at [thenevspaper \[dot\] com/news/46/4667 \[dot\] asp](#) . (As mentioned above, earlier this week Santa Clarita voted to close, effective March 31.)

Terms: Regarding the terms, staff uses the unfortunate fact that some other California cities have done a lousy job of negotiating their monthly rent, together with a mistaken claim that only one city is paying less than the \$2190 proposed in Ventura, in an attempt to explain away the fact that Ventura is not getting a price decrease and will pay substantially more than a number of California cities. For details about what other cities pay, see FAQ # 17 at [highwayrobbery \[dot\] net](#).

Redflex is sweetening the deal with a free Halo (tm) collision avoidance system which, as far as I can tell, is unproven. I have made a number of public records requests to Marysville, California, which has had a Halo system for several years, and so far they report that they have no information as to how it is working.

Returning to the accident reduction claims, staff's table shows that the (claimed) accident reduction has been flat for several years, at just above 70%. Over the same period, ticketing did not decrease but actually rose and is up a projected 48% since 2010 (per figures on the Ventura Docs page at [highwayrobbery \[dot\] net](#)). The rise in ticketing, occurring while accidents have been flat, suggests that the City is ticketing more and more people each year for technical violations having no relation to safety.

The "technical" ticketing may be driven by the "cost neutral" terms of the contract between the City and Redflex, because under those terms the City came to owe the company \$2.7 million, most of which the company would have to write off were the contract to end or be renegotiated - as appears to be happening now. The prospect of

losing a million Dollars would give any company a powerful incentive to not wait until the end but get the money now, by encouraging an artificially high level of ticketing. The proposed new contract retains cost neutrality, so leaves that perverse incentive in place.

Conclusion

During the up-to-seven year term 42,000 tickets could be issued in Ventura, bearing \$21 million in fines, so this decision is an important one. It does not have to be made right now. If you want a lower price, a clearly legal contract, better statistics, and more input from the public, please bring this matter back to a later meeting.

Sincerely,

Jim

9-12-14

Re: Red light cameras, Item 16, 9-15-14 meeting of the Ventura City Council

Honorable Mayor and Councilmembers:

First, the rent. The City is being asked to pay \$2190 rent per camera per month while it should pay no more than \$1500, per this table found in the April 2014 contract between Redflex and the City of Elk Grove, California. (The Elk Grove contract is online at the website highwayrobbery.net.)

Years in service	Fixed price not to exceed / Designated Intersection Approach per month
0-4.99	\$4696.00
5.0-6.99	\$4196.00
7.0-9.99	\$2000.00
10.0+	\$1500.00

If Ventura agrees to the \$2190 rent it will pay 46% extra, an overpayment of \$1,043,280 during the term of the contract. To cover that extra rent, Ventura will need to issue an extra 10,432 tickets (assuming that 2/3 of those ticketed pay their tickets and that the City gets \$150 of revenue from each ticket paid). It should also be noted that since Elk Grove has only five cameras, an argument could be made that Ventura, with its economies of scale, is entitled to an even lower price.

If the City obtains a \$1500 or lower rent, it will be better positioned to eliminate the present Cost Neutral clause. Cost Neutrality is problematic because to protect the City, Redflex must take all the risk - all the company will get is whatever fine money comes in from the court. Plus, the company risks never collecting the \$1 million (proposed) balance owed. Thus, Cost Neutrality leaves Redflex with an incentive to do whatever is necessary to increase the fine money, and that sort of incentive is exactly what the author of CVC 21455.5 intended to ban. Clearly the present contract violates that ban. The payment to Redflex needs to be changed to a flat amount which does not go up or down with the revenue coming from the court.

The Term

The contract calls for automatic extensions of the term, and there is no Termination for Convenience clause allowing the City to cancel mid-term. If the City misses the deadline to terminate the contract, two years are automatically added. In my humble opinion, extensions should never be automatic. At the very least, the vendor should be required to come around every two years, make a quick presentation about the program, and ask for the extension.

The Stats

On page 3 of the staff report we see the claim of "a 49% reduction of violations," while the table on page 4 shows totals that are instead, fairly level since 2003. Further, if we back out the heavy violations at Mills/Telegraph during 2007 - 2010, it looks like violations are way up now (when 2012 & 2013 are compared to 2010 & 2011). That increase in violations suggests either manipulation of the system consistent with Redflex' incentive, discussed above, to increase ticketing - or that continuation of the program has not made - and will not make - further improvement to the safety of City intersections.

Also on page 3, continuing onto page 4, there is a table of collisions. Was the sudden decrease in 2007 - which accounts for half of the overall decrease - due to a change in the city's policy about taking accident reports? Why didn't staff show the number of injury collisions over the years, or camera-by-camera? If staff does provide a table of injury accidents, it will be important to consider that over the last ten years, injury accidents are down 20% statewide even though the state's population is up.

It's also important to mention that people who have professional training in statistics are very critical of the type of reporting we see in this staff report. One peer reviewed journal article (copy attached) said:

"A common error among inexperienced researchers is to make simple before and after comparisons." "This reveals the complexity of conducting public health research because an outcome can be incorrectly attributed to an intervention if variables necessary to explain the outcome are excluded."

Not Covered in the Report

A. Please ask staff, or Redflex, to report to you about the percentage of tickets going to visitors to town. Most likely, you will learn that the huge majority of the tickets are going to visitors. (In the nine cities discussed in FAQ # 22 on highwayrobbery.net, visitors got between 69% and 98.5% of the tickets.)

That's important because operating cameras in an area with high turnover can never stop the running; there's always fresh meat, um, new visitors, making mistakes, being distracted or lost (unless you keep them out of the City by installing a dome, like the one they have in Chester's Mill, Maine). A visitor won't know that there's a camera up ahead, so the presence of a camera won't, by itself, keep him from running the light and endangering the other people - mostly local residents - who frequent the same intersection.

If a city genuinely wants to minimize running, and accidents, it will do these things to make the problematic intersection stand out, look more important.

1. Put up more visible signal lights (larger diameter, with bigger backboards, with more of them placed on the "near" side of the wider intersections).
2. Paint "signal ahead" on the pavement.
3. Install lighted overhead street signs for the cross street (also placed on the "near" side), and larger bulbs in the streetlights at the intersection.

Then there is the issue of what to do about right turns. The annual report Redflex filed with the Judicial Council on behalf of the City (copy attached) says that in 2013, Ventura issued 621 tickets for right turns. I submit that if the number and severity of accidents caused by right turns is high and has not declined despite years of photo enforcement, the City should study its records to determine when during the red phase most of those accidents occur and then install "blank out" signs programmed to light up and prohibit right turns during the high risk period.

B. Please ask staff, or Redflex, to report to you the average age of those ticketed, broken down by camera location. Age is of interest because those intersections where the age of

violators is found to be significantly higher probably need to be made more navigable for older drivers. Sometimes it can be as simple as lengthening the yellow light.

C. The last three pages of the staff report are a letter in which Redflex discussed the actions the company has taken since it was alleged that the company spent \$2 million to bribe an official in Chicago. But those allegations have long been common knowledge. What is not common knowledge, and in my opinion worse than what may have happened in Chicago, is the extent to which California officials, government employees and their associates have immunized themselves and their families from receiving photo enforcement and toll tickets by exploiting the CVC 1808.4 confidential registration address program. As of 2011 1.5 million private vehicles in California - about 5% of all registrations - had the confidential registrations. I would like to suggest that you ask staff how many City employees have the confidential registrations, and also ask the staff of the red light camera program to provide regular reports detailing their handling of the red light camera violations made by those enjoying confidential registrations.

Conclusion

The staff report claims that accidents are way down - over the same period that running has evidently been rising. With all due respect to staff, may I suggest that the accident statistics be re-run by an independent professional with credentials in the field of statistics? A professional statistician's report will compare the camera-enforced intersections to "control" intersections, and will tell you which changes are statistically significant, and which are not.

Riverside shut down their camera system last week. Last month South San Francisco shut theirs down. In June Laguna Woods shut theirs down. In May, Oakland and Walnut shut theirs down. In April Highland shut theirs down. In March Santa Ana voted to shut theirs down. In January Inglewood shut theirs down. In 2013 Belmont, El Cajon, Escondido, Hayward, Murrieta, Poway, Redwood City, San Diego, San Rafael and South Gate voted to shut theirs down. The authorities in those and other towns have said that the cameras made no significant difference. Their statements are attached below, for your review.

During the up-to-seven year term 42,000 tickets could be issued in Ventura, bearing \$21 million in fines, so this decision is an important one. It does not have to be made right now. If you want a lower price, a clearly legal contract, better statistics, and more input from the public, please bring this matter back to a later meeting.

Sincerely,

Jim

Attachments:

Statements by authorities in other towns, from highwayrobbery.net

Annual report filed with Judicial Council (required by CVC 21455.5(i))

USF Study, page 4 (full study available at <http://hsc.usf.edu/NR/rdonlyres/2511FA2D-6BC2-4091-9FD5-DBF711F420AA/0/2011pp00109FPHROrbanetal.pdf>)

cc: Media

Attachment

CANDOR BY OFFICIALS

City of Laguna Woods, California (cameras installed in 2005, closed June 2014): "Staff studied incidents over a 10-year period of time and found that the number of collisions related to signal violations at the two photo enforced intersections fluctuated slightly, but did not change in any significant manner after initiation of the red light photo enforcement program." City Manager Christopher Macon in staff report prepared for 5-28-14 council item.

<http://www.highwayrobbery.net/TrcDocsLagunaWoodsContr2014MayStaffRep.pdf>

City of Walnut, California (cameras installed in 2007, removed in 2014): "The statistical review of the RedFlex camera program did not reflect a reduction of traffic accidents, nor could the data support the cameras made the intersections safer." Mayor Tony Cartagena in 5-19-14 San Gabriel Valley Tribune article <http://www.sgvtribune.com/general-news/20140519/walnut-city-council-votes-to-end-red-light-camera-program>

City of Riverside, California (cameras installed in 2006, closed Sept. 2014): "Upon review CalTrans has determined that the accident rates do not warrant the camera systems at any of the five CalTrans locations and has requested their removal." Riverside Director of Public Works/City Engineer Thomas J. Boyd, in report prepared for Public Safety Committee meeting of 6-18-12, page 2-3.

Source: <http://www.highwayrobbery.net/TrcDocsRivers2012JuneStaffRepCloseProg.pdf>

More from Riverside: "It's impossible to attribute causality to one thing. I don't know whether and to what degree the red light cameras have contributed to a reduction in traffic crashes." Chief of Police Sergio Diaz.

Source: 7-14-12 Press Enterprise article <http://blog.pe.com/2012/07/14/police-chief-on-red-light-cameras-data-not-conclusive/>

More from Riverside: "I have spoken publicly against the program several times in the past, once before the public safety committee and twice before the entire council. Each time, I expressed my dislike of the general concept of the program, the unethical tactics used to collect fees, inconclusive data regarding their effectiveness and the realization of corporate profits at the expense of our citizens. My position on these matters has not changed." Retired 28-year Riverside fire captain, in letter submitted for the Oct. 2, 2012 city council meeting.

Source:

<http://www.highwayrobbery.net/TrcDocsRiversideContractOpinionByRetdFireCapt.pdf>

City of Emeryville, California (cameras installed in 2004, removed in 2012): "Staff also analyzed the number of accidents for the same seven year period and found that the red light cameras did not significantly impact the number of accidents." "Finance has estimated that elimination of the program would result in a \$200,000 per year savings to the City." Chief of Police Kenneth James, in reports submitted for 5-15-12 city council meeting. Source:

<http://web01.emeryville.org/sirepub/pubmtgframe.aspx?meetid=87&doctype=agenda>

City of Los Angeles (cameras installed in 2000, removed in 2011): "It was completely

wrong." "It was strictly designed to bring in revenue and didn't do anything for public safety." Councilmember Dennis Zine, who prior to his twelve years (termed out) on the council served 28 years with the LAPD, 18 years of which was on motors. Source: Los Angeles Daily News, 3-27-12, <http://www.dailynews.com/general-news/20120328/red-light-scofflaws-will-catch-a-break>

City of San Bernardino, California (cameras installed in 2005, removed in 2012): "It was the consensus of the Council that the City has lost business because of the red light cameras and they're not making the City any safer." Minutes, 1-24-11 city council meeting. <http://www.highwayrobbery.net/TrcDocsSanBernContr2011JanMins.pdf>

City of El Monte, California (cameras installed in 2003, removed in 2008): "A comparison of traffic collisions at Redflex monitored intersections vs. non-Redflex monitored intersections revealed that there is no statistical difference in the number of traffic collisions because of Redflex monitoring." Chief of Police Ken Weldon, in memo presented at 10-21-08 council meeting. <http://www.highwayrobbery.net/TrcDocsElMonteContrTerminateWeldonMemo.pdf>

More from El Monte: "We're spending a lot of staff time on this just to gain \$2000 a month." "It doesn't reduce accidents -- that's what our studies and results have come back." City Manager James W. Mussenden. Source: Granicus video of council meeting of 10-21-08, at 1:28:40, available on City's website at <http://www.ci.el-monte.ca.us/IWantto/View/VideosonDemand.aspx>

City of Upland, California (cameras installed in 2003, removed in 2009): "The system appears to have little influence on the number of red light related collisions at monitored intersections. At times, rear end collisions have actually increased." Chief Steve Adams, in memo presented at 3-9-09 council meeting. Source: <http://www.highwayrobbery.net/TrcDocsUplandStaffReport2009Mar9.pdf>

City of Whittier, California (cameras installed in 2004, removed in 2010): "Initially, the red-light program did change behaviors because it did lessen the number of red-light violations but over the long term it didn't appear to lessen the number of injury accidents." Assistant City Manager Nancy Mendez. Source: 12-6-10 Whittier Daily News <http://www.highwayrobbery.net/TrcDocsWhittierArticleProgTerminated.pdf>

City of Loma Linda, California (cameras installed in 2006, removed in 2010): "I believe these red light cameras are ways for city governments to legally extort money from their citizens." "The month after we lengthened the yellow light by one second, the number of violations that we have seen dropped by 90 percent." Mayor Rhodes Rigsby, M.D. Source: KABC - TV, 12-3-10, http://abclocal.go.com/kabc/story?section=news/local/inland_empire&id=7824510

City of Gardena, California (cameras installed in 2005, removed in 2011): "Our research in Gardena has revealed there is no significant traffic safety impact as a result of the use of the red light cameras. At almost every intersection where we have cameras, collisions have remained the same, decreased very slightly, or increased depending on the intersection you examine. When combining the statistics of all the intersections, the overall consensus is that there is not a noticeable safety enhancement to the public." Chief of Police Edward Medrano, in memo presented at 2-9-10 council meeting. Source: <http://www.highwayrobbery.net/TrcDocsGardenaContr2010staffRepFull.pdf>

City of Bell Gardens, California (cameras installed in 2009, removed in 2012): "To date, 95% of the funds collected from verifiable violations have been paid to RedFlex Traffic Systems for operating the cameras. The remaining 5% of funds collected have been utilized to partially offset costs of personnel to manage the system. The red light camera program has contributed to a moderate decrease in the overall number of accidents; however, no change in the overall number of injury accidents. Furthermore, the police department has recognized unanticipated personnel costs to manage the program. Based on this analysis, the red light camera program is not significant enough of a community safety benefit to justify the continuation of the program beyond the existing three (3) year agreement term that expires on March 29, 2012." Staff report presented at 9-26-11 council meeting. <http://www.highwayrobbery.net/TrcDocsBellGdnsContr2011staffRep.pdf>

City of Hayward, California (cameras installed in 2008, removed in 2013): "In response to Council Member Zermeño's question for reasons why cities chose to drop out of the Red Light Camera program... City Manager David commented that another reason was the lack of strong evidence in the industry that red light cameras were effective in reducing collisions." Minutes, 10-11-11 council meeting. <http://www.highwayrobbery.net/TrcDocsHaywardStaffRep2011Oct11mins.pdf>

More from Hayward: "There is no concrete data that supports the fact that red light cameras are supposed to reduce collisions." "That's not been our experience here in Hayward. We've had much better results with a redeployment of our motor officers. I think that having that personal contact with our community members makes a lasting impression. It's an opportunity for us to change behavior when it's wrong versus getting a ticket in the mail 2-4 weeks down the road." Hayward Police Chief Diane Urban, during 3-6-13 city council meeting. <http://sanfrancisco.cbslocal.com/2013/03/06/hayward-to-get-rid-of-red-light-cameras/>

City of Hawthorne, California (cameras installed in 2004, still operating as of 2014): "The hope is that driving behavior is corrected, not just through that intersection but through the rest of the time you're driving here." "You need to study accidents overall. Some of the data that you don't have is accidents for their entirety in our city. You know what, you're right, they're not going down. I wish they were." Hawthorne Police Captain Keith Kauffman, during 3-13-12 city council meeting. <http://highwayrobbery.net/redlightcamsdocsHawthMain.html#Council2012>

City of Escondido, California (cameras installed in 2004, removed in 2013): "Staff's analysis is, the data on accident rates is inconclusive." "We didn't find any change between photo enforced intersections and citywide. You're just as likely to be injured at a photo enforced intersection as you are citywide. So we didn't find anything to demonstrate that severity had been reduced." "Photo enforcement has the highest cost of all the countermeasures."

Escondido Assistant Director of Public Works Julie Procopio. Source: Video of council meeting of 8-21-13, at 1:26:50, available on City's official archive site, at <http://escondido2.12milesout.com/>

Effectiveness of Other Counter Measures

Counter Measure	Crash Reduction Factor *	Cost per Intersection /Year
Left Turn Protected Phasing	27%	\$5,000
Retroreflective Backplates	13%	\$2,000
Countdown Pedestrian Heads	20%	\$4,800
Improve Signal Coordination	27%**	\$2,400
Automated Enforcement (RLPE)	12%	\$89,800

* FHWA study estimates
 ** Right Angle Crashes Only

Slide shown by staff at 8-21-13 Escondido council meeting

More from Escondido: "Some of the best footage of really drastic collisions comes from red light cameras." "The cameras are there, the collisions still happen." Councilwoman Olga Diaz. Source: Video of council meeting of 8-21-13, at 1:30:00.

City of South Gate, California (cameras installed in 2003, removed in 2013): "The most disappointing thing from staff's perspective is the lack of change in behavior at the intersections." "If you look at the statistics that were provided by RedFlex, you didn't see a dramatic impact in the behavior over the years. In fact, a limited correlation between the implementation of RedFlex and the change in behavior. That's disappointing in the deployment, not just in this city, but everywhere." City Manager Michael Flad at council meeting of 9-10-13. Source: [audio clip](#) [audio of full item](#)

City of Moreno Valley, California (cameras installed in 2008, removed in 2009, City of Riverside camera on shared border removed in 2012 at Moreno Valley's request): "We took the heat without having any control over it." "I'm happy to see all those red light cameras go. ...The few people that like them just haven't looked at the reality of what it does. It takes away the discretion of a police officer." Moreno Valley Mayor Richard Stewart. Source: Riverside Press Enterprise article 8-6-12 <http://www.pe.com/local-news/riverside-county/riverside/riverside-headlines-index/20120806-moreno-valley-red-light-camera-to-be-shut-off.ece>

The San Mateo County (California) Superior Court (beginning in 2005 nine cities in the County installed cameras and four still were operating cameras as of Sept. 2014): "Are we

doing right by the public?" "It's questionable whether the trade-offs are appropriate." "There's a balance there, and I don't think we have found it." CEO John Fitton, San Mateo Superior Court, on 11-13-09.

Source:

<http://www.highwayrobbery.net/TrcDocsSanMateoCountyArticles2009Nov13CourtExecAngry.txt>

More from the San Mateo Superior Court: "I would advise cities who are contemplating installing red light cameras to move cautiously. I know these systems generate revenue for cities, but safety-wise there are questions about whether the red light cameras reduce accidents." CEO John Fitton, on 2-16-10.

Source: KGO-TV,

<http://www.abclocal.go.com/kgo/story?section=news/local/peninsula&id=7280823>

From the San Mateo County Grand Jury: "Based on the data provided by the cities, there was no overall trend indicating a noticeable change in accident rates before and after installation of red light cameras." "Recently, the City of San Carlos [extended the yellow light time to comply with state standards](#) and found that the number of citations fell dramatically." "As a result the revenue from red light citations could no longer cover the associated costs."

Source: 2010 Grand Jury Report

<http://www.highwayrobbery.net/TrcDocsSanMateoGrandJuryFinalRep.pdf>



MAKING A **SAFER** WORLD.

Tuesday, August 12, 2014

Administrative Offices of the Courts
Attn: Traffic Signal Automated Enforcement Photographic Records
455 Golden Gate Avenue
San Francisco, CA 94102-3688

RE: Redflex Traffic Systems Inc. filing of V C Section 21455.5 Traffic Signal Automated Enforcement Photographic Records

To whom it may concern,

Enclosed please find the annual reports required under V C Section 21455.5 Traffic Signal Automated Enforcement Photographic Records for 2013. Should anyone at the Administrative Offices of the Courts have any questions please contact Redflex Traffic Systems directly at:

Redflex Traffic Systems Inc.
23751 N. 23rd Ave.
Suite 150
Phoenix, AZ 85085
Phone: 623-207-2000

Enclosed: 2013 V C Section 21455.5 Traffic Signal Automated Enforcement Photographic Records



MAKING A SAFER WORLD.

To remain in compliance with California Vehicle Code 21455.5 (i) Redflex Traffic System and our contracted Government Agency has produced this report for the Judicial Counsel for the calendar year 2013:

Government Agency:

Ventura Police Department

The number of alleged violations in 2013 captured by the systems they operate:

5,347

The number of citations issued in 2013 by a law enforcement agency based on information collected from the automated traffic enforcement system:

4,820 Citations filed with the Court

For citations identified in paragraphs (2), the number of violations that involved traveling straight through the intersection, turning right and turning left (if known)

Straight: 2,873

Right: 621

Left: 1,326

The number and percentage of citations that are dismissed by the court:

77 (1.6 %)

The number of traffic collisions at each intersection that occurred prior to, and after the installation of, the automated traffic enforcement system:

Information not available.

- The Butler (2001) study was not accessible to us; however, the NHTSA compendium reported it but did not find a significant safety benefit to cameras.
- Cunningham and Hummer (2004) merged outcomes from RLC approaches with non-RLC approaches, meaning their findings are not specific to RLC sites.

More recently, an analysis published in the *Journal of Trauma* (Wahl et al., 2010) reported an RLC program was ineffective in producing a safety benefit. The authors suggested alternative interventions should be pursued.

Some studies are reported to use "unscientific" research methods. What does this mean?

The NHTSA's compendium (Decina et al., 2007) criticized some RLC review studies for failing to control for other sources of variation in the outcome measure. The criticism stems from these studies failing to account for other factors that can increase or decrease crashes, such as changes in traffic volume or a long running time trend of declining injury crashes. A common error among inexperienced researchers is to make simple before and after comparisons. Decina et al. (2007) identified the following RLC review studies as violating this research tenet, meaning these reports should *not* be used in RLC decision making:

- Cochrane Collaboration (Aeron-Thomas & Hess, 2005);
- Transportation Research Board (McGee & Eccles, 2003);
- *Traffic Injury Prevention* (Retting, Ferguson, & Hakkert, 2003);
- *Road and Transport Research* (Hakkert & Gitelman, 2004); and
- Proceeding from Transportation Research Board conferences (Flannery & Maccubbin, 2002; Persaud, Council, Lyon, Eccles, & Griffith, 2005).

To illustrate the importance of including meaningful variables in a study, Table 2 provides the variables integrated into each of the five analyses that we critiqued in 2008. The studies that integrated relevant independent variables in the analysis found RLCs were associated with increases in crashes and injuries. This reveals the complexity of conducting public health research because an outcome can be incorrectly attributed to an intervention if variables necessary to explain the outcome are excluded.

Another type of research flaw in some RLC studies is the use of a process measure, such as violations or traffic citations, instead of an actual safety outcome, e.g., crashes or injuries. Unlike

crashes, citations are "endogenous," meaning officials responsible for issuing citations directly control the number issued. For example, Retting, Williams, Farmer, and Feldman (1999) studied violations, not crashes. In contrast, Wahl et al. (2010) analyzed violations and crashes and found violations decreased following RLC use, but crashes did not, meaning RLCs were ineffective in reducing crashes. Also, Lum and Wong (2003) studied stopping propensity at yellow lights, without analyzing the association between stopping propensity and crashes. It is not possible to make conclusions about safety associated with RLCs if the impact on crashes and injuries is not evaluated.

Is there an economic incentive in using RLCs?

RLC vendors and government entities clearly can receive an economic benefit from cameras, in addition to automobile insurance companies that use RLC tickets as a basis for increasing a driver's insurance rate. However, RLCs are merely an expense for motorists. Even if using the FHWA study (Council et al, 2005), which estimated annual crash cost savings per RLC site as \$38,845 (excluding the cost of fatal crashes), it affirms RLCs are economically disadvantageous to motorists. The estimated savings must be considered relative to the cost to motorists to achieve the savings. For example, in Temple Terrace, Florida, RLCs were installed in two directions at two intersections, for a total of four RLC sites. If believing the estimated annual savings of \$38,845 per site, the annual estimated crash cost savings to Temple Terrace drivers and/or their insurance companies would be \$155,380 (\$38,845 per site, multiplied by four sites). In the first year, 21,000 RLC tickets were issued in Temple Terrace, primarily to drivers making right turns (Shopes, 2009; Cohn, 2009). At \$125 per citation, the cost assessed to ticketed drivers was \$2.6 million, which greatly exceeds the estimated crash cost savings of \$155,380. This difference is an extremely adverse cost-to-benefit relationship for affected motorists, particularly as crashes were reported to increase at Temple Terrace RLC sites. The use of RLCs has a double negative effect for motorists, as they are put more at risk for both a fine and a crash.

Citations can become a taxation method. A study by the Federal Reserve Bank of St. Louis evaluated ticketing in North Carolina over a 14-year period, and found the issuance of tickets increased in the year following a decline in municipality revenues. The authors concluded tickets are not just used for public safety, but also to generate revenue (Garrett & Wagner, 2006). As a taxation method, RLCs are highly inefficient due to the large percentage of revenues that accrues to private out-of-state vendors,