TRAFFIC SAFETY ADVISORY BOARD
AGENDA

DATE: Tuesday, June 17, 2014

TIME: 7:00 PM

LOCATION: Municipal Building, Training Room

1. Approval of Minutes from the last meeting.

2. Jason Elliott with Cannon & Cannon Inc. will discuss the Pedestrian Hybrid Beacon.

3. Discussion of Redflex System, Inc. before and after data collection at the red light/speed camera locations.

4. Oak Ridge Turnpike/Oak Ridge High School continuing discussion on traffic control options. (City Council deferred to TSAB on March 25, 2014)

5. Update from subcommittee to create TSAB Annual Plan.

6. Comments or questions on road work in the city.

7. Additional business.

8. Adjournment.

If members cannot attend, please call William Polfus at 482-8068.

UNAPPROVED

TRAFFIC SAFETY ADVISORY BOARD
Minutes
May 20, 2014

The May meeting of the TSAB was held at 7 pm on Tuesday, May 20, 2014 in the training room of the municipal building (room 104). Meeting was called to order at 7:02 pm.

Present were:

Gene Dunaway, William Polfus, Jane L. Shelton, Aditya Savara, Andrew Howe, Bill Davis, Steve Byrd (City staff representative), Ben Redmond, Emeline Brown

Non board members:

Trygve Myhre

1) Minutes from the April 15, 2014 meeting were approved unanimously.

2) We were informed that the TSAB website now has a link to a new page that makes the agendas and minutes to our meetings available for public consumption.

The link is: http://www.oakridgetn.gov/department.aspx?article=3086&site=PublicWorks

3) A by-laws committee was formed to create a set of by-laws for the TSAB. Bill Polfus, Ben Redmond and Andrew Howe volunteered to be on this committee. It was our understanding that the process to make our by-laws official is to present them to council for approval. A special meeting will be called for the committee to meet publicly for a work session.

4) An Annual Plan committee was formed to create a set of goals for the board. Aditya Savara, Jane Shelton and Bill Polfus volunteered to be on this committee. In 2012 the boards were given a list of goals to reach that year and the TSAB appreciated that. It was the understanding of some that we were supposed to have an annual plan. A special meeting will be called for the committee to meet publicly for a work session.

5) Jason Elliot was unable to attend the meeting, so we were unable to have his scheduled presentation on Pedestrian Hybrid Beacons and their application at the ORHS / Turnpike intersection.

In his absence the TSAB continued our discussion about the pedestrian crossing at that intersection.

Steve Byrd reported that the data collected during the final "no ticket" month of the speed cameras at the intersection indicate that driving speeds have increased in their absence.

Bill Polfus informed us that Councilman Hope, Councilwomen Baughn and Garcia-Garland, and ORHS Principal Bryant all have expressed favor for a Pedestrian Hybrid Beacon at that intersection via emails.

The TSAB discussed the problems with such a device:

They have to be 100' from an intersection. If the crosswalk is moved west it is unlikely many pedestrians will walk the extra 200' to use it. If it is moved east, pedestrians would then have to cross the HS entrance driveway without light assistance. This approach could also create problems at the Tulane intersection, and again may not be used by many pedestrians as it may diverge greatly from their desired route.

The TSAB then discussed the use of a Flashing Beacon, like the one on Emory Valley Road. These devices can be placed at the current location. There is a possible incident risk of cars exiting west from the HS driveway, so a "Vehicles must yield to pedestrians in crosswalk" would be placed at the exit. These

devices cost the city around $10K per crossing when purchased last. The board was in agreement that they worked very well on Emory Valley Road.

Steve Byrd reminded us that the city still has an opening available for a crossing guard at that intersection.

6) Gene Dunaway brought up and distributed an email suggestion he received from Anne Garcia-Garland and Diane Wilson regarding the idea of installing more advanced green left turn arrow lights for general safety at the intersections on the Turnpike.

He also discussed the possible need for a re-look at the intersection of Robertsville and Raleigh to better handle the turn radius of semis. Steve Byrd informed us that the city will resurface Raleigh and they may need to adjust for a wider turn there.

7) Steve Byrd says the city is getting ready to remove the railroad tracks on Emory Valley Rd and resurface the road from LaFayette to Davidson Lane.

8) Jane Shelton handed out a quick bullet point diagram regarding Complete Streets from the May 2014 American Planning Association magazine.

9) A motion to adjourn was made and passed unanimously.

The meeting was adjourned at 8:12 pm.

Andrew Howe
TSAB Secretary

City of Oak Ridge, TN - Traffic Safety Program

A Statistical Analysis of the Effects of Photo Enforcement on Driver Behavior and Traffic Safety

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Introduction

Oak Ridge, TN contracted Redflex Traffic System, Inc. on August 18, 2008 to provide a Photo Enforcement Program in an effort to increase traffic safety in the city. Program objectives were to reduce the incidence of vehicle collisions at photo enforced intersections and to reduce speeding on city streets. In April 2009, four speed enforcement traffic safety cameras were installed on the roadways in front of Oak Ridge High School and Willow Brook Elementary School to enforce the speed limit in the school zones. Four additional red light and speed traffic safety cameras were installed at the intersections of Oak Ridge Turnpike @ Lafayette Drive and Illinois Ave @ Robertsville Road.

The Traffic Safety Program was operated and enforced by the Oak Ridge Police Department (ORPD) from April 2009 through April 2014.

What are the benefits of photo enforcement?

Automatic Detection: Redflex photo enforcement cameras are fully automated. No action is required by an officer at the scene to trigger or activate the system. However, an officer does approve each and every violation prior to its issuance.

24/7 Deterrent: The presence of photo enforcement systems causes drivers to think twice before initiating any risky maneuvers. The camera systems serve as deterrents to breaking the law, 24/7.

Police Force Multiplier: Photo enforcement programs serve as "police force multipliers" enabling local officers to focus on high-priority tasks while still ensuring the safety and security of problematic intersections.

Crash Prevention: Photo enforcement programs help prevent crashes; thereby reducing traffic delays and resource allocation by police, fire and EMT resources. More importantly, automated enforcement cameras save lives. According to National Highway Traffic Safety Administration an average of 89 people died each day in motor vehicle crashes in 2011 – an average of one every 16 minutes.

Key Points of the evaluation

1. **Collision reduction during enforcement – Down 34.1%**
2. **Evaluation of 21 days before (April 1 – 21) and 21 days (April 22 – May 12) after disablement**
3. **Increased speed of vehicles at monitored locations – 20,000 more vehicles at or over 40 MPH**
4. **Increased detections of speeding incidents – Increase of 116%**
5. **Increased detections of red light incidents – Increase of 30%**

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Program Objectives and Results

The program's objective was to reduce collisions at traffic controlled intersections. This objective was met. Overall the city experienced a 34% reduction in collisions at the monitored locations.

Collision Analysis – Provided by Oak Ridge Police Department

The collision analysis completed by the Oak Ridge Police looked at pre-camera data from March 2005 – March 2009 (49 months) and post-camera data April 2009 – December 2013 (57 months). To achieve an accurate comparison each collision category was analyzed on an average collision per month.

Comparison Data from Photo Enforced locations*:

	Property Damage		Injury Collisions		Total Collisions	
Location	Before	After	Before	After	Before	After
Oak Ridge HS	55	43	16	14	71	57
Willow Brook Elem	0	0	0	0	0	0
OR @ Lafayette	61	45	25	13	86	58
III @ Robertsville	15	18	8	5	23	23
Totals	131	106	49	32	180	138

* Baseline Data as provided by ORPD

Before = March 2005 – March 2009 (49 months)

After = April 2009 – December 2013 (57 months)

Average collisions per month

	Property Damage		Injury Collisions		Total Collisions		Comparison
Location	Before	After	Before	After	Before	After	
Oak Ridge HS	1.12	**0.75**	0.33	**0.25**	1.45	**1.00**	-31.0%
Willow Brook Elem	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.0%
OR @ Lafayette	1.24	**0.79**	0.51	**0.23**	1.76	**1.02**	-42.0%
III @ Robertsville	0.31	**0.32**	0.16	**0.09**	0.47	**0.40**	-14.0%
Totals	2.67	**1.86**	1.00	**0.56**	3.67	**2.42**	-34.1%

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Increase in Speed – Before and After System Disablement

The Traffic Safety Program's second objective was to reduce vehicle speed at the monitored locations. Data from the program indicates this public safety objective was also met. To best illustrate the effect the traffic safety cameras had in Oak Ridge, an analysis was completed using data received from the systems after the cameras were disabled on April 21, 2014. At the request of the City, Redflex disabled the cameras and flashes but allowed the computers and sensors to remain operational, allowing for the continued collection of traffic count and speed data for analysis.

The evaluation compared data collected April 1 – 21, 2014 while the cameras were fully operational to data collected April 22 – May 12, 2014 when only the computers and sensors remained active. The results of this comparison have been included on the following pages.

Traffic Counts		
	April 1 – 21 Cameras operational	April 22 – May 12 Cameras non-operational
OAR-ILRO-01	128,911	124,454
OAR-ILRO-02	128,668	115,673
OAR-ORLA-01	189,005	190,701
OAR-ORLA-02	107,055	107,532
OAR-OREHS-01	142,537	144,480
OAR-OREHS-01SZ	18,368	20,584
OAR-ORWHS-01	159,964	167,367
OAR-ORWHS-01SZ	15,003	17,446
OAR-ROIR-01	17,886	17,946
OAR-ROIR-01SZ	617	1,335
OAR-ROJE-01	18,596	19,357
OAR-ROJE-01SZ	1,078	1,964
GRAND TOTALS	**927,688**	**928,839**

*Note: 4 more school days from April 22 – May 12 than during the April 1 – 21.

Traffic Safety Camera Locations		
OAR-ILRO-01	SB	Illinois Avenue and Robertsville Road
OAR-ILRO-02	NB	
OAR-ORLA-01	WB	Oak Ridge Turnpike and Lafayette Drive
OAR-ORLA-02	EB	
OAR-OREHS-01	EB	Oak Ridge Turnpike and Oak Ridge High School
OAR-OREHS-01SZ	EB	
OAR-ORWHS-01	WB	Oak Ridge Turnpike and Oak Ridge High School
OAR-ORWHS-01SZ	WB	
OAR-ROIR-01	WB	Robertsville Road WB and Iroquois Road
OAR-ROIR-01SZ	WB	
OAR-ROJE-01	EB	Robertsville Road EB and Jefferson Avenue
OAR-ROJE-01SZ	EB	

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85th Percentile (MPH)	April 1 – 21 Cameras operational	April 22 – May 12 Cameras non-operational
OAR-ILRO-01	36.9	38.4
OAR-ILRO-02	34.3	36.6
OAR-ORLA-01	32.8	32.4
OAR-ORLA-02	31.3	32.7
OAR-OREHS-01	34.0	36.5
OAR-OREHS-01SZ	18.3	19.9
OAR-ORWHS-01	35.9	36.5
OAR-ORWHS-01SZ	19.1	20.6
OAR-ROIR-01	27.6	29.6
OAR-ROIR-01SZ	17.0	18.3
OAR-ROJE-01	22.1	24.0
OAR-ROJE-01SZ	16.8	17.9
GRAND TOTALS	**34.3**	**35.7**

*Note: 85th Percentile is used to calculate the speed at which 85% of the vehicles are traveling.

In all but one approach, the 85th Percentile for speed increased when the traffic safety cameras were disabled. For three (3) of the approaches observed, the speed of traffic increased by 2 MPH or greater. The increased speed of vehicles led to an increase in the number of violations detected for vehicles in excess of 11 MPH over the speed limit and 6 MPH over the limit in school zones. Non-school zone detections increased by **1,805** or up to **243.3%.** Schools zone approaches saw an increase by **921** detections or up to **434.5%**. The chart below includes details for each approach.

Approach (Non-SZ)	Enforced Speed	Before (21 days)	After (21 days)	Before Avg (Daily)	After Avg (Daily)	% Increase
OAR-ILRO-01	51 MPH or >	195	442	9.3	21.0	126.7%
OAR-ILRO-02	51 MPH or >	61	155	2.9	7.4	154.1%
OAR-OREHS-01	46 MPH or >	486	1,019	23.1	48.5	109.7%
OAR-ORWHS-01	46 MPH or >	497	1,087	23.7	51.8	118.7%
OAR-ORLA-01	46 MPH or >	98	147	4.7	7.0	50.0%
OAR-ORLA-02	46 MPH or >	30	103	1.4	4.9	243.3%
OAR-ROIR-01	36 MPH or >	180	388	8.6	18.5	115.6%
OAR-ROJE-01	36 MPH or >	11	22	0.5	1.0	100.0%
Approach (SZ)	**Enforced Speed**	**Before (14 days)**	**After (14 Days)**	**Before Avg (Daily)**	**After Avg (Daily)**	**% Increase**
OAR-OREHS-01SZ	26 MPH or >	229	527	16.4	37.6	130.1%
OAR-ORWHS-01SZ	26 MPH or >	497	888	35.5	63.4	78.7%
OAR-ROIR-01SZ	21 MPH or >	34	140	2.4	10.0	311.8%
OAR-ROJE-01SZ	21 MPH or >	29	155	2.1	11.1	434.5%

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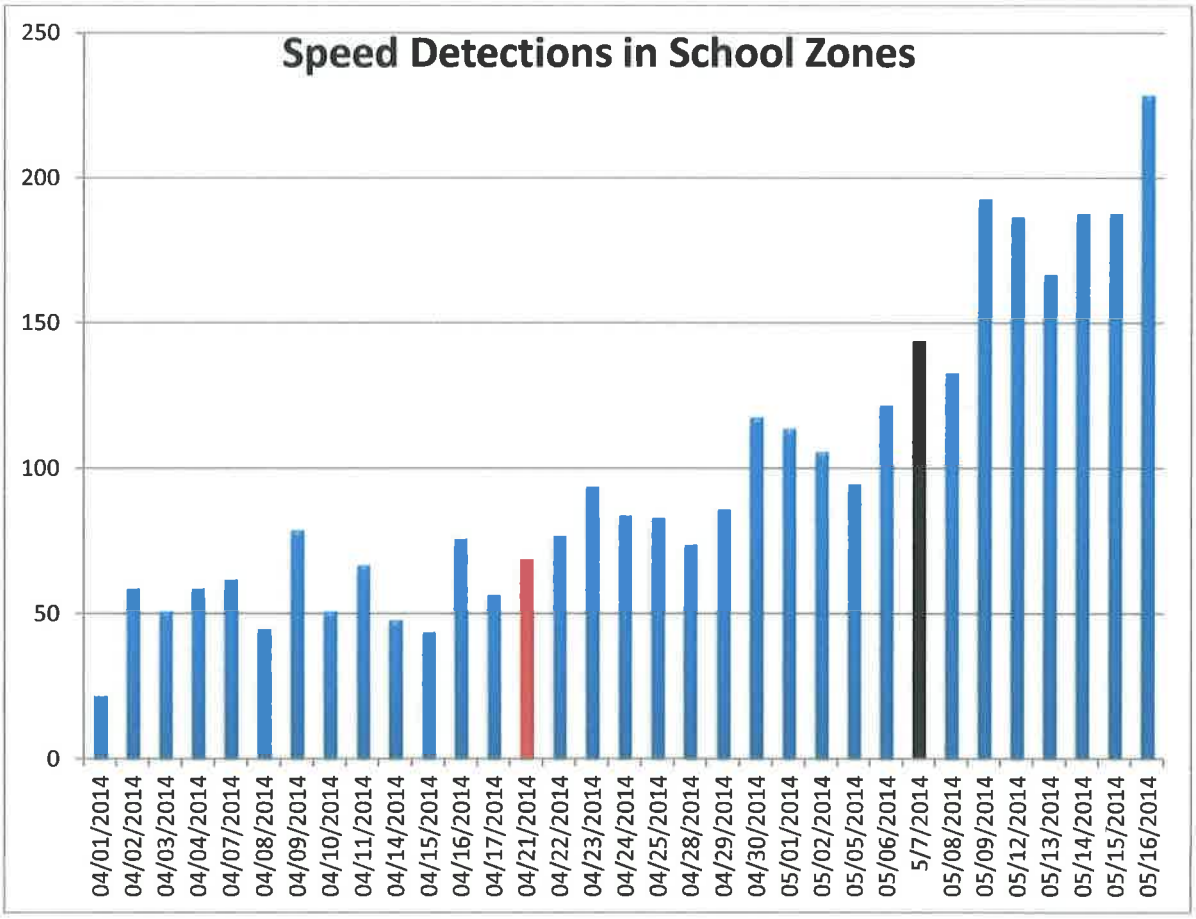
Speed Detections in School Zones – Before and After System Disablement

The graph below shows the number of school zone detections prior to the disablement of the system. . The red bar represents the date the cameras were last activated to capture violations (4/21/2014). The black bar represents the date black bags were placed over the cameras (5/7/2014). As shown in the chart, speeding began to increase immediately after the cameras were deactivated. As seen below, once there was a visual for drivers that the cameras had been disabled (black bags over the camera housings) the speed increased dramatically by up to **231%**.



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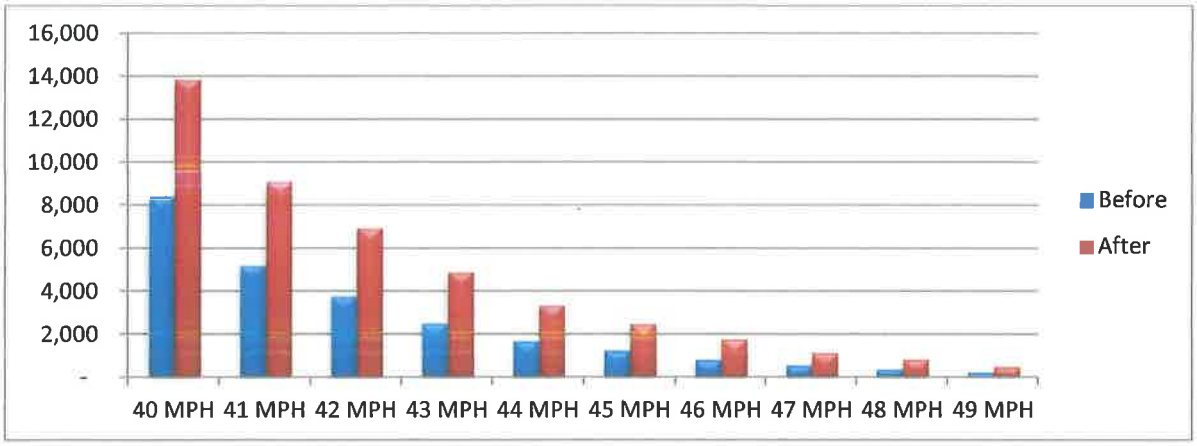
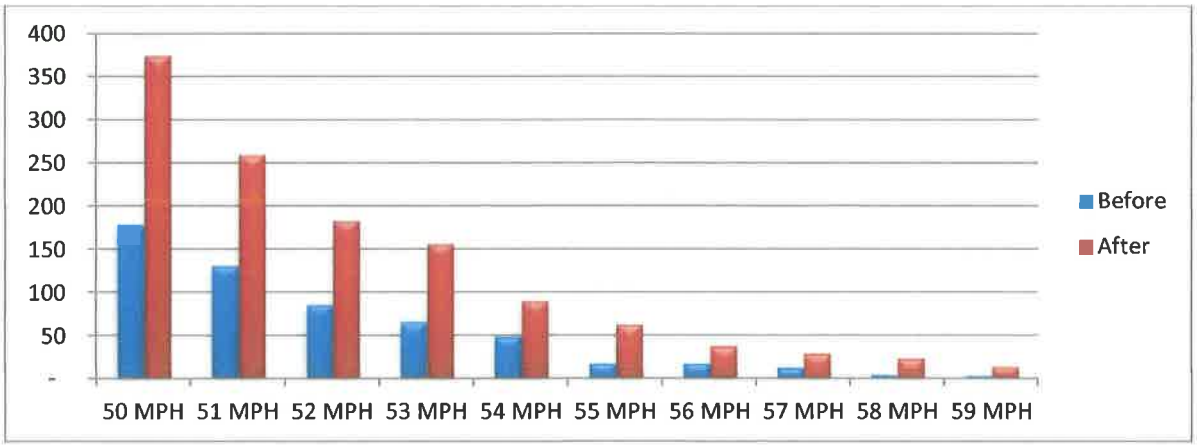
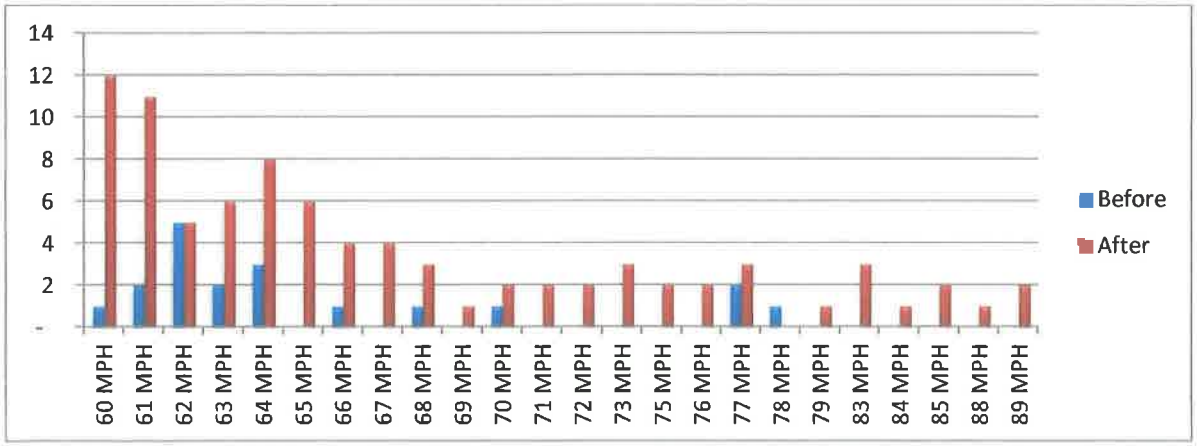
Vehicle Count and Speed - Before and After System Disablement

The next few graphs show the total vehicles observed and the speeds at which they were traveling. In each case there is an increase in the number of vehicles observed after the cameras were deactivated. The graph starts at 40 MPH as this is the highest speed limit roadway among the monitored locations.







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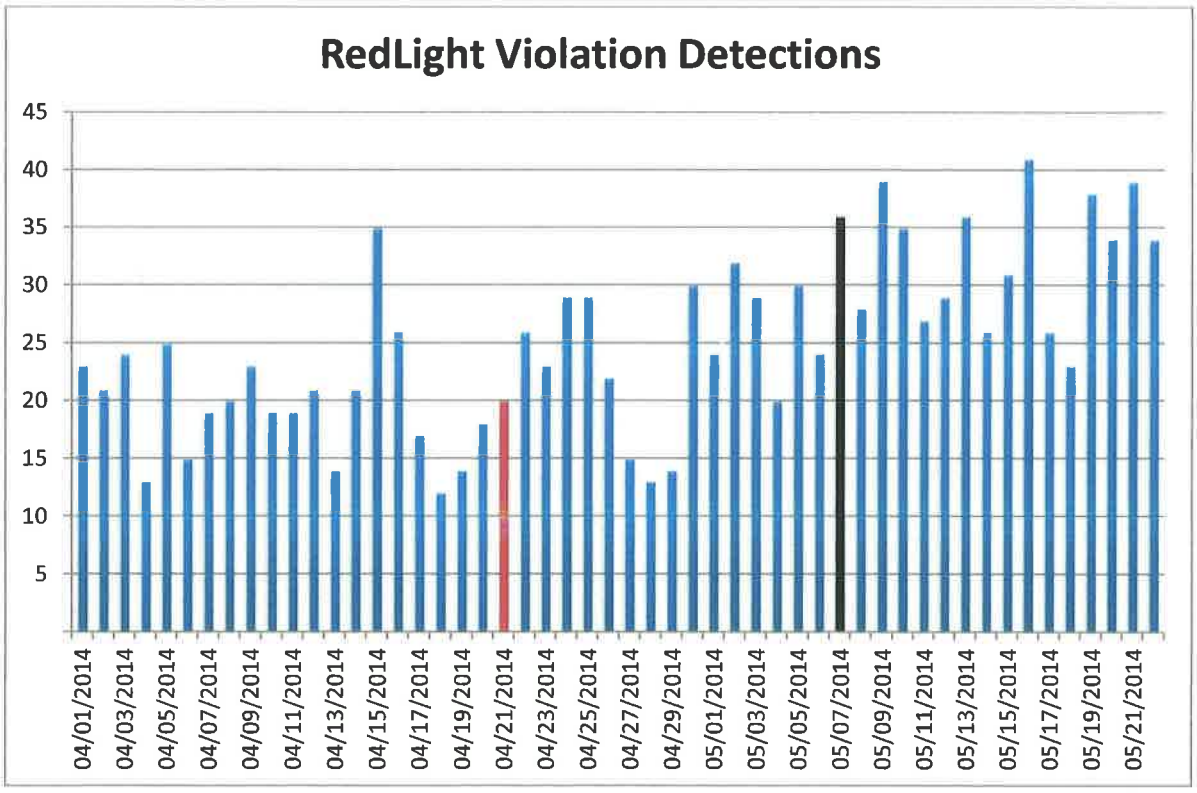
Increase in Red Light Detections – Before and After Disablement

Four (4) monitored locations were established to reduce the incidence of red light violations. Red light running leads to the most serious of all accidents. During the 21 days prior to the cameras being disabled, an average 20 detections per day were captured by the system. Following camera disablement, the system captured 26 detections per day for the first 21 days, day 22 through day 30, saw a continued increase to **28 detections per day**. As depicted in the graph, when the cameras were covered with a black bag on 5/7/2014 a consistent increase in detections was realized.



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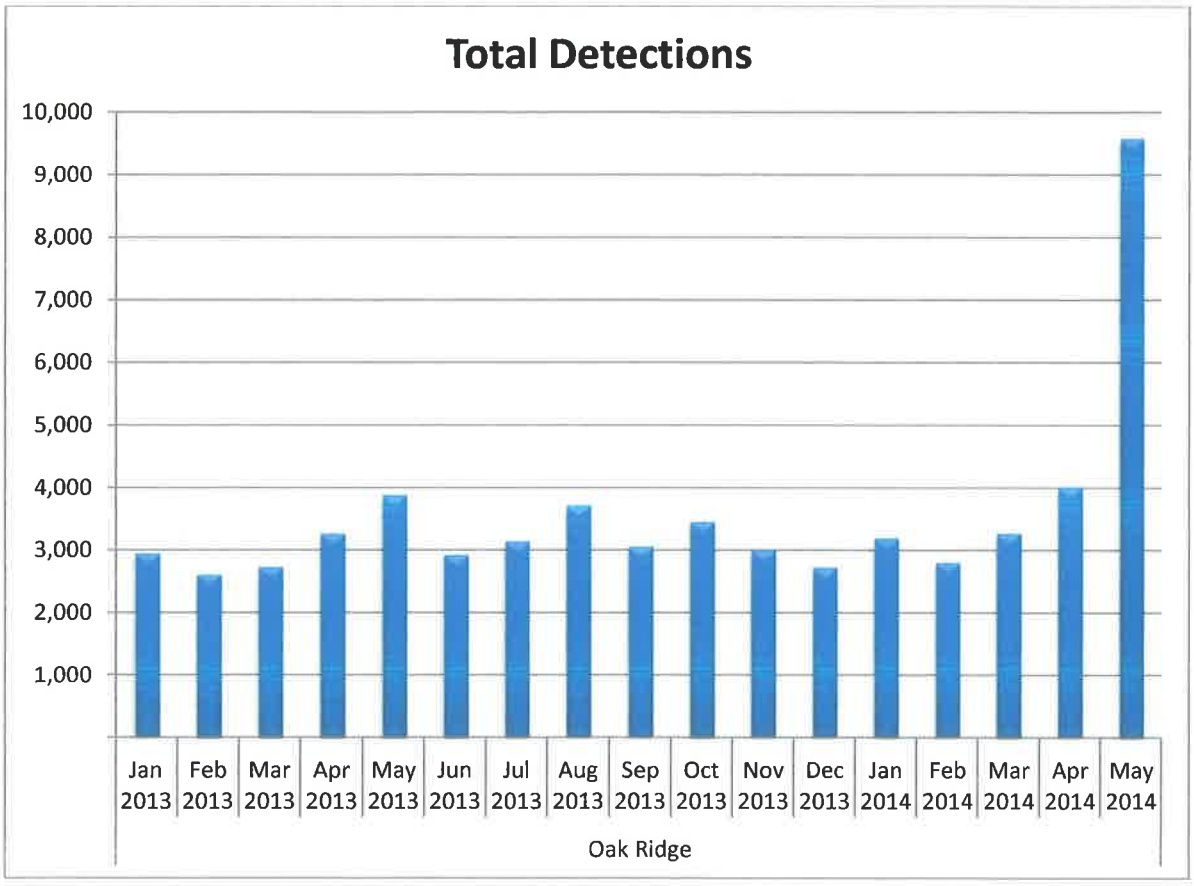
Conclusion

During the five years the Traffic Safety Program was in operation for the City of Oak Ridge, the City realized the benefits of a reduction in accidents, controlled speed at monitored locations and a reduced incidence of red light violations. In addition, the Oak Ridge Police Department was able to allow officers to focus on high-priority tasks while still ensuring the safety and security of problematic intersections. The accountability to the violators for this program was a monetary penalty. The monetary penalty paid by those who **broke the law** was used for improvements within Oak Ridge. Some of these improvements include rumble strips, pedestrian crosswalk improvements, sidewalk improvements, bike route signage, parking lot reconstructions and new roadway designs. A total of **$1.2 million** has been either spent on improvements or allocated to future projects within the City. By the decommissioning of the program, future projects will have to be funded by taxpayer dollars instead of an optional violator funded program.

Data shows that in the 21 days since the program was disabled. Reckless driving has increased significantly at the enforced locations. The numbers indicated an **increase** in average speed, **increase** in the incidents of red light running and an **increase** in speeding detections.



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