



## Technology to Improve Traffic Flow and Safety on Today's Roadways

May 9, 2017

#### Benefits of Optimized Traffic Flow

- Move higher volume of traffic in less time
- Less fuel consumption and carbon emissions
- Safety: less injuries, fatalities, and property damage

It is not often thought of, but Photo Enforcement (PE) has many benefits to the Traffic Engineering community. In addition to those listed above our experience in Arizona, has resulted in positive responses from Traffic Engineering. During the State wide implementation of the program ADOT was a vocal **opponent** to photo enforcement (PE). The main reason is that they did not understand the potential benefits of the program as related to their unique perspective. Once the program started they quickly realized that PE calmed traffic, reduced overall travel times, reduced infrastructure damage to their freeway system and had little to no adverse effect on their system. ADOT quickly became a PE **proponent** as a result. The Highway Patrol (DPS) also realized benefits in enabling the department to free up officers from focusing on speeders (almost exclusively) to attend to other needs of the motoring public improving driver safety.

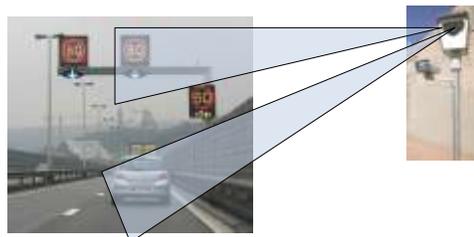
- **E**ngineering
- **E**nforcement
- **E**ducation

We believe the foundation of a successful program must include these three basic tenets.

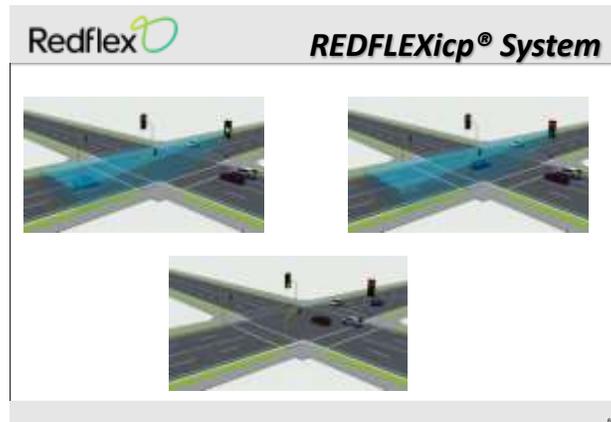
**Engineering** – Proper Engineering is vital to a successful program, if a system is not engineered optimally, this should be done before seeking a PE solution. It is also important for the Engineering community to understand that PE can provide vital data on usage that the program should allow them to have access to making it more palatable for all to justify the use of the technology.

**Enforcement** – Ensuring the motoring public complies with established guidelines (speed limits, movement restrictions, etc) enforcement must be consistent and present to ensure compliance. As Abe Lincoln said, “rules without enforcement is just good advice”.

**Education** – Ensuring everyone knows the rules, how they will be enforced, how the systems work and where the systems are placed provides transparency to the programs. Education is not limited to the public but is necessary for the Judicial and Political communities as well to ensure there is again transparency on the program.



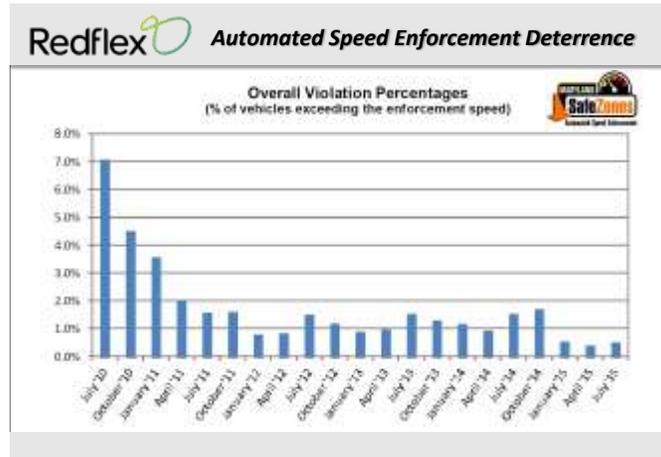
One example of the use of PE to aid Engineering is the need to have compliance with variable speed limit changes. We have proven success in the UK with the HADECS (Highway Administration Digital Enforcement Camera System) on their variable speed limit motorways. Through independent means (we visually monitor the displayed speed limit) allowing dynamic and flexibility to change the speed limits as needed to optimize flow. Without compliance to the new limits, the changes would have little effect on the traffic flow counteracting the desired result of such a change.



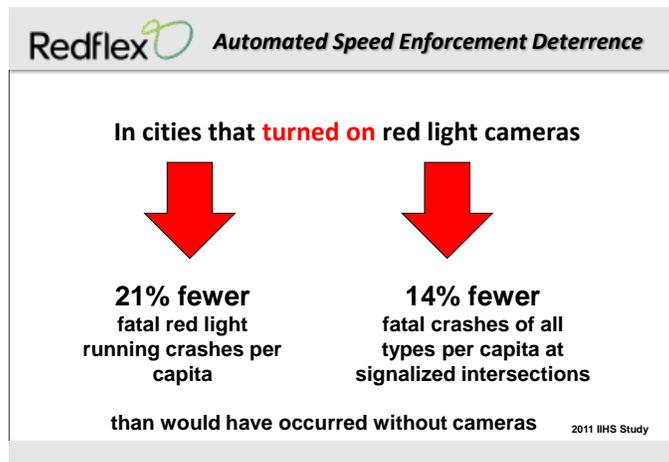
We have also had success and plenty of positive feedback on our *Intelligent Collision Pre-emption* System. This system allows us to monitor traffic with a non-intrusive radar and anticipate a vehicle likely to run a redlight (in much the same manner a system is activated for redlight running camera systems) and provide an indication to the Traffic Controller so the adjacent signal phase can be held red for the duration of the event. Once this occurs the traffic can be released allowing for a safer release of traffic for the ensuing phase. This is of particular interest to traffic Engineers currently employing longer "all red" phases to achieve the same safety result but without sacrificing precious time dear to the Traffic Engineering community.



It is critical to enforce existing laws in order to gain compliance from the motoring public. There will be little chance for success if variable speed limits are used but are not adhered to. The combination of correct Engineering AND Enforcement ensure the implemented solution has a chance at success.



Phot enforcement has been proven to change driver behavior. As you can see when enforcement is maintained compliance is also maintained.



This goes for both red light and speed. An independent IIHS study (<http://www.iihs.org/iihs/news/desktopnews/turning-off-red-light-cameras-costs-lives-new-research-shows>) validates the reduction in Redlight fatalities where systems have been utilized.

Redflex  Automated Speed Enforcement Deterrence

In cities that **turned off** red light cameras



**30% more**  
fatal red light  
running crashes per  
capita



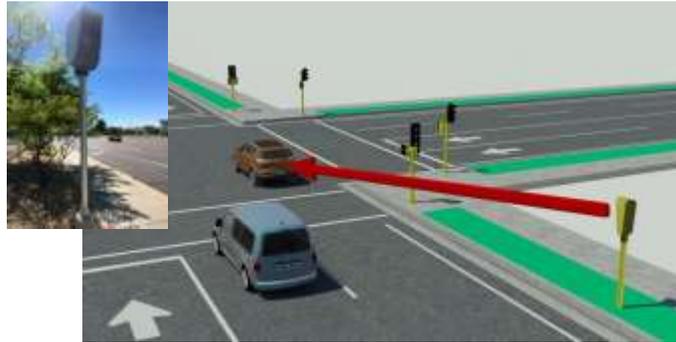
**16% more**  
fatal crashes of all  
types per capita at  
signalized intersections

than would have occurred with cameras

2011 IIHS Study

Conversely there is data to support the fact that location where redlight cameras were removed resulted in an increase in fatalities.

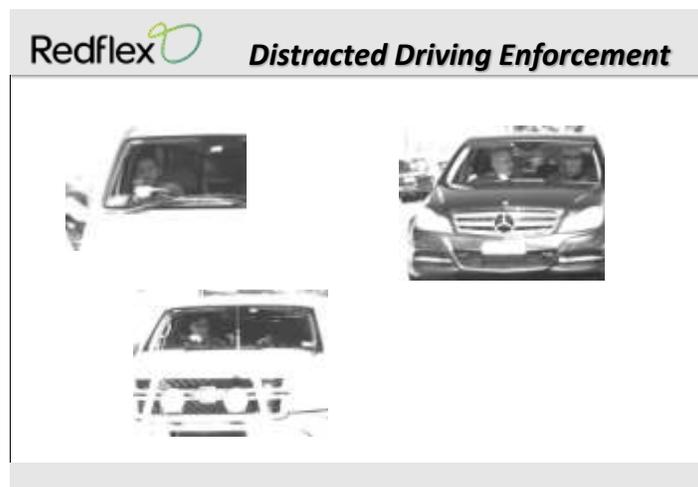
Redflex  Traffic Signal Enforcement



Current technology allows for installation of a redlight/speed camera system that can be deployed from a single pole location with non-intrusive vehicle detection AND non-intrusive phase detection (in many instances) minimizing the traffic flow during the construction and maintenance processes.



The non-intrusive technology used (exclusive to Reflex) is capable of, from a single pole location, determine multiple vehicle movements and in the example above the distance relative to each other dynamically and without post processing data and information. This allows for on the spot detection, evaluation and information capturing to ensure comprehensive data is delivered to the processing facility for enforcement.



Our imaging experience allows us to collect clear evidence of distracted driving (automated detection required to catch up with this fact) that will one day allow us to automatically detect and issue distracted driving citations one day without the need to manually review images.

**— Education**

Education is key tenant that cant be ignored. It is important to educate all stake holders (Police, Traffic Eng, City council, etc) on how the program works. We have also realized over time that the more knowledge that can be shared (i.e. court clerks, Judges, local media, etc) goes a long way to ensure transparency of the program is obtained in an effort to gain public confidence in the need for these systems, but most importantly the public needs to know:

- Where/what it is**
- How it works**
- Why it's there**

The need to know these at a minimum.



And this is why : (run video)

***Thank You***

***Tony Parrino, Director of Product  
Development and Implementation  
Redflex Traffic Systems Inc.  
tparrino@redflex.com***