SafeLight Program Analysis

City of Garland

November 2017

by Council Member Robert John Smith, District 8

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Foreword

The red light camera program has been hotly debated across the country. Supporters are looking for ways to improve public safety. Law enforcement wants to enforce the law using modern tools in order to be more effective, provide stronger evidence and reduce officer exposure to the risks inherent in traditional enforcement. Critics point to the convoluted legal implementation that skirted constitutional concerns and a lack of citizen oversight. They also question the real impact that the program has had on public safety. As a representative of my constituency, I felt it was my duty to study the program as thoroughly as possible, cut through much of the politics surrounding the program and make recommendations. In the spirit of impartiality, I've worked with supporters, law enforcement and critics to try and build a complete picture of the program. While I've used many outside sources for data and legal arguments, the conclusions within this document are my own. The statistical methods used to analyze the data were my own, and were chosen to be as clear and relevant as possible. I discuss my methods and possible sources of error later in the study.

This issue will boil down to three final questions.

1) Does the program improve public safety?
2) Is the program fundamentally legal, and did we implement it in a legal way?
3) What should the future of the program be?

Once I reached my initial conclusions, I went back through each section and asked myself two questions.

1) Is this a fair representation of what is really going on?
2) Do the results make sense, and can we base public policy on this data?

I then reminded myself of the price of getting this wrong. At the end of the day we are talking about the lives of my family, friends, and neighbors. There are no greater stakes than that.

I hope that this study provides an informative view of the Safe Light program for Garland and I hope that it leads to better public policy.

Robert John Smith
City Council Member, District 8
200 N Fifth St
Garland, TX 75040
P: 972-205-2292
F: 972-205-2504
rosmith@garlandtx.gov

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Overview

The SafeLight program is a red-light monitoring program that began in Garland in 2003. Since then, coalitions, cities, and states have questioned the program's effectiveness. Some states have banned the program altogether, and some area cities have been forced to halt their program by court order. Supporters state that the program improves safety at high violation intersections, acts as a force multiplier for local law enforcement, and ultimately saves lives. Critics dispute the public safety claims, question the legality of the program at both the state and federal constitutional level, and question the revenue streams.

This program analysis is designed to address claims made by both sides and use existing statistics, recent state-level studies, and case law to suggest a future path for the program.

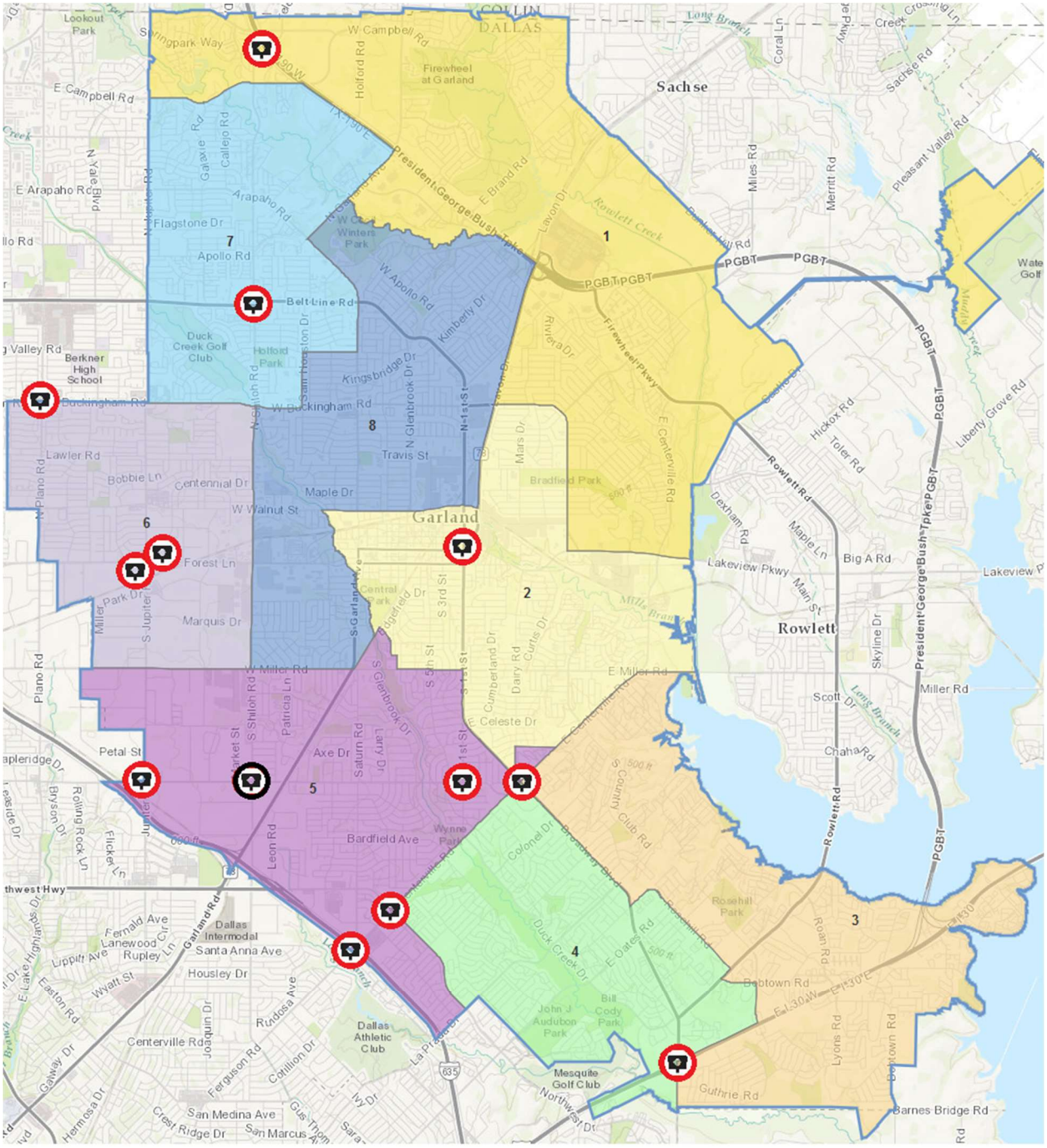
Program History

The SafeLight Garland program began in 2003 as part of a traffic safety initiative to reduce the incidents of red light running. Violators who pass through the sensors after the lights turn red receive a notice of violation along with a photograph documenting the date and time the violation occurred. The owner of the vehicle is liable for a $75 civil penalty. SafeLight income is restricted by law to covering direct program expenditures, traffic control enhancements, and public safety.

Program Mission Statement

SafeLight Garland's mission is to reduce red light running and the vehicle crashes, injuries, and deaths that can result from red light running. The program is tasked with enforcing the City ordinance created to address this dangerous driver behavior. SafeLight Garland serves as a force-multiplier for the Garland Police Department and provides public education regarding the program and the issue of red light running.

Camera Location Map



Camera Locations by Council District

How the Program Works

Business Rules

Garland keeps a set of business rules on file with our camera vendor. This determines the rules by which the vendor generates citation reviews.

Our rules are:

Question / Issue	Answer
Issue violations to out-of-state plates?	Yes
Minimum red light time showing on 1st violation photo	1/10th of a second
Minimum yellow light time showing on 1st violation photo	3.5 seconds
Number of days before vendor must submit violations for officer review and mail citation to registered driver of vehicle	30 calendar days
On-duty law enforcement personnel cited	On-duty emergency vehicles must be forwarded to the Garland PD for internal review. “Special Incident Form”
City and county emergency vehicles cited	On-duty emergency vehicles must be forwarded to the Garland PD for internal review. “Special Incident Form”
Privately owned emergency vehicles cited	Yes
Non-emergency city & county vehicles cited	Yes
Off-duty law enforcement personnel cited	Off duty police officers and city personnel should be forwarded as normal.
Fleet Vehicles	Yes
Rental or lease vehicles	Yes
Dealer plates	No
Temporary plates	No
Hazardous road conditions / stop bar not visible	If there is no stop bar visible, vendor will reject as “Stop bar not visible”. If there is a partial stop bar, vendor will process events as normal.
Funeral procession	No citations will be processed when a vehicle is traveling through a red light as part of a funeral procession if a police officer / vehicle is visible in the image.
Officer directing traffic	No citation will be processed if there is an officer directing traffic in the image of video.
Vehicle joint ownership	Up to the first two registered owners’ names will be used.
Criteria for violation	1) Legible plate photo 2) Entire vehicle must be behind the leading stop bar in the primary photo and progressing into the intersection in secondary photo, for semi-

	trucks this applies to the vehicle only not the trailer, for other long vehicles see supervisor. 3) No funeral procession or intersection control in progress. 4) Multiple violations are accepted. 5) Straight-through movement on red: Video should be available for vendor to process violation before forwarding to officer's queue. 6) Right-turn on red: Video must be available for vendor to process violation before forwarding to officer's queue. 7) Left turn on a red from a one-way street onto a one-way street will be cited if the rear tires of the vehicle have passed the stop bar. The enforcement officer will review the video clip to determine issuance if the vehicle did not stop first before proceeding. Video must be available for vendor to process violation before forwarding to officer's queue.

Detection and Citation

When the camera system detects a violation, three separate photos are taken of the vehicle.

1) The license plate of the vehicle.
2) The vehicle's position just before the traffic stop bar.
3) The vehicle in the intersection.

SAMPLE ONLY

SAMPLE ONLY

SAMPLE ONLY

The photos and a video are forwarded to the operations center of the vendor. Each violation is reviewed against the city's defined operating rules by two separate employees and approved or discarded.

The violations are then made available on a secure website for Garland Police to review and either accept or decline the violation. If the violation is declined, the citation is canceled. If the violation is approved, then a citation is mailed to the owner of the vehicle. The rate of citation declines by Garland PD is around 7%.

A sample of the mailed violation follows on the next page. It provides the relevant information of the traffic offense and provides a link and login information for the vehicle owner to review the evidence.

SAMPLE ONLY

GARLAND

NOTICE OF VIOLATION

AUTOMATED RED LIGHT ENFORCEMENT PROGRAM

Mail Date: 08-18-2017

You can view full color versions of the images below at: http://www.public.cite-web.com	
Citation Number	Pin Number

Under Article VI, Chapter 26 of the Code of Ordinances of the City of Garland, Texas, the owner of a motor vehicle is liable for payment of a civil penalty in the amount of $75.00 if the owner's vehicle proceeds into an intersection equipped with an automated red light enforcement system when the traffic control signal for that vehicle's direction of travel is emitting a steady red signal. A recorded image is evidence in a proceeding for the imposition of a civil penalty.

[redacted]

On Aug 11, 17 at 04:46 PM, your vehicle was photographed driving through the listed intersection while the traffic signal was red. On the back of this notice you will find detailed information regarding payment, adjudication/hearing rights, and assignment of responsibility.

YOU MUST RESPOND TO THIS NOTICE OF VIOLATION BY **09-18-2017**

VIOLATION INFORMATION

Notice Number: [redacted]
Violation Date: 08/11/2017
Violation Time: 04:46:36 PM
Location: NB Plano Rd @ Buckingham
[redacted]
Due Date: 09-18-2017
Amount Due: $75
Vehicle Make: MITS
Posted Speed: 40 mph
Light was Red in 1st Photograph: 0.50

THE IMPOSITION OF A CIVIL FINE IS NOT A CONVICTION FOR ANY PURPOSE, INCLUDING INSURANCE RATES. AN ARREST WARRANT WILL NOT BE ISSUED TO THE OWNER AND THE IMPOSITION OF THE CIVIL PENALTY IS NOT RECORDED ON THE OWNER'S DRIVING RECORD.

Failure to pay the civil fine or to contest liability within (30) calendar days is an admission of liability in the full amount of the civil fine assessed and will result in an additional late fee penalty of $25.00 and waives the right to appeal at a hearing. In addition, you will be subject to formal collection procedures including, but not limited to, being reported to a credit reporting agency, a civil lawsuit and a hold on your registration with the Department of Transportation or County Tax Assessor.

CERTIFICATE

I am a duly authorized officer/technician/agent of the Garland Police Department. Based on my inspection of recorded images, the motor vehicle was operated in violation of §26.61(B) of the Code of Ordinances of the City of Garland, Texas. Sworn to or affirmed by: APPROVER:_____ ID#_____

QUESTIONS ABOUT THIS NOTICE, CALL THE AUTOMATED RED LIGHT ENFORCEMENT PROGRAM CUSTOMER SERVICE (800) 603-4998

Detach and return this portion with your payment

Registered Owner of Vehicle [redacted]

Notice Number [redacted] Vehicle Tag [redacted]

AMOUNT DUE BY 09-18-17:	$75
AMOUNT DUE IF PAID AFTER 09-18-17:	$100

Pay your Red Light Citation Online
http://www.safelightgarland.com under the "Online Services", select "Online Payments"

Or send a check or money order payable to:
City of Garland
Automated Red Light Enforcement Program
PO BOX 1730,
DENVER, CO 80201-1730.

Amount Paid: $

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Pay on-line using PAY-BY-WEB at:
www.safelightgarland.com

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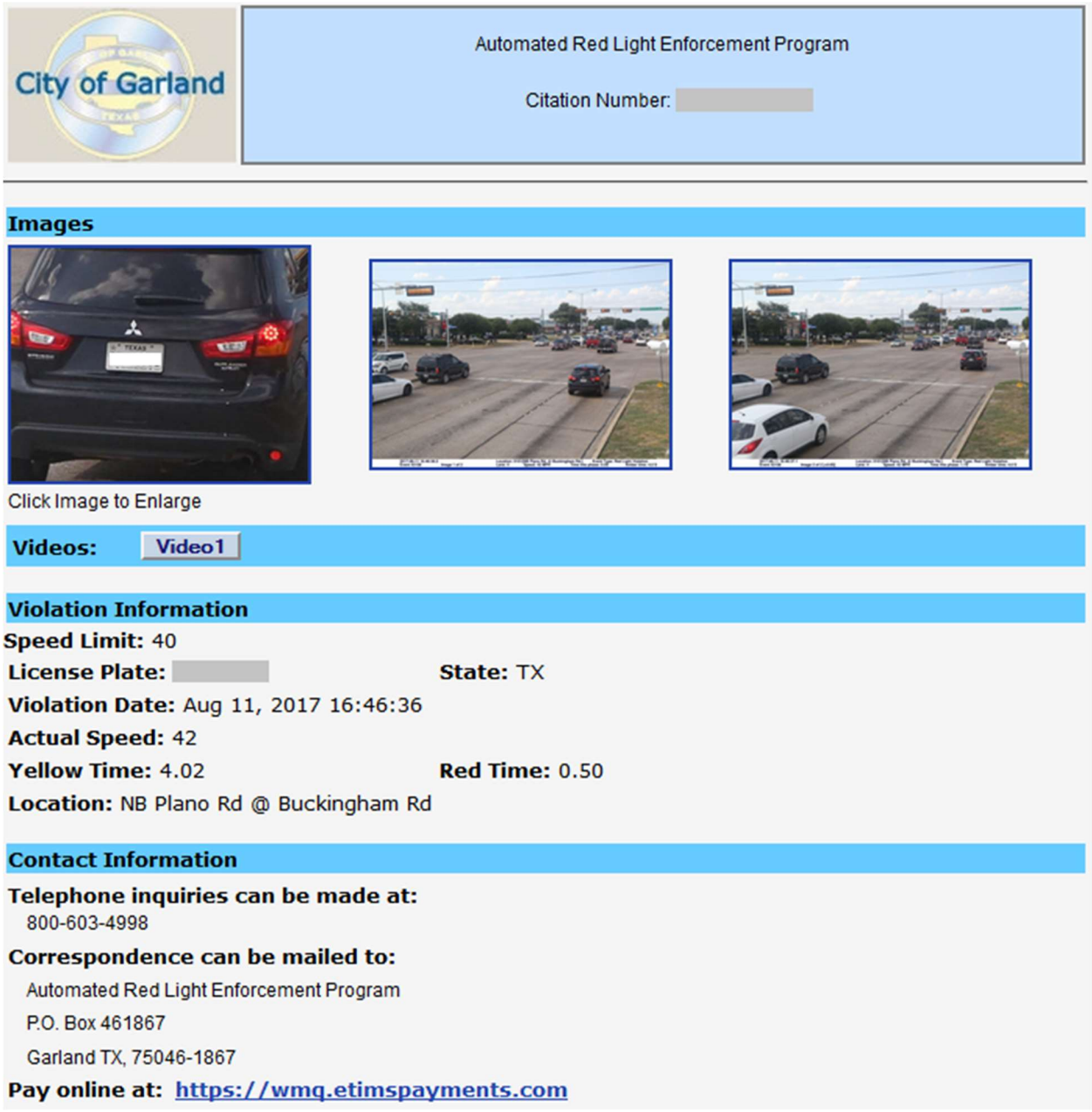
Driver Review

Once the driver has received the citation, they are able to review the evidence at:

https://public.cite-web.com/

SAMPLE ONLY



SAMPLE ONLY

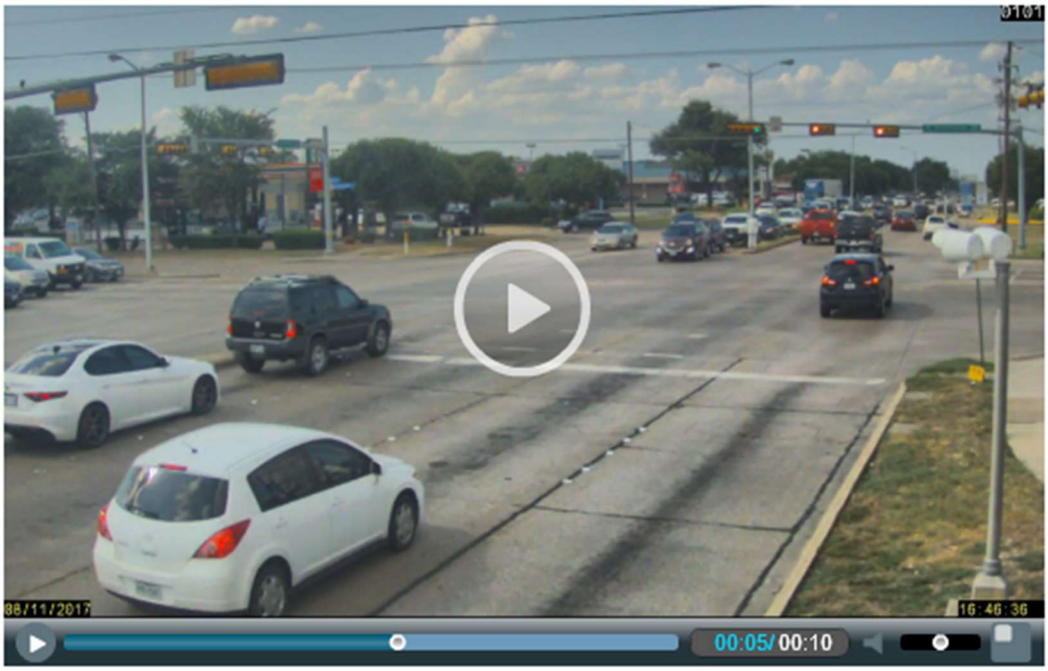
Clicking the “Video 1” button brings up a video of the violation.

SAMPLE ONLY

CONDUENT

Public Safety Solutions
Saving Lives Through Technology

To Download Video - Right Click this line and select "Save Target As..."



SAMPLE ONLY

Once the citation has been received and/or reviewed by the vehicle owner, they have a number of possible actions that they can take:

1) Pay the fine via web, mail or walk-in.
2) Deny commission of the violation. This triggers a civil hearing.
3) Request a dismissal under the following criteria:
   a) Vehicle or license tag was stolen.
   b) Vehicle had been sold, disposed of, or ownership had been otherwise transferred.
   c) The owner was not in operation of the vehicle at the time, provided that the owner was engaged in leasing, selling or renting the vehicle.

Hearing

Vehicle owners engaging in an administrative hearing may have their citation confirmed or dismissed.

Program Finances

Fig 1. SafeLight Fund - History of Revenues and Expenditures

Fiscal Year	Safelight Revenue	Safelight Expenditures (1)	Revenue Over (Under) Expenditures
2004	1,007,145	395,410	611,735
2005	1,418,676	1,064,635	354,041
2006	867,371	366,229	501,142
2007 (2)	621,797	617,996	3,801
2008	500,076	424,753	75,323
2009	1,088,921	1,230,685	(141,764)
2010	998,746	962,071	36,675
2011	889,003	859,880	29,123
2012	1,140,405	1,143,620	(3,215)
2013	1,492,290	1,238,575	253,715
2014	1,470,812	1,255,607	215,205
2015	1,879,135	1,536,326	342,809
2016	2,592,932	2,188,495	404,437

Notes:

1) Includes funding sent to State of Texas (50% of fines that exceed program cost).

2) In FY 2007 the Safelight Fund was created to track revenues and expenditures associated with the Safelight Program. Previously the funds were tracked in the General Fund.

Fig 1: Data provided by City Staff by request of Council Member Robert John Smith on 2017-07-06.

While the SafeLight program fund is generating revenue now, there have been years in the past where the program ran a deficit. Recent efforts by the county government have improved fine collection rates, making the program self-sustaining. This is in-line with the original program goal of being revenue-neutral to the taxpayers. The program continues to be paid for only by red light violators.

Program Statistics by Intersection

See Appendix A for full statistics. This program summary shows conditions that have improved in green, no change in yellow, and worsening conditions in red.

Example:

Intersection	Activation Date	Avg Daily Traffic Change	Avg Citation Rate	Avg Crash Rate	Avg Fatality Rate	Avg Injury Rate	Total Violator Cost
Street 1 @ Street 2	1/1/2001	Positive numbers mean more average daily traffic. Negative means less.	Red / positive numbers mean that we are issuing more citations on average per day, per daily volume	Red / positive numbers mean that the crash rate has increased over time as a % of average traffic volume	Average increase/decrease of fatalities over time as a % of average traffic volume.	Red / positive numbers mean that the injury rate has increased over time as a % of average traffic volume	Total amount fined since the activation date.

Overall Impact of the Program

Intersection	Activation Date	Avg Daily Traffic Change	Avg Citation Rate	Avg Crash Rate	Avg Fatality Rate	Avg Injury Rate	Total Violator Cost
Beltline @ Shiloh	7/1/2006	-394	0.00161481%	0.00000334%	0.00000000%	0.00000060%	$ 1,515,525
Broadway @ Centerville	7/14/2006	2,230	-0.00035607%	-0.00000231%	0.00000000%	-0.00000043%	$ 1,488,525
Broadway @ IH-30	5/9/2009	-420	-0.00023200%	0.00000203%	0.00000000%	0.00000415%	$ 484,950
Centerville @ I-635	1/1/2016	-649	-0.00967822%	-0.00005069%	0.00000000%	-0.00003782%	$ 1,635,450
Centerville @ NW Hwy	7/28/2006	12	0.00456713%	0.00000570%	0.00000000%	0.00000101%	$ 1,683,525
First St @ Ave B	4/24/2009	-1,037	-0.00048349%	0.00000251%	0.00000000%	-0.00000038%	$ 776,100
First St @ Kingsley	8/7/2006	-168	0.00452170%	0.00000365%	0.00000000%	-0.00000055%	$ 1,131,750
Forest @ Jupiter	7/5/2006	-468	0.00096202%	0.00000082%	0.00000000%	-0.00000103%	$ 2,100,750
Jupiter @ Kingsley	9/2/2003	85	0.00192871%	0.00000403%	0.00000019%	0.00000500%	$ 1,039,125
Plano @ Buckingham	9/2/2003	-1,197	0.00220464%	0.00000563%	0.00000000%	0.00000339%	$ 1,683,525
SH 190 @ Shiloh	4/24/2009	-1,578	0.00001371%	0.00001437%	0.00000000%	0.00001433%	$ 705,600
Shiloh @ Kingsley*	8/5/2006	388	0.00021682%	0.00000173%	0.00000000%	-0.00000756%	$ 476,475
Totals		-326	0.00046027%	-0.00000099%	0.00000002%	-0.00000106%	$ 14,244,825

** Deactivated in 2017*

Trending Increase / Decrease of Red Light-Related Traffic Accidents

Intersection	Change in Crash % as a total of all traffic	Pre-Activation Study Included?
Beltline @ Shiloh	0.3337%	N/A
Broadway @ Centerville	-0.2306%	N/A
Broadway @ IH-30	0.2035%	Yes
Centerville @ I-635	-5.0688%	Yes
Centerville @ NW Hwy	0.5702%	N/A
First St @ Ave B	0.2511%	Yes
First St @ Kingsley	0.3649%	N/A
Forest @ Jupiter	0.0823%	N/A
Jupiter @ Kingsley	0.4029%	N/A
Plano @ Buckingham	0.5626%	N/A
SH 190 @ Shiloh	1.4367%	Yes
Shiloh @ Kingsley	0.1729%	N/A

It should be noted that while injury rates appear to have declined under this program, the national injury rate average has declined by 33% since 2003, the year that Garland's SafeLight program began. *(https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812318 Figure 3, Page 3)*

Statistical Methodology and Exceptions

Trends were calculated using a standard linear expected value algorithm (slope intercept). This can be replicated in Microsoft Excel using the formula *=LINEST(RangeStart:RangeEnd)*.

Individual analysis pages zoomed into a 'per 100,000 cars' view in order to better illustrate percentage changes from year to year. The main summary page pulls back out to look at overall traffic and program effectiveness. Each view attempts to provide maximum understanding and benefit to the reader.

Centerville @ IH635 (2016) is a newly-reactivated intersection, so traffic values were not provided on the state report. Values from the pre-activation report (18 months prior to the March 2016 activation) were used in the 2016 analysis.

Shiloh @ Kingsley (2016) was deactivated and moved to Centerville @ IH635.

When available, pre-activation data has been computed as part of the trend line to better show program performance.

Sources of Error

1) Vehicle Counts - Traffic studies were estimates. Since a traffic study was not performed every day of every year and volumes were estimated, all traffic numbers have a margin of error.
2) Causation - Accident causes are not part of the reporting criteria. Driver distraction, DUI/DWI or mechanical failure of the vehicle are not taken into consideration.
3) Political Volatility – Due to the amount of discussion that this issue generates, many information sources are highly polarized. Research has been difficult for finding more than anecdotal evidence on yellow light lengths, program problems and recent litigation. This study has made every reasonable effort to verify data and cite reliable sources.
4) Statistics – Collection of statistics on intersection crash data was formalized by the state and began in the 2009 reporting period. Data quality degrades the further back you search. Only four of the twelve intersections had data reported that covered the full life of the monitoring including the eighteen-month pre-activation study.
5) Intersection Configuration – Changes in properties near monitored intersections can cause traffic patterns to change. For instance, a K-8 school was added near the intersection of Shiloh @ Beltline road. This can change driver behavior based on the presence of nearby school zones. Similarly, taller buildings which may block the sun, building demolition, bus stops, and nearby long-term construction can all have an impact. This study did not attempt to account for those variables.
6) Citation counts have increased over the years due to advances in technology. Originally the cameras would only catch one violator per red light cycle, and only in one lane. Current technology allows the camera system to catch all violators in straight and right turn lanes each cycle.

Despite many possible sources of error, these same statistics would be used to both support and oppose the continuation of the program. The statistical picture painted in the preceding section is a good faith, best-guess effort.

Sensible Enforcement

There are many things that the SafeLight program does well. Staff has looked at implementation and operational problems in other cities and attempted to compensate for them. Staff has also examined situations that appeared to be unfair to the driver, and eliminated those citations where possible. The goal has been to cite bad intentional decisions and distracted driving, not to cite wrong split-second decisions.

'California' Stops

The city currently has a floor speed limit of 12 mph on right-on-red violations. This means that the city does not pursue violators who make slow, incomplete stops at intersections. These 'technical' violations of law may pose no safety risk, and are appropriately excluded by the city. Additionally, the city ignores violators that straddle the line into the crosswalk and those that enter the intersection within 0.1 seconds of it turning red.

Yellow Light Length

Yellow light lengths are reportedly set to 1 second per 10 mph of the street speed limit. Intersections were spot-checked on July 9, 2017 to verify timing.

Checked intersections were Shiloh @ SH190 and Shiloh @ Beltline. The results matched published values within the margin of error (explained below). The videos for those checks are available for review. Videos were recorded using a Samsung Galaxy Note 5. The video length was trimmed down for presentation purposes. Unedited video was preserved and is available upon request.

Based on the tools used (Windows Movie Maker, Win10), the frame time interval available is .03 seconds. This gives the recording a margin of error of +/- 00.06 seconds.

Intersection	Video Length	Green End	Yellow Start	Yellow End	Red Start	Measured Length +/- 00.06 sec	Reported Length
Shiloh @ Beltline	12.97s	00:07.00	00:07:03	00:11:47	00:11:50	**4.38 – 4.50 sec**	**4.5 sec**
Shiloh @ SH190	10.57s	00:03:47	00:03:50	00:07:47	00:07:50	**3.91 – 4.03 sec**	**4.0 sec**

Fine Amounts

Garland fines violators $75, which is the amount set by state law.

Alabama	$100	Missouri	$100
Arizona	$165-$250	Nevada	No Programs
Arkansas	No Programs	New Jersey	$85
California (criminal)	$490	New Mexico	$75
Colorado	$40-80	New York	$50-$100
Delaware	$75-$230	North Carolina	$50-$100
D.C.	$150	Ohio	$100-$200
Florida	$200	Oklahoma	No Programs
Georgia	$70	Oregon	$260-1000
Hawaii	$77	Pennsylvania	$100
Illinois	$100-$500	Rhode Island	$75
Indiana	No Programs	South Dakota	No Programs
Iowa	$45-$150	Tennessee	$50
Kansas	No Programs	**Texas**	**$75**
Louisiana	$100-$140	Virginia	$100 - $200
Maryland	$100	Washington	$124-250
Michigan	No Programs	West Virginia	No Programs
Minnesota	No Programs	Wisconsin	No Programs
Mississippi	No Programs		

http://www.photoenforced.com/fines-dmv-points.html#.WV8dtSlw9lY

Officer Review

The City of Garland does not outsource its final violation review. All recorded incidents are reviewed by a licensed and sworn peace officer. This lends integrity to the program and reduces the possibility that a camera company acting in its own interests can unilaterally increase its revenue by overzealous enforcement. As per state law, the city pays a fixed rate per camera per year no matter the citation volume.

Legal Questions and Case Law

Moving traffic violations are a criminal offense. However, in Texas the enabling legislation for red light cameras allows for both criminal and civil enforcement. Criminal enforcement requires a positive identification of the driver, whereas civil enforcement allows the city to cite the owner of the vehicle. Garland has opted to enforce this law with a civil fine. To ensure that they could collect that fine, they partnered with County governments to use their Scofflaw program to enforce collection.

"Section 502.185 of the Texas Transportation Code allows a freeze on the auto registration of those who owe a city and/or county money for a fine or fee that is past due. The vehicle registration block can only be removed by paying your fines and fees."
http://www.dallascounty.org/department/tax/mv_what_is_scofflaw.php

And while the offender may appeal the fine within the system and get a secondary review of the alleged violation, they are not afforded the opportunity to have their day in court, with a jury of their peers. This is purely a civil, administrative fine. The city acts as both the law enforcement, the judge, and the jury. There are no additional appeal processes.

Cases

There are many cases regarding red light cameras that have been heard and ruled on over the past five years. This is a very contentious program and the case law has not been fully settled nationwide. The following is a sampling of commentary about recent, relevant cases that may affect Garland.

Florida: In 2004, the Fourth District Court of Appeals ruled that citations must be issued only by those vested with policing authority. Garland appropriately reviews and issues citations from within the police department.

https://edca.4dca.org/DCADocs/2012/1312/121312_DC05_10152014_070723_i.pdf

Richardson, TX "Bowman asserted in court filings that the red-light camera ordinance, and the state's transportation code, was unconstitutional. The Texas transportation code requires cities to complete a traffic engineering study and appoint a citizens advisory committee before installing red light cameras. Richardson has not done so."

https://www.dallasnews.com/news/richardson/2016/07/06/judge-sides-man-said-richardson-red-light-cams-violated-rights

Program Start Date

Garland was one of the first cities to use a red light camera program, and many of our intersections are grandfathered in under prior law. However, any intersection that was activated after the law took effect September 1, 2007 is required to have both an advisory board's approval and a traffic study prior to implementation. All existing intersections are required to report yearly statistics. There is debate on whether existing intersections required reauthorization. State law does not specify.

Legal Liability

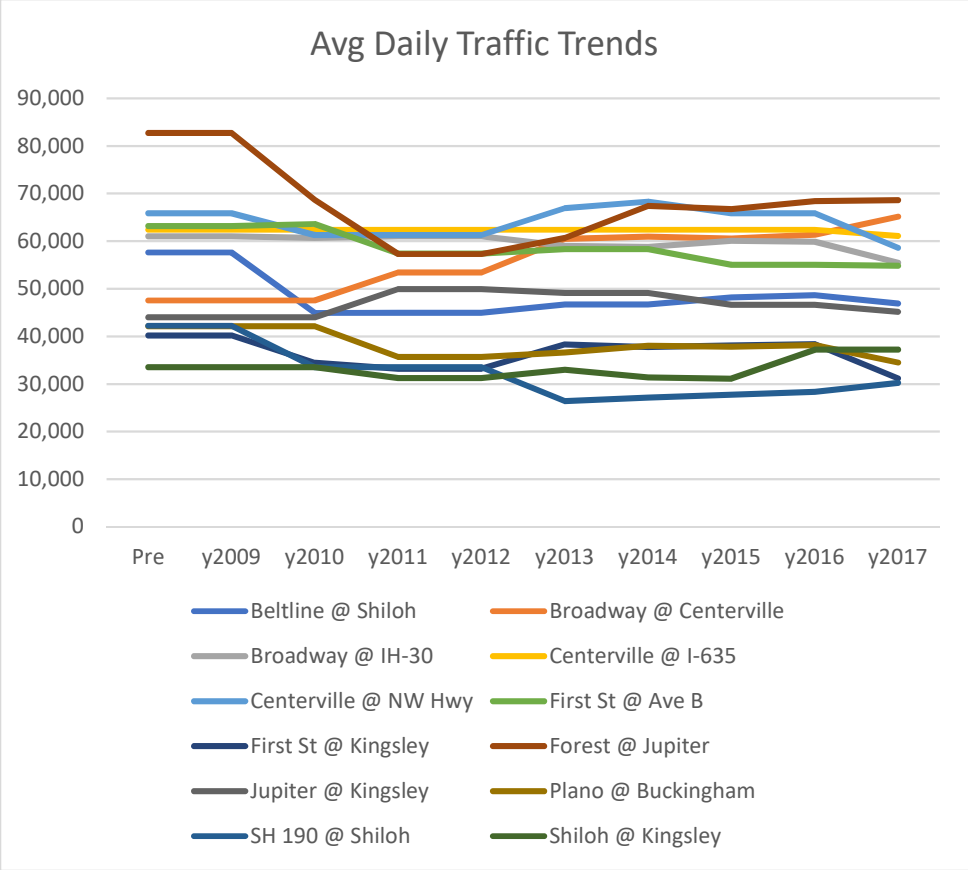
It is possible, although unlikely that the city will be liable for back-payment of all citations issued for all newly-activated cameras after September 1, 2007 that either were activated without the proper study and board approval, or in cases where no proof exists that those events occurred. That amount as of June 30, 2017 is approximately $2,362,650. The value is a total of all citations issued for four intersections:

Broadway @ IH-30
Centerville @ I-635
First St @ Ave B
SH 190 @ Shiloh

“Lies, Damn Lies, and Statistics”

Intersection Avoidance

There is a theory floated in many circles that injury rates drop off at monitored intersections due to ‘intersection avoidance’. The assumption is that once monitoring begins at an intersection, a variable percentage of drivers opt to use a different intersection. The Average Daily Traffic volume does show a decrease over time at most of the monitored intersections. Based on the unlimited number of variables that influence driver decisions, it could be argued that this statistic is meaningless. For instance, at Shiloh and Beltline, a new school was opened a few years ago which causes morning traffic slowdowns. It is reasonable to assume that drivers take other routes to avoid that traffic and not necessarily the red light cameras. However, since virtually all of the monitored intersections show the same pattern, the traffic trends are included in this study for consideration.



Driving Under the Influence

According to the Federal Government, 12.9% of all vehicle crashes have one or more drivers that are impaired.

Page 159, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812013

Since impaired drivers are unable to function behind the wheel, it stands to reason that camera deterrence is irrelevant for those cases. Roughly 1/8th of accidents at red light intersections are not influenced by the SafeLight program.

Injury Rates

The rate of injury due to vehicle accidents is generally on the decline and has been since its peak in 1996. This rate drop has largely been attributed to enhanced safety features in motor vehicles. According to NHTSA (National Highway Traffic Safety Administration), rates have declined from an estimated 115 injuries per 100 million vehicle miles travelled to around 78. While this does not directly correspond to activity at intersections, a general conclusion could be drawn that the injury rate has organically dropped by one third. One would expect that injuries at intersections would drop by a roughly similar amount with or without the presence of red light cameras.

Page 3, Figure 3, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812318

Statistical Problems and Incorrect Performance Indicators

In the 2011-2012 Operating Budget, the key performance measures were:

“Decrease in Crashes Caused by Red Light Runners at Monitored Approaches”

“Decrease in Injuries at Intersections with Red Light Cameras”

The numbers reported for 2009-10 Actual were a 60% drop in crashes, and a 28% drop in injury rates.

There are several issues with these statistics.

Injury accident numbers are largely affected by the number of passengers involved and the safety features available in the vehicle. Correlation does not equal causation. This statistic is nearly irrelevant as a measure of the success or failure of the program.

The number of accidents did decrease from pre-monitored values, but according to the average daily traffic statistic supplied, the traffic had a drop-off that was statistically similar. The performance measurement should have been calculated as Accidents as a percentage of overall traffic. This analysis takes a more appropriate approach by measuring traffic accidents against the total of all estimated traffic.

Even with these differences in approach to program statistics, staff has been consistent by using this method in other budget years. The operating budget for 2010-2011 showed an increase of 20.4% in crashes, and a 4.6% increase in injuries using the same approach. A change in method is not necessarily warranted for the purposes of the operating budget, but is inappropriate for studying program effectiveness.

Studies and Bans

As of July 2017 fully-automated cameras are banned or otherwise generally prohibited in: Arkansas, Maine, Mississippi, Montana, Nevada, New Hampshire, New Jersey, Ohio, South Carolina, Utah, West Virginia and Wisconsin.

Studies included for further reading:

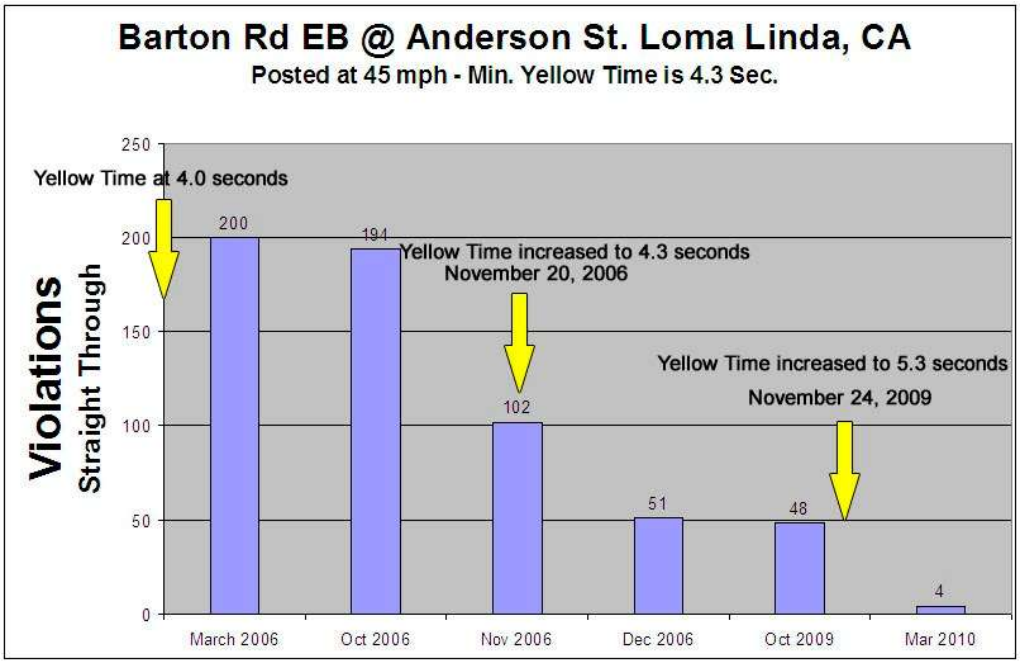
Texas: https://tti.tamu.edu/group/stsc/files/2011/03/Red-light-camera-effectiveness-070610-w-Garland-correction1.pdf

Virginia: https://www.motorists.org/wp-content/uploads/2015/09/2007Virginia.pdf

Australia: http://www.monash.edu/muarc/research/our-publications/muarc073

Yellow Light Length and Loma Linda, California

"In Loma Linda, CA, city officials increased the yellow signal time by 0.3 seconds and saw an immediate 75% decrease in violations from a monthly average of 197 per month to an average of 50 per month. When the yellow time was increased an additional 1.0 second, violations decreased a further 92% to an average of 4 per month. The total decrease in violations in Loma Linda was 98% when the yellow time was increased from the original 4.0 seconds to 5.3 seconds. The reduction in violations was maintained through the end of the red light camera program in November of 2010."



http://saferstreetsla.org/679/case-studies-longer-yellow-light-times-improve-safety/

"The month after we lengthened the yellow light by one second, the number of violations that we have seen dropped by 90 percent," said Mayor Rigsby.
http://abc7.com/archive/7824510/

Loma Linda moved its yellow light length to 1 second per 10 mph of average speed for the road. For streets that had a speed limit well below actual traffic speed, this drove accident rates down even further. This is a meaningful distinction to make when discussing yellow light times. California recently enshrined this concept into their traffic control regulations.

"Caltrans ruled that cities can either use the real speed of traffic or add 7 to 10 miles per hour to their current basis in order to calculate yellow-light phases."
http://www.laweekly.com/news/yay-longer-yellow-traffic-light-phases-now-required-by-caltrans-5275044

2011 APHA Study

The American Public Health Association produced a study in October 10, 2011 which concluded that red light cameras reduced accident rates by 7% (straight-through) and right angle crashes by 32% when compared to other cities without a camera program.

http://ajph.aphapublications.org/doi/full/10.2105/AJPH.92.11.1822

There are a number of problems with this study.

1) Accidents were compared to previous numbers irrespective of total traffic volumes. While they picked the appropriate response variable, they failed to use overall traffic as an explanatory variable. The response variable is the focus of the question. An explanatory variable is one that can explain changes in a variable. This is a glaring omission.
2) This study did not include overall reductions in fatalities and injuries due to improved vehicle safety standards. It also did not compare these rates to non-intersection accidents and attempt to correlate the values.

The study itself also notes in its conclusions that:

> *"Less is known, however, about the impact of red light camera enforcement on crashes, the outcome of primary interest. Such enforcement would be expected to reduce the frequency of right-angle collisions—the principal type of crash associated with red light running—at signalized intersections. Also, some additional rear-end crashes might result from nonuniform changes in driver behavior. For example, drivers, if they stop more often for red lights, may be struck from behind by drivers not intending to stop."*

The APHA study made no attempt to analyze trends in moving right angle accidents to rear end crashes.

This study by contrast, looks at both right angle and straight crashes, uses traffic volume as an explanatory variable, and looks at long-term performance of the camera system.

State Law

Texas state law governs the red light camera program. Each section of that law is listed here with commentary and related data.

Section 707.003

Sec. 707.003. INSTALLATION AND OPERATION OF PHOTOGRAPHIC TRAFFIC SIGNAL ENFORCEMENT SYSTEM. (a) A local authority that implements a photographic traffic signal enforcement system under this chapter may:

(1) contract for the administration and enforcement of the system; and

(2) install and operate the system or contract for the installation or operation of the system.

☑ Garland contracts with Conduent, (formerly Xerox State and Local Solutions, Inc) for red light camera services. The city manages and supervises the red-light camera program.

(b) A local authority that contracts for the administration and enforcement of a photographic traffic signal enforcement system may not agree to pay the contractor a specified percentage of, or dollar amount from, each civil penalty collected.

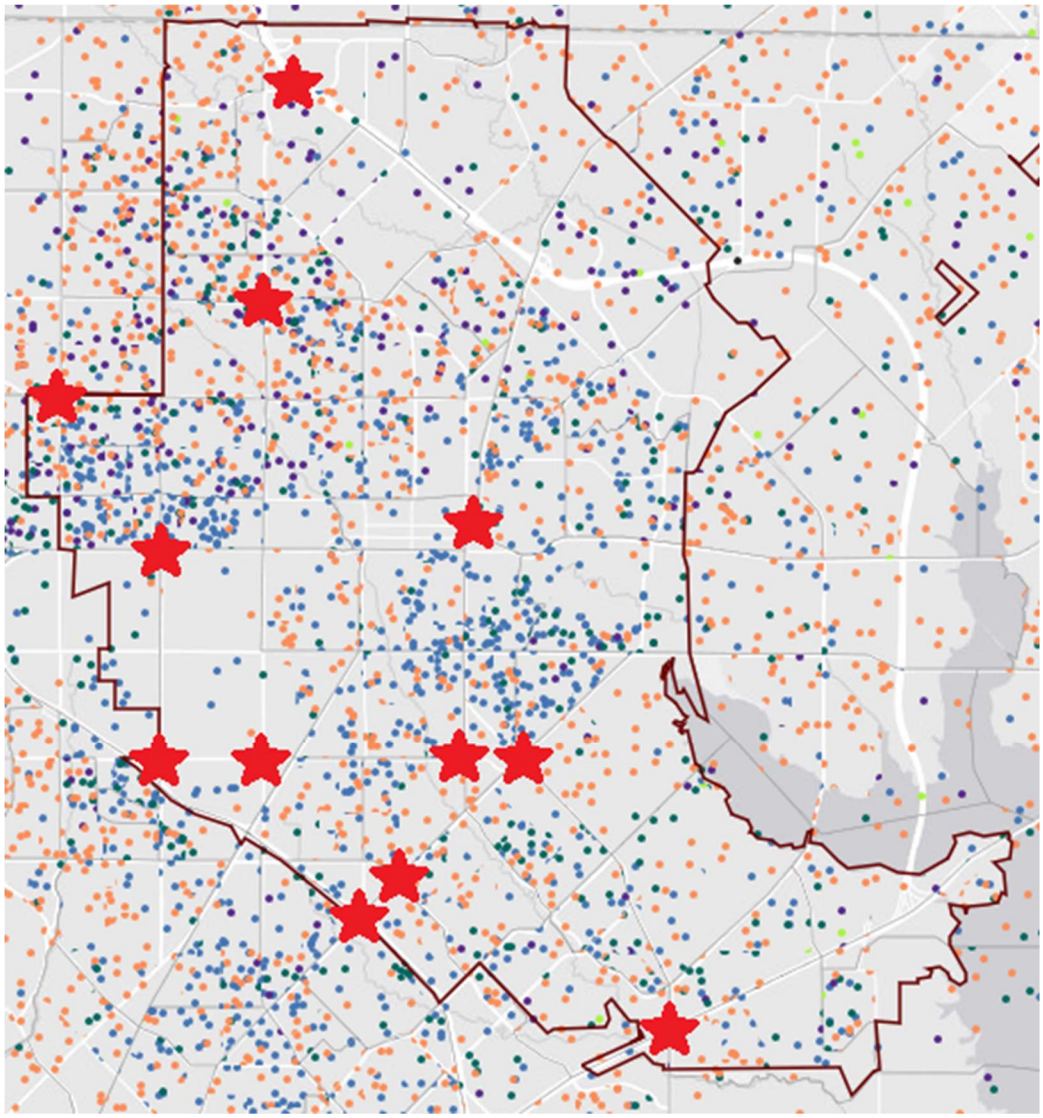
☑ Garland pays the vendor $4950 per intersection approach per year. Costs are set to increase by 5% in 2019 and again in 2029. This is a flat rate that does not promote higher citation rates. While an argument could be made that camera vendors stand to benefit from higher citation rates, for the purposes of this section the city and the program are in compliance with the law.

c) Before installing a photographic traffic signal enforcement system at an intersection approach, the local authority shall conduct a traffic engineering study of the approach to determine whether, in addition to or as an alternative to the system, a design change to the approach or a change in the signalization of the intersection is likely to reduce the number of red light violations at the intersection.

☒ Appendix E contains a vendor-supplied study for some of the intersections that are a part of the program. However, this study does not satisfy the legal requirements in section C. It does not attempt to answer the question of whether a design change in the intersection could reduce violations. The document is more of an implementation study to determine install feasibility.

(d) An intersection approach must be selected for the installation of a photographic traffic signal enforcement system based on traffic volume, the history of accidents at the approach, the number or frequency of red light violations at the intersection, and similar traffic engineering and safety criteria, without regard to the ethnic or socioeconomic characteristics of the area in which the approach is located.

☑ The camera location map near the beginning of this study shows that monitored intersections are in high traffic arterial areas and are located throughout the city without regard to socioeconomic factors. Heavy industrial traffic, proximity to the City of Dallas, and IH-635 results in a higher than average number of monitored intersections in District 5. Analysis of traffic patterns and agreements concerning relocation of cameras support the idea that monitoring was performed strictly for purposes of public safety, and not to target specific demographic groups. The map below (https://egis.hud.gov/affht/#) from 2017 shows camera locations in relation to ethnic makeup of the area.



HUD ethnicity map with camera location overlap

(e) A local authority shall report results of the traffic engineering study required by Subsection (c) to a citizen advisory committee consisting of one person appointed by each member of the governing body of the local authority. The committee shall advise the local authority on the installation and operation of a photographic traffic signal enforcement system established under this chapter.

☒ The Plan Commission was tasked with this responsibility. However, meeting notes were not provided by city staff that prove this event took place.

(f) A local authority may not impose a civil penalty under this chapter on the owner of a motor vehicle if the local authority violates Subsection (b) or (c).

☒ There is no evidence to support that the local authority violated either subsection (b) or (c). However, studies of the four intersections activated after 2007 are not available. Traffic studies are not on file with the state per a recent report by Sen Huffines (D16), however there is nothing in the law that explicitly requires the studies to be filed.

(g) The local authority shall install signs along each roadway that leads to an intersection at which a photographic traffic signal enforcement system is in active use. The signs must be at least 100 feet from the intersection or located according to standards established in the manual adopted by the Texas Transportation Commission under Section 544.001, be easily readable to any operator approaching the intersection, and clearly indicate the presence of a photographic monitoring system that records violations that may result in the issuance of a notice of violation and the imposition of a monetary penalty.

☑ Signs exist at all approaches, and have been installed in all four directions even if cameras do not monitor all four directions.

(h) A local authority or the person with which the local authority contracts for the administration and enforcement of a photographic traffic signal enforcement system may not provide information about a civil penalty imposed under this chapter to a credit bureau, as defined by Section 392.001, Finance Code.

☑ There is currently no program in place to report violators to credit bureaus.

Section 707.004

(See attached copy of State Law)

☑ This section details the reporting requirements of the city to the state agency. These requirements are available in the attachment "Red Light Cameras - State Law.pdf". Other than in one instance where the state failed to post the submitted 2013 data to their website, evidence exists that reporting was completed appropriately for all intersections in a timely manner in accordance with this law.

Wind-down Process

In the event that the city wishes to discontinue the program, it must give the vendor ninety (90) days written notice. Once notice is received, the contractor will promptly stop operating the unit. The city is required to pay off any additional costs that were associated with the unit, including paying for removal. The city would receive partial credit back for the fair market value of all reusable components of the system. (Section 6 of the services agreement, Amendment agreement number 3).

Conclusions

Staff Behavior

When discussing this program, it is common to hear from citizens that some level of corruption or ulterior motive must exist. A senior officer in Los Angeles reportedly asked traffic engineers to shorten a yellow light to help program profitability. Other cities have experienced unexplained instances of shortened yellow light times, discoveries of corruption and kickback schemes, and misuse of program revenue.

Throughout my investigation into this program I have found no sign of intentional inappropriate behavior by staff. I have instead found a program oriented towards public safety by keeping citation costs low, flexibility in citation issuance based on circumstances, proper enforcement of fines on public officials and city staff that received citations, a process of continual fairness analysis and improvement, and audits that affirm appropriate program fund use. It is my belief that staff has behaved in good faith since the program's inception.

Conclusion Criteria

With all of the statistics, the good, the bad, and discussion of financial impacts, the analysis of the appropriateness of this program can be distilled down to three basic fundamental questions.

1) Does the program improve public safety?
2) Is the program fundamentally legal, and did we implement it in a legal way?
3) What should the future of the program be?

Program Effectiveness

Does this program improve public safety?

Statistically speaking, the answer for Garland is inconclusive. There is no evidence of improvement on accident count as a percentage of all traffic. While our population has grown by roughly 10% and our density has increased correspondingly, there have been no real changes in our red light-related accident rate. The data does not strictly support a public safety argument.

Originally staff used the "total accident count" to judge program performance. This lead to the original positive statistics and the belief that the program was more effective than it really was. A more useful measurement of "accidents as a percentage of average daily traffic (ADT)" would have shown the real impact of the program.

Legality

Is there a legal concern? In Garland's program, perhaps. We have three shortfalls:

1) The program draws its legitimacy from the same type of laws that cover parking tickets or fines for running a toll booth. And indeed, there is a real effort underway in the state senate to de-criminalize moving traffic violations. Our authority to ticket is granted by state law and by our home-rule authority under the state constitution, and many would argue that there should be a right to a trial by jury of one's peers. I do not disagree with that position. We have the ability and the infrastructure in place today to allow for a jury trial in our municipal court system, satisfying a major argument against the constitutionality of the program.
2) While our cameras were 'grandfathered' in, there is no specific provision in state law that clearly spells that out. An argument could be made that our cameras, since inception, are fundamentally illegal. According to State Representative Jim Murphy R-Houston (who co-authored the 2007 program legislation) in an interview with NBC affiliate KXAN, "There was no grandfathering of this law. Every red light camera in the state of Texas must have this [engineering] study done." Legislative intent aside, there has not been a court ruling on the issue, nor on the type or quality of study that must be performed. Grandfathered elements and study quality concerns are unknowns for the city at this time.
   http://kxan.com/investigative-story/red-light-cameras-across-texas-could-be-operating-illegally/
3) We cannot locate the studies and minutes of approvals for cameras activated since 2009 (which have been disabled for now). This is a major problem in need of immediate resolution.

Program Future

There are three paths available to us today.

1) Continue the program as-is, with no changes.
2) Discontinue the program by providing a ninety-day written notice to our camera vendor.
3) Refine the program to not only bring it into full compliance with the law, but to also remove additional false positives based on the realities of driving. Suggested changes are included in the next section.

Program Change Suggestions

Based on my research, there are a number of ways in which the program can be improved.

1) Allow for a civil trial by jury after an administrative hearing has been completed.
   Currently, the vendor reviews the citation twice, a Garland Police Officer once, and if necessary once more by the Administrative Hearing Officer. Because the city is accusing a citizen of wrong-doing, a jury trial should be an option for escalating a case beyond the administrative hearing. The details and cost of this escalation are outside of the scope of this study.
2) Require council review and approval for changes to business rules that are on-file with the camera vendor.
3) Establish written policy that prohibits citations in improperly configured intersections, where stop bars are required to be crossed in order to make a safe right on red.
4) Establish a yearly public safety review of the Business Rules that are in place with our vendor. Require council approval to modify these rules, and any change in monitoring including installation or removal of cameras.

5) Establish a board/commission that meets on an ad-hoc basis for changes in the camera program, including once per year minimum to review all existing statistics and active locations. This board would have 9 members, appointed by the council and the mayor.
6) Require that traffic studies be performed on all active and future locations. Make these studies available to the public on the city website.
7) When reporting on program effectiveness, accidents should be reported as a percentage of total traffic volume for the intersection instead of just the number of accidents.
8) Instruct the new advisory board to *consider* using average traffic speed to set the yellow light length instead of the posted speed limit, or whichever speed is greater.
9) Because we utilize an 'All red' delay in our intersection, extend the 0.1 second camera delay to 0.25 seconds in the business rules. The average reaction time for humans to visual stimulus is 0.25 seconds. This change would cover most of the population.
10) Because of the high variability of reasons for red-light running, consider establishing "control" intersections. Gathering crash statistics on these unmonitored intersections would serve as comparisons against monitored intersections and improve our ability to determine the program usefulness.

Appendix A: Staff Comments

Appendix B: Program Statistics

Appendix C: State Law

Appendix D: Public Safety Committee Comments

Appendix E: Intersection Studies

Appendix A:

Placeholder for staff comments

Overall Impact of the Program

Intersection	Activation Date	Avg Daily Traffic Change	Avg Citation Rate	Avg Crash Rate	Avg Fatality Rate	Avg Injury Rate	Total Driver Cost
Beltline @ Shiloh	7/1/2006	-394	0.00161481%	0.00000334%	0.00000000%	0.00000060%	$ 1,515,525
Broadway @ Centerville	7/14/2006	2,230	-0.00035607%	-0.00000231%	0.00000000%	-0.00000043%	$ 1,488,525
Broadway @ IH-30	5/9/2009	-420	-0.00023200%	0.00000203%	0.00000000%	0.00000415%	$ 484,950
Centerville @ I-635	1/1/2016	-649	-0.00967822%	-0.00005069%	0.00000000%	-0.00003782%	$ 1,635,450
Centerville @ NW Hwy	7/28/2006	12	0.00456713%	0.00000570%	0.00000000%	0.00000101%	$ 1,683,525
First St @ Ave B	4/24/2009	-1,037	-0.00048349%	0.00000251%	0.00000000%	-0.00000038%	$ 776,100
First St @ Kingsley	8/7/2006	-168	0.00452170%	0.00000365%	0.00000000%	-0.00000055%	$ 1,131,750
Forest @ Jupiter	7/5/2006	-468	0.00096202%	0.00000082%	0.00000000%	-0.00000103%	$ 2,100,750
Jupiter @ Kingsley	9/2/2003	85	0.00192871%	0.00000403%	0.00000019%	0.00000500%	$ 1,039,125
Plano @ Buckingham	9/2/2003	-1,197	0.00220464%	0.00000563%	0.00000000%	0.00000339%	$ 1,683,525
SH 190 @ Shiloh	4/24/2009	-1,578	0.00001371%	0.00001437%	0.00000000%	0.00001433%	$ 705,600
Shiloh @ Kingsley*	8/5/2006	388	0.00021682%	0.00000173%	0.00000000%	-0.00000756%	$ 476,475
Totals		-326	0.00046027%	-0.00000099%	0.00000002%	-0.00000106%	$ 14,244,825

** Deactivated in 2017*

Trending Increase / Decrease of Red Light-Related Traffic Accidents

Intersection	Change in Crash % as a total of all traffic	Pre-Activation Study Included?
Beltline @ Shiloh	0.3337%	No
Broadway @ Centerville	-0.2306%	No
Broadway @ IH-30	0.2035%	Yes
Centerville @ I-635	-5.0688%	Yes
Centerville @ NW Hwy	0.5702%	No
First St @ Ave B	0.2511%	Yes
First St @ Kingsley	0.3649%	No
Forest @ Jupiter	0.0823%	No
Jupiter @ Kingsley	0.4029%	No
Plano @ Buckingham	0.5626%	No
SH 190 @ Shiloh	1.4367%	Yes
Shiloh @ Kingsley	0.1729%	No

Intersection Configurations

Intersection	Council District(s)	Activation Date	Primary Street	Speed Limit	Yellow Light Timing	All Red Timing	Cross Street	Speed Limit	Yellow Light Timing	All Red Timing
Beltline @ Shiloh	7	7/1/2006	Beltline	45	4.5	1.7	Shiloh	40	4.0	2.0
Broadway @ Centerville	3, 4, 5	7/14/2006	Broadway	40	4.0	2.0	Centerville	40	4.0	2.0
Broadway @ IH-30	3, 4	5/9/2009	Broadway	40	4.4	1.6	IH-30	45	4.4	2.3
Centerville @ I-635* **	5	1/1/2016	Centerville	40	4.2	1.6	I-635	45	4.5	1.8
Centerville @ NW Hwy	4, 5	7/28/2006	Centerville	40	4.0	2.2	NW Hwy	40	4.0	2.3
First St @ Ave B	2	4/24/2009	First St	40	4.0	1.4	Ave B	40	4.0	2.0
First St @ Kingsley	5	8/7/2006	First St	40	4.0	1.8	Kingsley	40	4.0	2.0
Forest @ Jupiter**	6	7/5/2006	Forest	45	4.5	1.8	Jupiter	45	4.5	1.9
Jupiter @ Kingsley	5	9/2/2003	Jupiter	45	4.5	1.8	Kingsley	40	4.0	2.0
Plano @ Buckingham	6	9/2/2003	Plano	40	4.0	2.2	Buckingham	45	4.5	2.2
SH 190 @ Shiloh	1	4/24/2009	SH 190	50	5.0	1.6	Shiloh	40	4.0	1.6
Shiloh @ Kingsley* **	5	8/5/2006	Shiloh	40	4.0	1.8	Kingsley	40	4.0	1.8

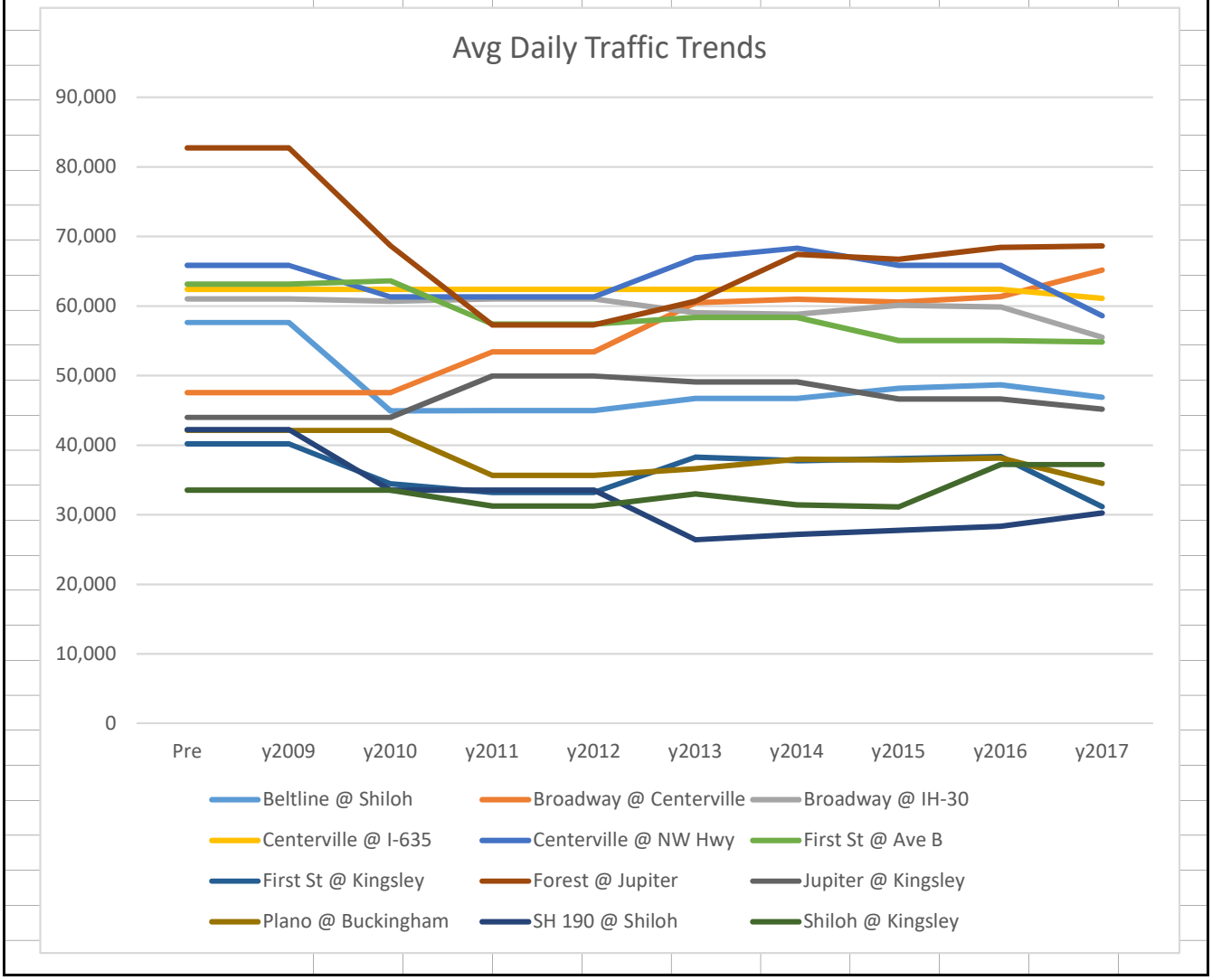
According to city-submitted data, intersection configurations have not changed during the life of the program.

** Forest @ Jupiter Rd is monitored from two different directions - NB Jupiter and EB Forest

*** Shiloh @ Kingsley has been deactivated and moved to Centerville @ IH-635 as of 1/1/2016

Average Daily Traffic Trends

Intersection	Pre	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017
Beltline @ Shiloh	57,630	57,630	44,929	44,982	44,982	46,714	46,714	48,173	48,669	46,886
Broadway @ Centerville	47,552	47,552	47,552	53,395	53,395	60,500	60,985	60,549	61,353	65,172
Broadway @ IH-30	61,030	61,030	60,672	61,005	61,005	59,007	58,813	60,099	59,880	55,498
Centerville @ I-635	62,403	62,403	62,403	62,403	62,403	62,403	62,403	62,403	62,403	61,106
Centerville @ NW Hwy	65,844	65,844	61,298	61,298	61,298	66,929	68,325	65,837	65,837	58,601
First St @ Ave B	63,159	63,159	63,618	57,423	57,423	58,344	58,344	55,034	55,034	54,828
First St @ Kingsley	40,199	40,199	34,444	33,209	33,209	38,297	37,765	38,092	38,350	31,169
Forest @ Jupiter	82,717	82,717	68,694	57,290	57,290	60,674	67,436	66,722	68,428	68,645
Jupiter @ Kingsley	44,000	44,000	44,000	49,938	49,938	49,108	49,108	46,617	46,617	45,175
Plano @ Buckingham	42,124	42,124	42,124	35,650	35,650	36,636	38,003	37,865	38,166	34,507
SH 190 @ Shiloh	42,240	42,240	33,536	33,536	33,536	26,406	27,161	27,770	28,332	30,251
Shiloh @ Kingsley	33,540	33,540	33,540	31,269	31,269	33,008	31,406	31,120	37,214	37,214



City-Reported Statistics - Broadway @ IH-30											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	*	Startup	*	*	*	*	*	*	*	*
	Citations Issued	0	211	1,034	764	973	1,105	903	890	797	743
	Dollar Value	$0	$15,825	$77,550	$57,300	$72,975	$82,875	$67,725	$66,750	$59,775	$55,725
	Avg Daily 1 - B	41,679	41,679	33,700	34,033	34,033	39,249	39,055	40,341	40,122	39,197
	Avg Daily 2 - I30	19,351	19,351	26,972	26,972	26,972	19,758	19,758	19,758	19,758	16,301
	Total Avg Daily Traffic	61,030	61,030	60,672	61,005	61,005	59,007	58,813	60,099	59,880	55,498
TOTAL CRASHES	Intersection	16	2	3	11	18	13	18	6	8	23
	Right Angle	4	0	1	1	6	2	2	3	2	2
	Rear-End	5	0	1	8	10	8	11	0	1	12
	Other	7	2	1	2	2	3	5	3	5	9
RED LIGHT-RELATED CRASHES	Intersection	5	0	2	2	6	2	5	3	1	5
	Right Angle	4	0	1	1	5	2	2	3	1	2
	Rear-End	0	0	0	0	1	0	3	0	0	2
	Other	1	0	1	1	0	0	0	0	0	1
TOTAL FATAL CRASHES	Intersection	0	2	0	0	1	0	0	0	0	1
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	2	0	0	1	0	0	0	0	1
TOTAL FATALITIES	Intersection	0	0	0	0	1	0	0	0	0	1
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	1	0	0	0	0	1
RL-RELATED FATAL CRASHES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection	4	0	2	4	7	5	4	3	4	9
	Right Angle	2	0	1	1	3	0	1	1	2	2
	Rear-End	1	0	1	3	4	3	3	0	0	2
	Other	1	0	0	0	0	2	0	2	2	5
TOTAL INJURIES	Intersection	5	0	2	6	8	6	5	3	4	14
	Right Angle	3	0	1	1	3	0	1	1	2	6
	Rear-End	1	0	1	5	5	4	4	0	0	2
	Other	1	0	0	0	0	2	0	2	2	6
RL-RELATED INJURY CRASHES	Intersection	2	0	1	1	2	0	1	1	1	4
	Right Angle	2	0	1	1	2	0	1	1	1	2
	Rear-End	0	0	0	0	0	0	0	0	0	1
	Other	0	0	0	0	0	0	0	0	0	1
RL-RELATED INJURIES	Intersection	3	0	1	1	2	0	1	1	1	9
	Right Angle	3	0	1	1	2	0	1	1	1	6
	Rear-End	0	0	0	0	0	0	0	0	0	1
	Other	0	0	0	0	0	0	0	0	0	2

Accident Trends and Cost Analysis - Broadway @ IH-30

Report End Year:	Pre	y2009*	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	547	52	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	61,030	61,030	60,672	61,005	61,005	59,007	58,813	60,099	59,880	55,498	-420
Estimated Traffic	33,383,410	3,173,560	22,145,280	22,266,825	22,327,830	21,537,555	21,466,745	21,936,135	21,916,080	20,256,770	-
Citations Issued	-	211	1,034	764	973	1,105	903	890	797	743	27
Dollar Value	-	$15,825	$77,550	$57,300	$72,975	$82,875	$67,725	$66,750	$59,775	$55,725	-
Citation Rate	-	0.0066%	0.0047%	0.0034%	0.0044%	0.0051%	0.0042%	0.0041%	0.0036%	0.0037%	-0.0002%
		*Partial Year									

% Chance of an Incident per 100,000 Vehicles

		Pre	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	1.4977%	0.0000%	0.9031%	0.8982%	2.6872%	0.9286%	2.3292%	1.3676%	0.4563%	2.4683%	0.1017%
	Right Angle	1.1982%	0.0000%	0.4516%	0.4491%	2.2394%	0.9286%	0.9317%	1.3676%	0.4563%	0.9873%	0.0364%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.4479%	0.0000%	1.3975%	0.0000%	0.0000%	0.9873%	0.0765%
	Other	0.2995%	0.0000%	0.4516%	0.4491%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.4937%	-0.0113%
	Total	2.9955%	0.0000%	1.8063%	1.7964%	5.3745%	1.8572%	4.6584%	2.7352%	0.9126%	4.9366%	0.2035%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.8986%	0.0000%	0.4516%	0.4491%	0.8957%	0.0000%	0.4658%	0.4559%	0.4563%	4.4430%	0.2077%
	Right Angle	0.8986%	0.0000%	0.4516%	0.4491%	0.8957%	0.0000%	0.4658%	0.4559%	0.4563%	2.9620%	0.1269%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.4937%	0.0269%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.9873%	0.0539%
	Total	1.7973%	0.0000%	0.9031%	0.8982%	1.7915%	0.0000%	0.9317%	0.9117%	0.9126%	8.8859%	0.4154%

City-Reported Statistics - Beltline @ Shiloh											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	2,526	1,524	1,830	2,196	2,389	3,024	2,924	3,794	4,002
	Dollar Value	$0	$189,450	$114,300	$137,250	$164,700	$179,175	$226,800	$219,300	$284,550	$300,150
	Avg Daily 1 - B	-	30,437	23,984	24,037	24,037	25,682	25,682	25,682	25,682	25,752
	Avg Daily 2 - S	-	27,193	20,945	20,945	20,945	21,032	21,032	22,491	22,987	21,134
	Total Avg Daily Traffic	-	57,630	44,929	44,982	44,982	46,714	46,714	48,173	48,669	46,886
TOTAL CRASHES	Intersection		9	13	10	17	2	11	10	21	10
	Right Angle		1	1	1	11	1	5	0	5	2
	Rear-End		3	4	3	5	1	6	6	4	3
	Other		5	8	6	1	0	0	4	12	5
RED LIGHT-RELATED CRASHES	Intersection		1	4	2	2	0	9	1	7	2
	Right Angle		1	1	1	2	0	4	0	5	0
	Rear-End		0	1	1	0	0	5	1	0	2
	Other		0	2	0	0	0	0	0	2	0
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		5	9	3	7	0	4	5	9	6
	Right Angle		1	1	1	4	0	3	0	3	1
	Rear-End		1	2	0	2	0	1	1	1	2
	Other		3	6	2	1	0	0	4	5	3
TOTAL INJURIES	Intersection		7	17	3	10	0	11	5	18	7
	Right Angle		2	2	1	5	0	10	0	8	1
	Rear-End		1	2	0	3	0	1	1	1	3
	Other		4	13	2	2	0	0	4	9	3
RL-RELATED INJURY CRASHES	Intersection		1	3	1	0	0	4	0	4	2
	Right Angle		1	1	1	0	0	3	0	3	0
	Rear-End		0	0	0	0	0	1	0	0	2
	Other		0	2	0	0	0	0	0	1	0
RL-RELATED INJURIES	Intersection		2	4	1	0	0	11	0	10	3
	Right Angle		2	2	1	0	0	10	0	8	0
	Rear-End		0	0	0	0	0	1	0	0	3
	Other		0	2	0	0	0	0	0	2	0

Accident Trends and Cost Analysis - Beltline @ Shiloh

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	57,630	44,929	44,982	44,982	46,714	46,714	48,173	48,669	46,886	-394
Estimated Traffic	21,034,950	16,399,085	16,418,430	16,463,412	17,050,610	17,050,610	17,583,145	17,812,854	17,113,390	-
Citations Issued	2,526	1,524	1,830	2,196	2,389	3,024	2,924	3,794	4,002	262
Dollar Value	$189,450	$114,300	$137,250	$164,700	$179,175	$226,800	$219,300	$284,550	$300,150	-
Citation Rate	0.0120%	0.0093%	0.0111%	0.0133%	0.0140%	0.0177%	0.0166%	0.0213%	0.0234%	0.0016%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.4754%	2.4392%	1.2181%	1.2148%	0.0000%	5.2784%	0.5687%	3.9297%	1.1687%	0.1668%
	Right Angle	0.4754%	0.6098%	0.6091%	1.2148%	0.0000%	2.3460%	0.0000%	2.8070%	0.0000%	0.0767%
	Rear-End	0.0000%	0.6098%	0.6091%	0.0000%	0.0000%	2.9324%	0.5687%	0.0000%	1.1687%	0.0950%
	Other	0.0000%	1.2196%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.1228%	0.0000%	-0.0048%
	Total	0.9508%	4.8783%	2.4363%	2.4296%	0.0000%	10.5568%	1.1375%	7.8595%	2.3374%	0.3337%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.9508%	2.4392%	0.6091%	0.0000%	0.0000%	6.4514%	0.0000%	5.6139%	1.7530%	0.2994%
	Right Angle	0.9508%	1.2196%	0.6091%	0.0000%	0.0000%	5.8649%	0.0000%	4.4911%	0.0000%	0.1776%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.5865%	0.0000%	0.0000%	1.7530%	0.1266%
	Other	0.0000%	1.2196%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.1228%	0.0000%	-0.0048%
	Total	1.9016%	4.8783%	1.2181%	0.0000%	0.0000%	12.9028%	0.0000%	11.2278%	3.5060%	0.5989%

City-Reported Statistics - Broadway @ Centerville											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	3,016	2,357	2,375	1,960	2,286	2,270	2,413	3,170	2,908
	Dollar Value	$0	$226,200	$176,775	$178,125	$147,000	$171,450	$170,250	$180,975	$237,750	$218,100
	Avg Daily 1 - B	-	21,396	21,396	26,813	26,813	34,145	34,145	34,145	34,145	35,514
	Avg Daily 2 - C	-	26,156	26,156	26,582	26,582	26,355	26,840	26,404	27,208	29,658
	Total Avg Daily Traffic	-	47,552	47,552	53,395	53,395	60,500	60,985	60,549	61,353	65,172
TOTAL CRASHES	Intersection		16	12	10	17	10	14	17	18	12
	Right Angle		4	2	1	7	2	8	2	2	1
	Rear-End		7	2	4	7	5	6	4	6	3
	Other		5	8	5	3	3	0	11	10	8
RED LIGHT-RELATED CRASHES	Intersection		5	3	3	6	3	2	7	4	2
	Right Angle		4	2	1	3	0	0	2	2	0
	Rear-End		1	0	1	3	0	2	3	2	0
	Other		0	1	1	0	3	0	2	0	2
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		6	8	7	4	7	5	4	7	6
	Right Angle		2	1	1	1	2	2	0	1	1
	Rear-End		3	1	3	2	4	3	2	3	2
	Other		1	6	3	1	1	0	2	3	3
TOTAL INJURIES	Intersection		12	13	10	6	8	12	5	9	9
	Right Angle		4	1	2	2	2	6	0	2	1
	Rear-End		6	1	5	2	5	6	2	3	3
	Other		2	11	3	2	1	0	3	4	5
RL-RELATED INJURY CRASHES	Intersection		2	2	2	2	3	3	3	2	0
	Right Angle		2	1	1	1	1	3	0	1	0
	Rear-End		0	0	1	1	1	0	1	1	0
	Other		0	1	0	0	1	0	2	0	0
RL-RELATED INJURIES	Intersection		4	4	4	3	3	3	4	3	0
	Right Angle		4	1	2	2	1	3	0	2	0
	Rear-End		0	0	2	1	1	0	1	1	0
	Other		0	3	0	0	1	0	3	0	0

Accident Trends and Cost Analysis - Broadway @ Centerville

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	47,552	47,552	53,395	53,395	60,500	60,985	60,549	61,353	65,172	2,230
Estimated Traffic	17,356,480	17,356,480	19,489,175	19,542,570	22,082,500	22,259,525	22,100,385	22,455,198	23,787,780	-
Citations Issued	3,016	2,357	2,375	1,960	2,286	2,270	2,413	3,170	2,908	40
Dollar Value	$226,200	$176,775	$178,125	$147,000	$171,450	$170,250	$180,975	$237,750	$218,100	-
Citation Rate	0.0174%	0.0136%	0.0122%	0.0100%	0.0104%	0.0102%	0.0109%	0.0141%	0.0122%	-0.0004%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	2.8808%	1.7285%	1.5393%	3.0702%	1.3585%	0.8985%	3.1674%	1.7813%	0.8408%	-0.1153%
	Right Angle	2.3046%	1.1523%	0.5131%	1.5351%	0.0000%	0.0000%	0.9050%	0.8907%	0.0000%	-0.1792%
	Rear-End	0.5762%	0.0000%	0.5131%	1.5351%	0.0000%	0.8985%	1.3574%	0.8907%	0.0000%	0.0237%
	Other	0.0000%	0.5762%	0.5131%	0.0000%	1.3585%	0.0000%	0.9050%	0.0000%	0.8408%	0.0403%
	Total	5.7615%	3.4569%	3.0786%	6.1404%	2.7171%	1.7970%	6.3347%	3.5626%	1.6815%	-0.2306%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	2.3046%	2.3046%	2.0524%	1.5351%	1.3585%	1.3477%	1.8099%	1.3360%	0.0000%	-0.2133%
	Right Angle	2.3046%	0.5762%	1.0262%	1.0234%	0.4528%	1.3477%	0.0000%	0.8907%	0.0000%	-0.1667%
	Rear-End	0.0000%	0.0000%	1.0262%	0.5117%	0.4528%	0.0000%	0.4525%	0.4453%	0.0000%	-0.0054%
	Other	0.0000%	1.7285%	0.0000%	0.0000%	0.4528%	0.0000%	1.3574%	0.0000%	0.0000%	-0.0412%
	Total	4.6092%	4.6092%	4.1048%	3.0702%	2.7171%	2.6955%	3.6198%	2.6720%	0.0000%	-0.4266%

City-Reported Statistics - Centerville @ IH 635				
	Report End Year:	Pre-Activation	2016	2017
TRAFFIC	Notes	3/22/2016	Startup: Partial Year	
	Citations Issued	0	5,280	16,526
	Dollar Value	$0	$396,000	$1,239,450
	Avg Daily 1 - C	43,052	43,052	41,498
	Avg Daily 2 - I	19,351	19,351	19,608
	Total Avg Daily Traffic	62,403	62,403	61,106
TOTAL CRASHES	Intersection	33	3	12
	Right Angle	25	2	1
	Rear-End	1	0	6
	Other	7	1	5
RED LIGHT-RELATED CRASHES	Intersection	25	2	5
	Right Angle	25	2	1
	Rear-End	0	0	3
	Other	0	0	1
TOTAL FATAL CRASHES	Intersection	0	0	0
	Right Angle	0	0	0
	Rear-End	0	0	0
	Other	0	0	0
TOTAL FATALITIES	Intersection	0	0	0
	Right Angle	0	0	0
	Rear-End	0	0	0
	Other	0	0	0
RL-RELATED FATAL CRASHES	Intersection	0	0	0
	Right Angle	0	0	0
	Rear-End	0	0	0
	Other	0	0	0
RL-RELATED FATALITIES	Intersection	0	0	0
	Right Angle	0	0	0
	Rear-End	0	0	0
	Other	0	0	0
TOTAL INJURY CRASHES	Intersection	11	1	4
	Right Angle	9	0	1
	Rear-End	0	0	2
	Other	2	1	1
TOTAL INJURIES	Intersection	19	1	6
	Right Angle	16	0	2
	Rear-End	0	0	3
	Other	3	1	1
RL-RELATED INJURY CRASHES	Intersection	9	0	1
	Right Angle	9	0	1
	Rear-End	0	0	0
	Other	0	0	0
RL-RELATED INJURIES	Intersection	16	0	2
	Right Angle	16	0	2
	Rear-End	0	0	0
	Other	0	0	0

Accident Trends and Cost Analysis - Centerville @ IH635

Report End Year:	Pre-Activation	y2016	y2017	Trends
Reporting Period (Days)	548	101	365	-
Avg Daily Traffic	62,403	62,403	61,106	-649
Estimated Traffic	34,196,844	6,302,703	22,303,690	-
Citations Issued	0	5,280	16,526	11,246
Dollar Value	$0	$396,000	$1,239,450	-
Citation Rate	$0	0.0838%	0.0741%	-0.0097%

% Chance of an Incident per 100,000 Vehicles

		Pre-Activation	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	7.3106%	3.1732%	2.2418%	-2.5344%
	Right Angle	7.3106%	3.1732%	0.4484%	-3.4311%
	Rear-End	0.0000%	0.0000%	1.3451%	0.6725%
	Other	0.0000%	0.0000%	0.4484%	0.2242%
	Total	14.6212%	6.3465%	4.4836%	-5.0688%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	4.6788%	0.0000%	0.8967%	-1.8910%
	Right Angle	4.6788%	0.0000%	0.8967%	-1.8910%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%
	Total	9.3576%	0.0000%	1.7934%	-3.7821%

City-Reported Statistics - Centerville @ NW Hwy											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	1,471	1,073	734	1,048	1,177	1,331	7,165	8,448	8,234
	Dollar Value	$0	$110,325	$80,475	$55,050	$78,600	$88,275	$99,825	$537,375	$633,600	$617,550
	Avg Daily 1 - C	-	37,960	39,856	39,856	39,856	40,358	41,754	41,777	41,777	37,823
	Avg Daily 2 - N	-	27,884	21,442	21,442	21,442	26,571	26,571	24,060	24,060	20,778
	Total Avg Daily Traffic	-	65,844	61,298	61,298	61,298	66,929	68,325	65,837	65,837	58,601
TOTAL CRASHES	Intersection		21	7	19	9	1	17	22	18	15
	Right Angle		1	0	0	6	0	9	0	2	1
	Rear-End		7	3	7	3	1	5	8	7	9
	Other		13	4	12	0	0	3	14	9	5
RED LIGHT-RELATED CRASHES	Intersection		3	0	0	3	0	3	8	5	5
	Right Angle		1	0	0	3	0	3	0	1	1
	Rear-End		1	0	0	0	0	0	7	3	4
	Other		1	0	0	0	0	0	1	1	0
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	1
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	1
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	1
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	1
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		11	3	12	7	1	6	8	6	6
	Right Angle		1	0	0	4	0	2	0	2	0
	Rear-End		3	0	4	3	1	3	2	3	2
	Other		7	3	8	0	0	1	6	1	4
TOTAL INJURIES	Intersection		13	5	19	11	2	9	9	9	8
	Right Angle		1	0	0	6	0	3	0	3	0
	Rear-End		3	0	5	5	2	5	2	4	3
	Other		9	5	14	0	0	1	7	2	5
RL-RELATED INJURY CRASHES	Intersection		2	0	0	2	0	1	3	2	1
	Right Angle		1	0	0	2	0	1	0	1	0
	Rear-End		1	0	0	0	0	0	2	1	1
	Other		0	0	0	0	0	0	1	0	0
RL-RELATED INJURIES	Intersection		2	0	0	2	0	1	3	2	1
	Right Angle		1	0	0	2	0	1	0	1	0
	Rear-End		1	0	0	0	0	0	2	1	1
	Other		0	0	0	0	0	0	1	0	0

Accident Trends and Cost Analysis - Centerville @ NW Hwy

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	65,844	61,298	61,298	61,298	66,929	68,325	65,837	65,837	58,601	12
Estimated Traffic	24,033,060	22,373,770	22,373,770	22,435,068	24,429,085	24,938,625	24,030,505	24,096,342	21,389,365	-
Citations Issued	1,471	1,073	734	1,048	1,177	1,331	7,165	8,448	8,234	1,039
Dollar Value	$110,325	$80,475	$55,050	$78,600	$88,275	$99,825	$537,375	$633,600	$617,550	-
Citation Rate	0.0061%	0.0048%	0.0033%	0.0047%	0.0048%	0.0053%	0.0298%	0.0351%	0.0385%	0.0046%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	1.2483%	0.0000%	0.0000%	1.3372%	0.0000%	1.2030%	3.3291%	2.0750%	2.3376%	0.2851%
	Right Angle	0.4161%	0.0000%	0.0000%	1.3372%	0.0000%	1.2030%	0.0000%	0.4150%	0.4675%	0.0219%
	Rear-End	0.4161%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	2.9130%	1.2450%	1.8701%	0.2563%
	Other	0.4161%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.4161%	0.4150%	0.0000%	0.0069%
	Total	2.4966%	0.0000%	0.0000%	2.6744%	0.0000%	2.4059%	6.6582%	4.1500%	4.6752%	0.5702%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.8322%	0.0000%	0.0000%	0.8915%	0.0000%	0.4010%	1.2484%	0.8300%	0.4675%	0.0506%
	Right Angle	0.4161%	0.0000%	0.0000%	0.8915%	0.0000%	0.4010%	0.0000%	0.4150%	0.0000%	-0.0152%
	Rear-End	0.4161%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.8323%	0.4150%	0.4675%	0.0519%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.4161%	0.0000%	0.0000%	0.0139%
	Total	1.6644%	0.0000%	0.0000%	1.7829%	0.0000%	0.8020%	2.4968%	1.6600%	0.9350%	0.1013%

City-Reported Statistics - First St @ Ave B											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes		*	*	*	*	*	*	*	*	*
	Citations Issued	0	374	1,760	1,530	1,172	1,535	2,260	935	782	885
	Dollar Value	$0	$28,050	$132,000	$114,750	$87,900	$115,125	$169,500	$70,125	$58,650	$66,375
	Avg Daily 1 - F	50,455	50,455	50,455	42,175	42,175	42,404	42,404	42,404	42,404	39,404
	Avg Daily 2 - A	12,704	12,704	13,163	15,248	15,248	15,940	15,940	12,630	12,630	15,424
	Total Avg Daily Traffic	63,159	63,159	63,618	57,423	57,423	58,344	58,344	55,034	55,034	54,828
TOTAL CRASHES	Intersection	9	3	4	10	11	9	10	4	5	6
	Right Angle	3	1	2	3	7	3	3	3	4	2
	Rear-End	1	0	1	3	3	3	4	1	1	1
	Other	5	2	1	4	1	3	3	0	0	3
RED LIGHT-RELATED CRASHES	Intersection	4	0	2	4	7	4	3	4	3	4
	Right Angle	3	0	2	3	7	2	2	3	3	2
	Rear-End	0	0	0	1	0	0	1	1	0	0
	Other	1	0	0	0	0	2	0	0	0	2
TOTAL FATAL CRASHES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection	5	2	3	6	6	5	5	2	1	3
	Right Angle	2	1	2	1	4	2	2	2	1	1
	Rear-End	1	0	1	3	2	1	0	0	0	1
	Other	2	1	0	2	0	2	3	0	0	1
TOTAL INJURIES	Intersection	9	3	4	8	7	6	5	4	2	3
	Right Angle	3	2	3	2	4	2	1	4	2	1
	Rear-End	1	0	1	4	3	1	4	0	0	1
	Other	5	1	0	2	0	3	0	0	0	1
RL-RELATED INJURY CRASHES	Intersection	3	0	2	2	4	4	2	2	1	1
	Right Angle	2	0	2	1	4	2	2	2	1	1
	Rear-End	0	0	0	1	0	0	0	0	0	0
	Other	1	0	0	0	0	2	0	0	0	0
RL-RELATED INJURIES	Intersection	6	0	3	3	4	5	1	4	2	1
	Right Angle	3	0	3	2	4	2	1	4	2	1
	Rear-End	0	0	0	1	0	0	0	0	0	0
	Other	3	0	0	0	0	3	0	0	0	0

Accident Trends and Cost Analysis - First St @ Ave B

Report End Year:	Pre-Activation	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	548	67	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	63,159	63,159	63,618	57,423	57,423	58,344	58,344	55,034	55,034	54,828	-1,037
Estimated Traffic	34,611,132	4,231,653	23,220,570	20,959,395	21,016,818	21,295,560	21,295,560	20,087,410	20,142,444	20,012,220	
Citations Issued	0	374	1,760	1,530	1,172	1,535	2,260	935	782	885	-17
Dollar Value	$0	$28,050	$132,000	$114,750	$87,900	$115,125	$169,500	$70,125	$58,650	$66,375	-
Citation Rate	0.0000%	0.0088%	0.0076%	0.0073%	0.0056%	0.0072%	0.0106%	0.0047%	0.0039%	0.0044%	-0.0005%

% Chance of an Incident per 100,000 Vehicles

		Pre-Activation	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	1.1557%	0.0000%	0.8613%	1.9085%	3.3307%	1.8783%	1.4087%	1.9913%	1.4894%	1.9988%	0.1255%
	Right Angle	0.8668%	0.0000%	0.8613%	1.4313%	3.3307%	0.9392%	0.9392%	1.4935%	1.4894%	0.9994%	0.0661%
	Rear-End	0.0000%	0.0000%	0.0000%	0.4771%	0.0000%	0.0000%	0.4696%	0.4978%	0.0000%	0.0000%	0.0149%
	Other	0.2889%	0.0000%	0.0000%	0.0000%	0.0000%	0.9392%	0.0000%	0.0000%	0.0000%	0.9994%	0.0444%
	Total	2.3114%	0.0000%	1.7226%	3.8169%	6.6613%	3.7567%	2.8175%	3.9826%	2.9788%	3.9976%	0.2511%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	1.7335%	0.0000%	1.2920%	1.4313%	1.9032%	2.3479%	0.4696%	1.9913%	0.9929%	0.4997%	-0.0188%
	Right Angle	0.8668%	0.0000%	1.2920%	0.9542%	1.9032%	0.9392%	0.4696%	1.9913%	0.9929%	0.4997%	0.0286%
	Rear-End	0.0000%	0.0000%	0.0000%	0.4771%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0087%
	Other	0.8668%	0.0000%	0.0000%	0.0000%	0.0000%	1.4087%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0387%
	Total	3.4671%	0.0000%	2.5839%	2.8627%	3.8065%	4.6958%	0.9392%	3.9826%	1.9859%	0.9994%	-0.0376%

City-Reported Statistics - First St @ Kingsley											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	1,304	982	737	771	771	934	4,110	5,481	4,714
	Dollar Value	$0	$97,800	$73,650	$55,275	$57,825	$57,825	$70,050	$308,250	$411,075	$353,550
	Avg Daily 1 - F	-	21,490	21,490	20,452	20,452	20,708	20,708	20,708	20,708	20,654
	Avg Daily 2 - K	-	18,709	12,954	12,757	12,757	17,589	17,057	17,384	17,642	10,515
	Total Avg Daily Traffic	-	40,199	34,444	33,209	33,209	38,297	37,765	38,092	38,350	31,169
TOTAL CRASHES	Intersection		3	5	1	9	6	5	8	11	7
	Right Angle		0	0	1	5	2	2	2	1	0
	Rear-End		1	2	0	3	4	2	2	5	3
	Other		2	3	0	1	0	1	4	5	4
RED LIGHT-RELATED CRASHES	Intersection		0	0	1	2	2	0	3	3	1
	Right Angle		0	0	1	2	2	0	2	1	0
	Rear-End		0	0	0	0	0	0	0	2	1
	Other		0	0	0	0	0	0	1	0	0
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		1	3	0	5	5	2	3	3	4
	Right Angle		0	0	0	4	2	2	0	0	0
	Rear-End		1	0	0	1	3	0	2	0	1
	Other		0	3	0	0	0	0	1	3	3
TOTAL INJURIES	Intersection		1	4	0	6	8	3	4	5	4
	Right Angle		0	0	0	5	4	3	0	0	0
	Rear-End		1	0	0	1	4	0	3	0	1
	Other		0	4	0	0	0	0	1	5	3
RL-RELATED INJURY CRASHES	Intersection		0	0	0	2	2	0	0	0	0
	Right Angle		0	0	0	2	2	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED INJURIES	Intersection		0	0	0	2	4	0	0	0	0
	Right Angle		0	0	0	2	4	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0

Accident Trends and Cost Analysis - First St @ Kingsley

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	40,199	34,444	33,209	33,209	38,297	37,765	38,092	38,350	31,169	-168
Estimated Traffic	14,672,635	12,572,060	12,121,285	12,154,494	13,978,405	13,784,225	13,903,580	14,036,100	11,376,685	-
Citations Issued	1,304	982	737	771	771	934	4,110	5,481	4,714	567
Dollar Value	$97,800	$73,650	$55,275	$57,825	$57,825	$70,050	$308,250	$411,075	$353,550	-
Citation Rate	0.0089%	0.0078%	0.0061%	0.0063%	0.0055%	0.0068%	0.0296%	0.0390%	0.0414%	0.0045%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.0000%	0.0000%	0.8250%	1.6455%	1.4308%	0.0000%	2.1577%	2.1373%	0.8790%	0.1825%
	Right Angle	0.0000%	0.0000%	0.8250%	1.6455%	1.4308%	0.0000%	1.4385%	0.7124%	0.0000%	0.0286%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.4249%	0.8790%	0.1298%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.7192%	0.0000%	0.0000%	0.0240%
	Total	0.0000%	0.0000%	1.6500%	3.2910%	2.8616%	0.0000%	4.3154%	4.2747%	1.7580%	0.3649%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.0000%	0.0000%	0.0000%	1.6455%	2.8616%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0274%
	Right Angle	0.0000%	0.0000%	0.0000%	1.6455%	2.8616%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0274%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	3.2910%	5.7231%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0548%

City-Reported Statistics - Forest @ Jupiter											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	2,546	4,198	2,806	3,206	3,636	1,598	4,355	5,665	4,616
	Dollar Value	$0	$190,950	$314,850	$210,450	$240,450	$272,700	$119,850	$326,625	$424,875	$346,200
	Avg Daily 1 - F	-	42,552	32,654	29,521	29,521	30,750	37,512	37,694	38,504	39,386
	Avg Daily 2 - J	-	40,165	36,040	27,769	27,769	29,924	29,924	29,028	29,924	29,259
	Total Avg Daily Traffic	-	82,717	68,694	57,290	57,290	60,674	67,436	66,722	68,428	68,645
TOTAL CRASHES	Intersection		20	17	31	24	21	22	20	19	25
	Right Angle		2	2	3	12	7	13	1	2	4
	Rear-End		7	4	8	8	5	5	9	7	9
	Other		11	11	20	4	9	4	10	10	12
RED LIGHT-RELATED CRASHES	Intersection		3	5	9	4	4	4	7	5	6
	Right Angle		1	2	3	2	2	3	1	2	4
	Rear-End		2	0	1	2	0	1	6	0	0
	Other		0	3	5	0	2	0	0	3	2
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		12	8	13	10	13	9	9	8	11
	Right Angle		2	1	1	7	5	7	1	0	1
	Rear-End		5	2	3	3	4	7	1	2	3
	Other		5	5	9	0	4	7	7	6	7
TOTAL INJURIES	Intersection		18	11	18	15	18	13	12	10	12
	Right Angle		3	1	1	11	8	11	1	0	1
	Rear-End		8	3	3	4	4	1	1	3	3
	Other		7	7	14	0	6	1	10	7	8
RL-RELATED INJURY CRASHES	Intersection		2	2	3	3	2	2	2	1	3
	Right Angle		1	1	1	2	2	2	1	0	1
	Rear-End		1	0	0	1	0	0	1	0	0
	Other		0	1	2	0	0	0	0	1	2
RL-RELATED INJURIES	Intersection		3	3	3	4	4	4	2	1	3
	Right Angle		2	1	1	2	4	4	1	0	1
	Rear-End		1	0	0	2	0	0	1	0	0
	Other		0	2	2	0	0	0	0	1	2

Accident Trends and Cost Analysis - Forest @ Jupiter

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	82,717	68,694	57,290	57,290	60,674	67,436	66,722	68,428	68,645	-468
Estimated Traffic	30,191,705	25,073,310	20,910,850	20,968,140	22,146,010	24,614,140	24,353,530	25,044,648	25,055,425	-
Citations Issued	2,546	4,198	2,806	3,206	3,636	1,598	4,355	5,665	4,616	236
Dollar Value	$190,950	$314,850	$210,450	$240,450	$272,700	$119,850	$326,625	$424,875	$346,200	-
Citation Rate	0.0084%	0.0167%	0.0134%	0.0153%	0.0164%	0.0065%	0.0179%	0.0226%	0.0184%	0.0010%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.9937%	1.9942%	4.3040%	1.9077%	1.8062%	1.6251%	2.8743%	1.9964%	2.3947%	0.0412%
	Right Angle	0.3312%	0.7977%	1.4347%	0.9538%	0.9031%	1.2188%	0.4106%	0.7986%	1.5965%	0.0547%
	Rear-End	0.6624%	0.0000%	0.4782%	0.9538%	0.0000%	0.4063%	2.4637%	0.0000%	0.0000%	0.0129%
	Other	0.0000%	1.1965%	2.3911%	0.0000%	0.9031%	0.0000%	0.0000%	1.1979%	0.7982%	-0.0264%
	Total	1.9873%	3.9883%	8.6080%	3.8153%	3.6124%	3.2502%	5.7487%	3.9929%	4.7894%	0.0823%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.9937%	1.1965%	1.4347%	1.9077%	1.8062%	1.6251%	0.8212%	0.3993%	1.1973%	-0.0514%
	Right Angle	0.6624%	0.3988%	0.4782%	0.9538%	1.8062%	1.6251%	0.4106%	0.0000%	0.3991%	-0.0286%
	Rear-End	0.3312%	0.0000%	0.0000%	0.9538%	0.0000%	0.0000%	0.4106%	0.0000%	0.0000%	-0.0243%
	Other	0.0000%	0.7977%	0.9564%	0.0000%	0.0000%	0.0000%	0.0000%	0.3993%	0.7982%	0.0014%
	Total	1.9873%	2.3930%	2.8693%	3.8153%	3.6124%	3.2502%	1.6425%	0.7986%	2.3947%	-0.1029%

City-Reported Statistics - Jupiter @ Kingsley											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	728	607	665	1,547	2,551	2,691	2,222	2,844	2,878
	Dollar Value	$0	$54,600	$45,525	$49,875	$116,025	$191,325	$201,825	$166,650	$213,300	$215,850
	Avg Daily 1 - J	-	26,229	26,229	36,601	36,601	33,974	33,974	31,483	31,483	31,992
	Avg Daily 2 - K	-	17,771	17,771	13,337	13,337	15,134	15,134	15,134	15,134	13,183
	Total Avg Daily Traffic	-	44,000	44,000	49,938	49,938	49,108	49,108	46,617	46,617	45,175
TOTAL CRASHES	Intersection		8	13	15	9	16	20	16	13	17
	Right Angle		0	6	2	5	4	8	4	4	3
	Rear-End		2	1	4	1	7	7	4	1	6
	Other		6	6	9	3	5	5	8	8	8
RED LIGHT-RELATED CRASHES	Intersection		1	7	5	0	2	7	6	5	6
	Right Angle		0	6	2	0	2	2	3	4	3
	Rear-End		0	1	2	0	0	5	3	1	3
	Other		1	0	1	0	0	0	0	0	0
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	1	0	0	0
	Right Angle		0	0	0	0	0	1	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	1	0	0	0
	Right Angle		0	0	0	0	0	1	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	1	0	0	0
	Right Angle		0	0	0	0	0	1	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	1	0	0	0
	Right Angle		0	0	0	0	0	1	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		3	5	2	5	6	5	5	3	9
	Right Angle		0	3	0	4	2	2	1	1	1
	Rear-End		0	0	2	1	1	3	0	1	5
	Other		3	2	1	0	3	0	4	1	3
TOTAL INJURIES	Intersection		4	13	5	6	12	10	9	5	16
	Right Angle		0	5	0	5	1	5	4	2	4
	Rear-End		0	0	3	1	3	5	0	2	5
	Other		4	8	4	0	8	0	4	1	7
RL-RELATED INJURY CRASHES	Intersection		0	3	1	0	3	3	0	2	3
	Right Angle		0	3	0	0	1	1	0	1	1
	Rear-End		0	0	1	0	0	2	0	1	2
	Other		0	0	0	0	2	0	0	0	0
RL-RELATED INJURIES	Intersection		0	5	1	0	6	9	0	4	6
	Right Angle		0	5	0	0	1	5	0	2	4
	Rear-End		0	0	1	0	0	4	0	2	2
	Other		0	0	0	0	5	0	0	0	0

Accident Trends and Cost Analysis - Jupiter @ Kingsley

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	44,000	44,000	49,938	49,938	49,108	49,108	46,617	46,617	45,175	85
Estimated Traffic	16,060,000	16,060,000	18,227,370	18,277,308	17,924,420	17,924,420	17,015,205	17,061,822	16,488,875	-
Citations Issued	728	607	665	1,547	2,551	2,691	2,222	2,844	2,878	326
Dollar Value	$54,600	$45,525	$49,875	$116,025	$191,325	$201,825	$166,650	$213,300	$215,850	-
Citation Rate	0.0045%	0.0038%	0.0036%	0.0085%	0.0142%	0.0150%	0.0131%	0.0167%	0.0175%	0.0019%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.6227%	4.3587%	2.7431%	0.0000%	1.1158%	3.9053%	3.5263%	2.9305%	3.3474%	0.2014%
	Right Angle	0.0000%	3.7360%	1.0973%	0.0000%	1.1158%	1.1158%	1.7631%	2.3444%	1.6737%	0.0828%
	Rear-End	0.0000%	0.6227%	1.0973%	0.0000%	0.0000%	2.7895%	1.7631%	0.5861%	1.6737%	0.1784%
	Other	0.6227%	0.0000%	0.5486%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0598%
	Total	1.2453%	8.7173%	5.4863%	0.0000%	2.2316%	7.8106%	7.0525%	5.8610%	6.6948%	0.4029%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.5579%	0.0000%	0.0000%	0.0000%	0.0093%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.5579%	0.0000%	0.0000%	0.0000%	0.0093%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.1158%	0.0000%	0.0000%	0.0000%	0.0186%
RED LIGHT-RELATED INJURIES	Intersection	0.0000%	3.1133%	0.5486%	0.0000%	3.3474%	5.0211%	0.0000%	2.3444%	3.3474%	0.2501%
	Right Angle	0.0000%	3.1133%	0.0000%	0.0000%	0.5579%	2.7895%	0.0000%	1.1722%	2.2316%	0.0982%
	Rear-End	0.0000%	0.0000%	0.5486%	0.0000%	0.0000%	2.2316%	0.0000%	1.1722%	1.1158%	0.1519%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	2.7895%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	6.2267%	1.0973%	0.0000%	6.6948%	10.0422%	0.0000%	4.6888%	6.6948%	0.5002%

City-Reported Statistics - Plano @ Buckingham											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	Data Unavailable	*	*	*	*	*	*	*	*	*
	Citations Issued	0	2,920	2,734	2,920	3,988	6,357	6,164	4,290	6,138	6,220
	Dollar Value	$0	$219,000	$205,050	$219,000	$299,100	$476,775	$462,300	$321,750	$460,350	$466,500
	Avg Daily 1 - P	-	33,194	33,194	33,194	33,194	32,486	32,486	33,278	33,531	24,005
	Avg Daily 2 - B	-	42,124	42,124	35,650	35,650	36,636	38,003	37,865	38,166	34,507
	Total Avg Daily Traffic	-	75,318	75,318	68,844	68,844	69,122	70,489	71,143	71,697	58,512
TOTAL CRASHES	Intersection		12	6	12	11	15	14	16	21	18
	Right Angle		1	0	1	7	9	6	0	1	1
	Rear-End		7	2	3	3	4	7	5	8	10
	Other		4	4	8	1	2	1	11	12	7
RED LIGHT-RELATED CRASHES	Intersection		2	0	4	4	4	2	4	5	8
	Right Angle		1	0	1	4	4	0	0	4	1
	Rear-End		1	0	1	0	0	2	4	1	7
	Other		0	0	2	0	0	0	0	0	0
TOTAL FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection		0	0	0	0	0	0	0	0	0
	Right Angle		0	0	0	0	0	0	0	0	0
	Rear-End		0	0	0	0	0	0	0	0	0
	Other		0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection		5	3	3	4	6	6	6	8	7
	Right Angle		0	0	1	2	4	2	0	0	1
	Rear-End		3	0	1	2	2	3	3	1	3
	Other		2	3	1	0	0	1	3	7	3
TOTAL INJURIES	Intersection		8	5	6	7	9	6	7	13	7
	Right Angle		0	0	2	2	6	2	0	0	1
	Rear-End		5	0	2	5	3	3	3	2	3
	Other		3	5	2	0	0	1	4	11	3
RL-RELATED INJURY CRASHES	Intersection		1	0	1	1	1	1	3	2	4
	Right Angle		0	0	1	1	1	0	0	0	1
	Rear-End		1	0	0	0	0	1	3	0	3
	Other		0	0	0	0	0	0	0	2	0
RL-RELATED INJURIES	Intersection		1	0	2	1	3	1	3	3	4
	Right Angle		0	0	2	1	3	0	0	0	1
	Rear-End		1	0	0	0	0	1	3	1	3
	Other		0	0	0	0	0	0	0	2	0

Accident Trends and Cost Analysis - Plano @ Buckingham

Report End Year:	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	365	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	75,318	75,318	68,844	68,844	69,122	70,489	71,143	71,697	58,512	-1,197
Estimated Traffic	27,491,070	27,491,070	25,128,060	25,196,904	25,229,530	25,728,485	25,967,195	26,241,102	21,356,880	-
Citations Issued	2,920	2,734	2,920	3,988	6,357	6,164	4,290	6,138	6,220	472
Dollar Value	$219,000	$205,050	$219,000	$299,100	$476,775	$462,300	$321,750	$460,350	$466,500	-
Citation Rate	0.0106%	0.0099%	0.0116%	0.0158%	0.0252%	0.0240%	0.0165%	0.0234%	0.0291%	0.0022%

% Chance of an Incident per 100,000 Vehicles

		y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.7275%	0.0000%	1.5918%	1.5875%	1.5854%	0.7773%	1.5404%	1.9054%	3.7459%	0.2813%
	Right Angle	0.3638%	0.0000%	0.3980%	1.5875%	1.5854%	0.0000%	0.0000%	1.5243%	0.4682%	0.0435%
	Rear-End	0.3638%	0.0000%	0.3980%	0.0000%	0.0000%	0.7773%	1.5404%	0.3811%	3.2776%	0.2643%
	Other	0.0000%	0.0000%	0.7959%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	-0.0265%
	Total	1.4550%	0.0000%	3.1837%	3.1750%	3.1709%	1.5547%	3.0808%	3.8108%	7.4917%	0.5626%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	0.3638%	0.0000%	0.7959%	0.3969%	1.1891%	0.3887%	1.1553%	1.1432%	1.8729%	0.1696%
	Right Angle	0.0000%	0.0000%	0.7959%	0.3969%	1.1891%	0.0000%	0.0000%	0.0000%	0.4682%	-0.0019%
	Rear-End	0.3638%	0.0000%	0.0000%	0.0000%	0.0000%	0.3887%	1.1553%	0.3811%	1.4047%	0.1334%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.7622%	0.0000%	0.0381%
	Total	0.7275%	0.0000%	1.5918%	0.7937%	2.3782%	0.7773%	2.3106%	2.2865%	3.7459%	0.3392%

City-Reported Statistics - SH 190, Shiloh											
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016	2017
TRAFFIC	Notes	*	*	*	*	*	*	*	*	*	*
	Citations Issued	0	377	1,516	1,411	1,147	1,328	1,233	1,202	1,194	1,462
	Dollar Value	$0	$28,275	$113,700	$105,825	$86,025	$99,600	$92,475	$90,150	$89,550	$109,650
	Avg Daily 1 - 190	19,960	19,960	19,960	19,960	19,960	12,638	12,638	13,067	13,334	13,334
	Avg Daily 2 - S	22,280	22,280	13,576	13,576	13,576	13,768	14,523	14,703	14,998	16,917
	Total Avg Daily Traffic	42,240	42,240	33,536	33,536	33,536	26,406	27,161	27,770	28,332	30,251
TOTAL CRASHES	Intersection	7	0	3	6	2	4	7	5	5	10
	Right Angle	3	0	2	4	1	2	5	4	5	5
	Rear-End	1	0	1	0	0	2	0	1	0	4
	Other	3	0	0	2	1	0	2	0	0	1
RED LIGHT-RELATED CRASHES	Intersection	3	0	2	4	1	2	5	5	5	9
	Right Angle	3	0	2	4	1	2	5	4	5	5
	Rear-End	0	0	0	0	0	0	0	1	0	3
	Other	0	0	0	0	0	0	0	0	0	1
TOTAL FATAL CRASHES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection	0	0	0	0	0	0	0	0	0	0
	Right Angle	0	0	0	0	0	0	0	0	0	0
	Rear-End	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection	3	0	2	0	1	3	3	3	5	6
	Right Angle	2	0	2	0	1	1	2	0	5	4
	Rear-End	0	0	0	0	0	2	0	0	0	2
	Other	1	0	0	0	0	0	1	0	0	0
TOTAL INJURIES	Intersection	7	0	2	0	2	3	5	5	9	8
	Right Angle	5	0	2	0	2	1	4	5	9	4
	Rear-End	0	0	0	0	0	2	0	0	0	4
	Other	2	0	0	0	0	0	1	0	0	0
RL-RELATED INJURY CRASHES	Intersection	2	0	2	0	1	1	2	3	5	5
	Right Angle	2	0	2	0	1	1	2	3	5	4
	Rear-End	0	0	0	0	0	0	0	0	0	1
	Other	0	0	0	0	0	0	0	0	0	0
RL-RELATED INJURIES	Intersection	5	0	2	0	2	1	4	5	9	6
	Right Angle	5	0	2	0	2	1	4	5	9	4
	Rear-End	0	0	0	0	0	0	0	0	0	2
	Other	0	0	0	0	0	0	0	0	0	0

Accident Trends and Cost Analysis - SH190 @ Shiloh

Report End Year:	Pre-Activation	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
Reporting Period (Days)	548	67	365	365	366	365	365	365	366	365	-
Avg Daily Traffic	42,240	42,240	33,536	33,536	33,536	26,406	27,161	27,770	28,332	30,251	-1,578
Estimated Traffic	23,147,520	2,830,080	12,240,640	12,240,640	12,274,176	9,638,190	9,913,765	10,136,050	10,369,512	11,041,615	-
Citations Issued	0	377	1,516	1,411	1,147	1,328	1,233	1,202	1,194	1,462	51
Dollar Value	$0	$28,275	$113,700	$105,825	$86,025	$99,600	$92,475	$90,150	$89,550	$109,650	-
Citation Rate	-	0.0133%	0.0124%	0.0115%	0.0093%	0.0138%	0.0124%	0.0119%	0.0115%	0.0132%	0.0000%

% Chance of an Incident per 100,000 Vehicles

		Pre-Activation	y2009	y2010	y2011	y2012	y2013	y2014	y2015	y2016	y2017	Trends
RED LIGHT-RELATED CRASHES	Intersection	1.2960%	0.0000%	1.6339%	3.2678%	0.8147%	2.0751%	5.0435%	4.9329%	4.8218%	8.1510%	0.7184%
	Right Angle	1.2960%	0.0000%	1.6339%	3.2678%	0.8147%	2.0751%	5.0435%	3.9463%	4.8218%	4.5283%	0.4909%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.9866%	0.0000%	2.7170%	0.1781%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.9057%	0.0494%
	Total	2.5921%	0.0000%	3.2678%	6.5356%	1.6294%	4.1502%	10.0870%	9.8658%	9.6437%	16.3020%	1.4367%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	2.1601%	0.0000%	1.6339%	0.0000%	1.6294%	1.0375%	4.0348%	4.9329%	8.6793%	5.4340%	0.7165%
	Right Angle	2.1601%	0.0000%	1.6339%	0.0000%	1.6294%	1.0375%	4.0348%	4.9329%	8.6793%	3.6227%	0.6177%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.8113%	0.0988%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	4.3201%	0.0000%	3.2678%	0.0000%	3.2589%	2.0751%	8.0696%	9.8658%	17.3586%	10.8680%	1.4331%

City-Reported Statistics - Shiloh, Kingsley										
	Report End Year:	Pre-Activation	2009	2010	2011	2012	2013	2014	2015	2016
TRAFFIC	Notes	Data Unavailable	Data Unavailable	*	*	*	*	*	*	*
	Citations Issued	0	0	990	772	731	788	922	1,166	984
	Dollar Value	$0	$0	$74,250	$57,900	$54,825	$59,100	$69,150	$87,450	$73,800
	Avg Daily 1 - S	-	-	18,298	16,820	16,820	18,524	16,922	16,636	18,689
	Avg Daily 2 - K	-	-	15,242	14,449	14,449	14,484	14,484	14,484	18,525
	Total Avg Daily Traffic	-	-	33,540	31,269	31,269	33,008	31,406	31,120	37,214
TOTAL CRASHES	Intersection			3	6	9	9	2	6	4
	Right Angle			1	2	5	4	0	0	0
	Rear-End			1	2	3	5	2	4	3
	Other			1	2	1	0	0	2	1
RED LIGHT-RELATED CRASHES	Intersection			1	3	1	4	1	2	3
	Right Angle			1	2	1	4	0	0	0
	Rear-End			0	1	0	0	1	2	3
	Other			0	0	0	0	0	0	0
TOTAL FATAL CRASHES	Intersection			0	0	0	0	0	0	0
	Right Angle			0	0	0	0	0	0	0
	Rear-End			0	0	0	0	0	0	0
	Other			0	0	0	0	0	0	0
TOTAL FATALITIES	Intersection			0	0	0	0	0	0	0
	Right Angle			0	0	0	0	0	0	0
	Rear-End			0	0	0	0	0	0	0
	Other			0	0	0	0	0	0	0
RL-RELATED FATAL CRASHES	Intersection			0	0	0	0	0	0	0
	Right Angle			0	0	0	0	0	0	0
	Rear-End			0	0	0	0	0	0	0
	Other			0	0	0	0	0	0	0
RL-RELATED FATALITIES	Intersection			0	0	0	0	0	0	0
	Right Angle			0	0	0	0	0	0	0
	Rear-End			0	0	0	0	0	0	0
	Other			0	0	0	0	0	0	0
TOTAL INJURY CRASHES	Intersection			1	4	3	4	0	2	2
	Right Angle			1	2	2	3	0	0	0
	Rear-End			0	2	1	1	0	1	1
	Other			0	0	0	0	0	1	1
TOTAL INJURIES	Intersection			2	5	3	7	0	2	4
	Right Angle			2	3	2	6	0	0	0
	Rear-End			0	2	1	1	0	1	1
	Other			0	0	0	0	0	1	3
RL-RELATED INJURY CRASHES	Intersection			1	3	1	3	0	0	1
	Right Angle			1	2	1	3	0	0	0
	Rear-End			0	1	0	0	0	0	1
	Other			0	0	0	0	0	0	0
RL-RELATED INJURIES	Intersection			2	4	1	6	0	0	1
	Right Angle			2	3	1	6	0	0	0
	Rear-End			0	1	0	0	0	0	1
	Other			0	0	0	0	0	0	0

Accident Trends and Cost Analysis - Shiloh @ Kingsley

Report End Year:	y2010	y2011	y2012	y2013	y2014	y2015	y2016	Trends
Reporting Period (Days)	365	365	366	365	365	365	366	-
Avg Daily Traffic	33,540	31,269	31,269	33,008	31,406	31,120	37,214	388
Estimated Traffic	12,242,100	11,413,185	11,444,454	12,047,920	11,463,190	11,358,800	13,620,324	-
Citations Issued	990	772	731	788	922	1,166	984	34
Dollar Value	$74,250	$57,900	$54,825	$59,100	$69,150	$87,450	$73,800	-
Citation Rate	0.0081%	0.0068%	0.0064%	0.0065%	0.0080%	0.0103%	0.0072%	0.0002%

Camera was deactivated as of 2017

% Chance of an Incident per 100,000 Vehicles

		y2010	y2011	y2012	y2013	y2014	y2015	y2016	Trends
RED LIGHT-RELATED CRASHES	Intersection	0.8169%	2.6285%	0.8738%	3.3201%	0.8724%	1.7607%	2.2026%	0.0864%
	Right Angle	0.8169%	1.7524%	0.8738%	3.3201%	0.0000%	0.0000%	0.0000%	-0.2439%
	Rear-End	0.0000%	0.8762%	0.0000%	0.0000%	0.8724%	1.7607%	2.2026%	0.3303%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	1.6337%	5.2571%	1.7476%	6.6402%	1.7447%	3.5215%	4.4052%	0.1729%
RED LIGHT-RELATED FATALITIES	Intersection	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Right Angle	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Rear-End	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
RED LIGHT-RELATED INJURIES	Intersection	1.6337%	3.5047%	0.8738%	4.9801%	0.0000%	0.0000%	0.7342%	-0.3779%
	Right Angle	1.6337%	2.6285%	0.8738%	4.9801%	0.0000%	0.0000%	0.0000%	-0.3940%
	Rear-End	0.0000%	0.8762%	0.0000%	0.0000%	0.0000%	0.0000%	0.7342%	0.0161%
	Other	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Total	3.2674%	7.0094%	1.7476%	9.9602%	0.0000%	0.0000%	1.4684%	-0.7558%

APPENDIX C
State Law

http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.707.htm#707.003

Sec. 707.003. INSTALLATION AND OPERATION OF PHOTOGRAPHIC TRAFFIC SIGNAL ENFORCEMENT SYSTEM. (a) A local authority that implements a photographic traffic signal enforcement system under this chapter may:

(1) contract for the administration and enforcement of the system; and

(2) install and operate the system or contract for the installation or operation of the system.

(b) A local authority that contracts for the administration and enforcement of a photographic traffic signal enforcement system may not agree to pay the contractor a specified percentage of, or dollar amount from, each civil penalty collected.

(c) Before installing a photographic traffic signal enforcement system at an intersection approach, the local authority shall conduct a traffic engineering study of the approach to determine whether, in addition to or as an alternative to the system, a design change to the approach or a change in the signalization of the intersection is likely to reduce the number of red light violations at the intersection.

(d) An intersection approach must be selected for the installation of a photographic traffic signal enforcement system based on traffic volume, the history of accidents at the approach, the number or frequency of red light violations at the intersection, and similar traffic engineering and safety criteria, without regard to the ethnic or socioeconomic characteristics of the area in which the approach is located.

(e) A local authority shall report results of the traffic engineering study required by Subsection (c) to a citizen advisory committee consisting of one person appointed by each member of the governing body of the local authority. The committee shall advise the local authority on the installation and operation of a photographic traffic signal enforcement system established under this chapter.

(f) A local authority may not impose a civil penalty under this chapter on the owner of a motor vehicle if the local authority violates Subsection (b) or (c).

(g) The local authority shall install signs along each roadway that leads to an intersection at which a photographic traffic signal enforcement system is in active use. The signs must be at least 100 feet from the intersection or located according to standards established in the manual adopted by the Texas Transportation Commission under Section 544.001, be easily readable to any operator approaching the intersection, and clearly indicate the presence of a photographic monitoring system that records violations that may result in the issuance of a notice of violation and the imposition of a monetary penalty.

(h) A local authority or the person with which the local authority contracts for the administration and enforcement of a photographic traffic signal enforcement system may not provide information about a civil

penalty imposed under this chapter to a credit bureau, as defined by Section 392.001, Finance Code.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.004. REPORT OF ACCIDENTS. (a) In this section, "department" means the Texas Department of Transportation.

(b) Before installing a photographic traffic signal enforcement system at an intersection approach, the local authority shall compile a written report of the number and type of traffic accidents that have occurred at the intersection for a period of at least 18 months before the date of the report.

(c) Not later than six months after the date of the installation of the photographic traffic signal enforcement system at the intersection, the local authority shall provide the department a copy of the report required by Subsection (b).

(d) After installing a photographic traffic signal enforcement system at an intersection approach, the local authority shall monitor and annually report to the department the number and type of traffic accidents at the intersection to determine whether the system results in a reduction in accidents or a reduction in the severity of accidents.

(e) The report must be in writing in the form prescribed by the department.

(f) Not later than December 1 of each year, the department shall publish the information submitted by a local authority under Subsection (d).

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.005. MINIMUM CHANGE INTERVAL. At an intersection at which a photographic traffic monitoring system is in use, the minimum change interval for a steady yellow signal must be established in accordance with the Texas Manual on Uniform Traffic Control Devices.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1,2007.

Sec. 707.006. GENERAL SURVEILLANCE PROHIBITED; OFFENSE. (a) A local authority shall operate a photographic traffic control signal enforcement system only for the purpose of detecting a violation or suspected violation of a traffic-control signal.

(b) A person commits an offense if the person uses a photographic traffic signal enforcement system to produce a recorded image other than in the manner and for the purpose specified by this chapter.

(c) An offense under this section is a Class A misdemeanor.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.007. AMOUNT OF CIVIL PENALTY; LATE PAYMENT PENALTY. If a local authority enacts an ordinance to enforce compliance with the instructions of a traffic-control signal by the imposition of a civil or administrative penalty, the amount of:

(1) the civil or administrative penalty may not exceed $75; and

(2) a late payment penalty may not exceed $25.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.008. DEPOSIT OF REVENUE FROM CERTAIN TRAFFIC PENALTIES. (a) Not later than the 60th day after the end of a local authority's fiscal year, after deducting amounts the local authority is authorized by Subsection (b) to retain, the local authority shall:

(1) send 50 percent of the revenue derived from civil or administrative penalties collected by the local authority under this section to the comptroller for deposit to the credit of the designated trauma facility and emergency medical services account established under Section 780.003, Health and Safety Code; and

(2) deposit the remainder of the revenue in a special account in the local authority's treasury that may be used only to fund traffic safety programs, including pedestrian safety programs, public safety programs, intersection improvements, and traffic enforcement.

(b) A local authority may retain an amount necessary to cover the costs of:

(1) purchasing or leasing equipment that is part of or used in connection with the photographic traffic signal enforcement system in the local authority;

(2) installing the photographic traffic signal enforcement system at sites in the local authority, including the costs of installing cameras, flashes, computer equipment, loop sensors, detectors, utility lines, data lines, poles and mounts, networking equipment, and associated labor costs;

(3) operating the photographic traffic signal enforcement system in the local authority, including the costs of creating, distributing, and delivering violation notices, review of violations conducted by employees of the local authority, the processing of fine payments and collections, and the costs associated with administrative adjudications and appeals; and

(4) maintaining the general upkeep and functioning of the photographic traffic signal enforcement system.

(c) Chapter 133, Local Government Code, applies to fee revenue described by Subsection (a)(1).

(d) If under Section 133.059, Local Government Code, the comptroller conducts an audit of a local authority and determines that the local authority retained more than the amounts authorized by this section or failed to deposit amounts as required by this section, the comptroller may impose a penalty on the local authority equal to twice the amount the local authority:

(1) retained in excess of the amount authorized by this section; or

(2) failed to deposit as required by this section.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Amended by:

Acts 2015, 84th Leg., R.S., Ch. 448 (H.B. 7), Sec. 39, eff. September 1, 2015.

Sec. 707.009. REQUIRED ORDINANCE PROVISIONS. An ordinance adopted under Section 707.002 must provide that a person against whom the local authority seeks to impose a civil penalty is entitled to a hearing and shall:

(1) provide for the period in which the hearing must be held;

(2) provide for the appointment of a hearing officer with authority to administer oaths and issue orders compelling the attendance of witnesses and the production of documents; and

(3) designate the department, agency, or office of the local authority responsible for the enforcement and administration of the ordinance

or provide that the entity with which the local authority contracts under Section 707.003(a)(1) is responsible for the enforcement and administration of the ordinance.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.010. EFFECT ON OTHER ENFORCEMENT. (a) The implementation of a photographic traffic signal enforcement system by a local authority under this chapter does not:

(1) preclude the application or enforcement in the local authority of Section 544.007(d) in the manner prescribed by Chapter 543; or

(2) prohibit a peace officer from arresting a violator of Section 544.007(d) as provided by Chapter 543, if the peace officer personally witnesses the violation, or from issuing the violator a citation and notice to appear as provided by that chapter.

(b) A local authority may not impose a civil penalty under this chapter on the owner of a motor vehicle if the operator of the vehicle was arrested or issued a citation and notice to appear by a peace officer for the same violation of Section 544.007(d) recorded by the photographic traffic signal enforcement system.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.011. NOTICE OF VIOLATION; CONTENTS. (a) The imposition of a civil penalty under this chapter is initiated by the mailing of a notice of violation to the owner of the motor vehicle against whom the local authority seeks to impose the civil penalty.

(b) Not later than the 30th day after the date the violation is alleged to have occurred, the designated department, agency, or office of the local authority or the entity with which the local authority contracts under Section 707.003(a)(1) shall mail the notice of violation to the owner at:

(1) the owner's address as shown on the registration records of the Texas Department of Motor Vehicles; or

(2) if the vehicle is registered in another state or country, the owner's address as shown on the motor vehicle registration records of the

department or agency of the other state or country analogous to the Texas Department of Motor Vehicles.

(c) The notice of violation must contain:

(1) a description of the violation alleged;

(2) the location of the intersection where the violation occurred;

(3) the date and time of the violation;

(4) the name and address of the owner of the vehicle involved in the violation;

(5) the registration number displayed on the license plate of the vehicle involved in the violation;

(6) a copy of a recorded image of the violation limited solely to a depiction of the area of the registration number displayed on the license plate of the vehicle involved in the violation;

(7) the amount of the civil penalty for which the owner is liable;

(8) the number of days the person has in which to pay or contest the imposition of the civil penalty and a statement that the person incurs a late payment penalty if the civil penalty is not paid or imposition of the penalty is not contested within that period;

(9) a statement that the owner of the vehicle in the notice of violation may elect to pay the civil penalty by mail sent to a specified address instead of appearing at the time and place of the administrative adjudication hearing; and

(10) information that informs the owner of the vehicle named in the notice of violation:

(A) of the owner's right to contest the imposition of the civil penalty against the person in an administrative adjudication hearing;

(B) that imposition of the civil penalty may be contested by submitting a written request for an administrative adjudication hearing before the expiration of the period specified under Subdivision (8); and

(C) that failure to pay the civil penalty or to contest liability for the penalty in a timely manner is an admission of liability and a waiver of the owner's right to appeal the imposition of the civil penalty.

(d) A notice of violation is presumed to have been received on the fifth day after the date the notice is mailed.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Amended by:

Acts 2009, 81st Leg., R.S., Ch. 933 (H.B. 3097), Sec. 2T.02, eff. September 1, 2009.

Sec. 707.012. ADMISSION OF LIABILITY. A person who fails to pay the civil penalty or to contest liability for the penalty in a timely manner or who requests an administrative adjudication hearing to contest the imposition of the civil penalty against the person and fails to appear at that hearing is considered to:

(1) admit liability for the full amount of the civil penalty stated in the notice of violation mailed to the person; and

(2) waive the person's right to appeal the imposition of the civil penalty.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.013. PRESUMPTION. (a) It is presumed that the owner of the motor vehicle committed the violation alleged in the notice of violation mailed to the person if the motor vehicle depicted in a photograph or digital image taken by a photographic traffic signal enforcement system belongs to the owner of the motor vehicle.

(b) If, at the time of the violation alleged in the notice of violation, the motor vehicle depicted in a photograph or digital image taken by a photographic traffic signal enforcement system was owned by a person in the business of selling, renting, or leasing motor vehicles or by a person who was not the person named in the notice of violation, the presumption under Subsection (a) is rebutted on the presentation of evidence establishing that the vehicle was at that time:

(1) being test driven by another person;

(2) being rented or leased by the vehicle's owner to another person; or

(3) owned by a person who was not the person named in the notice of violation.

(c) Notwithstanding Section 707.014, the presentation of evidence under Subsection (b) by a person who is in the business of selling, renting, or leasing motor vehicles or did not own the vehicle at the time of the violation must be made by affidavit, through testimony at the administrative adjudication hearing under Section 707.014, or by a written declaration under penalty of perjury. The affidavit or written declaration may be submitted by mail to the local authority or the entity with which the local authority contracts under Section 707.003(a)(1).

(d) If the presumption established by Subsection (a) is rebutted under Subsection (b), a civil penalty may not be imposed on the owner of the vehicle or the person named in the notice of violation, as applicable.

(e) If, at the time of the violation alleged in the notice of violation, the motor vehicle depicted in the photograph or digital image taken by the photographic traffic signal enforcement system was owned by a person in the business of renting or leasing motor vehicles and the vehicle was being rented or leased to an individual, the owner of the motor vehicle shall provide to the local authority or the entity with which the local authority contracts under Section 707.003(a)(1) the name and address of the individual who was renting or leasing the motor vehicle depicted in the photograph or digital image and a statement of the period during which that individual was renting or leasing the vehicle. The owner shall provide the information required by this subsection not later than the 30th day after the date the notice of violation is received. If the owner provides the required information, it is presumed that the individual renting or leasing the motor vehicle committed the violation alleged in the notice of violation and the local authority or contractor may send a notice of violation to that individual at the address provided by the owner of the motor vehicle.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.014. ADMINISTRATIVE ADJUDICATION HEARING. (a) A person who receives a notice of violation under this chapter may contest the imposition of the civil penalty specified in the notice of violation by filing a written request for an administrative adjudication hearing. The request for a hearing must be filed on or before the date specified in the notice of violation, which may not be earlier than the 30th day after the date the notice of violation was mailed.

(b) On receipt of a timely request for an administrative adjudication hearing, the local authority shall notify the person of the date and time of the hearing.

(c) A hearing officer designated by the governing body of the local authority shall conduct the administrative adjudication hearing.

(d) In an administrative adjudication hearing, the issues must be proven by a preponderance of the evidence.

(e) The reliability of the photographic traffic signal enforcement system used to produce the recorded image of the motor vehicle involved in the violation may be attested to by affidavit of an officer or employee of the local authority or of the entity with which the local authority contracts under Section 707.003(a)(1) who is responsible for inspecting and maintaining the system.

(f) An affidavit of an officer or employee of the local authority or entity that alleges a violation based on an inspection of the applicable recorded image is:

(1) admissible in the administrative adjudication hearing and in an appeal under Section 707.016; and

(2) evidence of the facts contained in the affidavit.

(g) At the conclusion of the administrative adjudication hearing, the hearing officer shall enter a finding of liability for the civil penalty or a finding of no liability for the civil penalty. A finding under this subsection must be in writing and be signed and dated by the hearing officer.

(h) A finding of liability for a civil penalty must specify the amount of the civil penalty for which the person is liable. If the hearing officer enters a finding of no liability, a civil penalty for the violation may not be imposed against the person.

(i) A finding of liability or a finding of no liability entered under this section may:

(1) be filed with the clerk or secretary of the local authority or with a person designated by the governing body of the local authority; and

(2) be recorded on microfilm or microfiche or using data processing techniques.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.015. UNTIMELY REQUEST FOR ADMINISTRATIVE ADJUDICATION HEARING. Notwithstanding any other provision of this chapter, a person who receives a notice of violation under this chapter and who fails to timely pay the amount of the civil penalty or fails to timely request an administrative adjudication hearing is entitled to an administrative adjudication hearing if:

(1) the person submits a written request for the hearing to the designated hearing officer, accompanied by an affidavit that attests to the date on which the person received the notice of violation; and

(2) the written request and affidavit are submitted to the hearing officer within the same number of days after the date the person received the notice of violation as specified under Section 707.011(c)(8).

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.016. APPEAL. (a) The owner of a motor vehicle determined by a hearing officer to be liable for a civil penalty may appeal that determination to a judge by filing an appeal petition with the clerk of the court. The petition must be filed with:

(1) a justice court of the county in which the local authority is located; or

(2) if the local authority is a municipality, the municipal court of the municipality.

(b) The petition must be:

(1) filed before the 31st day after the date on which the administrative adjudication hearing officer entered the finding of liability for the civil penalty; and

(2) accompanied by payment of the costs required by law for the court.

(c) The court clerk shall schedule a hearing and notify the owner of the motor vehicle and the appropriate department, agency, or office of the local authority of the date, time, and place of the hearing.

(d) An appeal stays enforcement and collection of the civil penalty imposed against the owner of the motor vehicle. The owner shall file a notarized statement of personal financial obligation to perfect the owner's appeal.

(e) An appeal under this section shall be determined by the court by trial de novo.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.017. ENFORCEMENT. (a) If the owner of a motor vehicle is delinquent in the payment of a civil penalty imposed under this chapter, the

county assessor-collector or the Texas Department of Motor Vehicles may refuse to register a motor vehicle alleged to have been involved in the violation.

(b) This section does not apply to the registration of a motor vehicle under Section 501.0234.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Amended by:

Acts 2009, 81st Leg., R.S., Ch. 266 (H.B. 2530), Sec. 1, eff. May 30, 2009.

Acts 2009, 81st Leg., R.S., Ch. 542 (S.B. 1617), Sec. 4, eff. September 1, 2009.

Acts 2009, 81st Leg., R.S., Ch. 933 (H.B. 3097), Sec. 2T.03, eff. September 1, 2009.

Reenacted by Acts 2011, 82nd Leg., R.S., Ch. 91 (S.B. 1303), Sec. 24.018, eff. September 1, 2011.

Sec. 707.018. IMPOSITION OF CIVIL PENALTY NOT A CONVICTION. The imposition of a civil penalty under this chapter is not a conviction and may not be considered a conviction for any purpose.

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Sec. 707.019. FAILURE TO PAY CIVIL PENALTY. (a) If the owner of the motor vehicle fails to timely pay the amount of the civil penalty imposed against the owner:

(1) an arrest warrant may not be issued for the owner; and

(2) the imposition of the civil penalty may not be recorded on the owner's driving record.

(b) Notice of Subsection (a) must be included in the notice of violation required by Section 707.011(c).

Added by Acts 2007, 80th Leg., R.S., Ch. 1149 (S.B. 1119), Sec. 1, eff. September 1, 2007.

Appendix D:

Placeholder for Public Safety Committee Comments