

Evaluation of 2016 Automated Traffic Enforcement Report City of Des Moines

Introduction:

Automated traffic enforcement (ATE) is one of many safety countermeasures that can be used to enhance roadway safety. Automated enforcement may involve the enforcement of red-light running violations and speed limit violations. The city of Des Moines uses ATE systems to enforce red-light running violations at two signalized intersections on the primary highway system. In addition, they use an ATE system to enforce speed violations at one location along I-235.

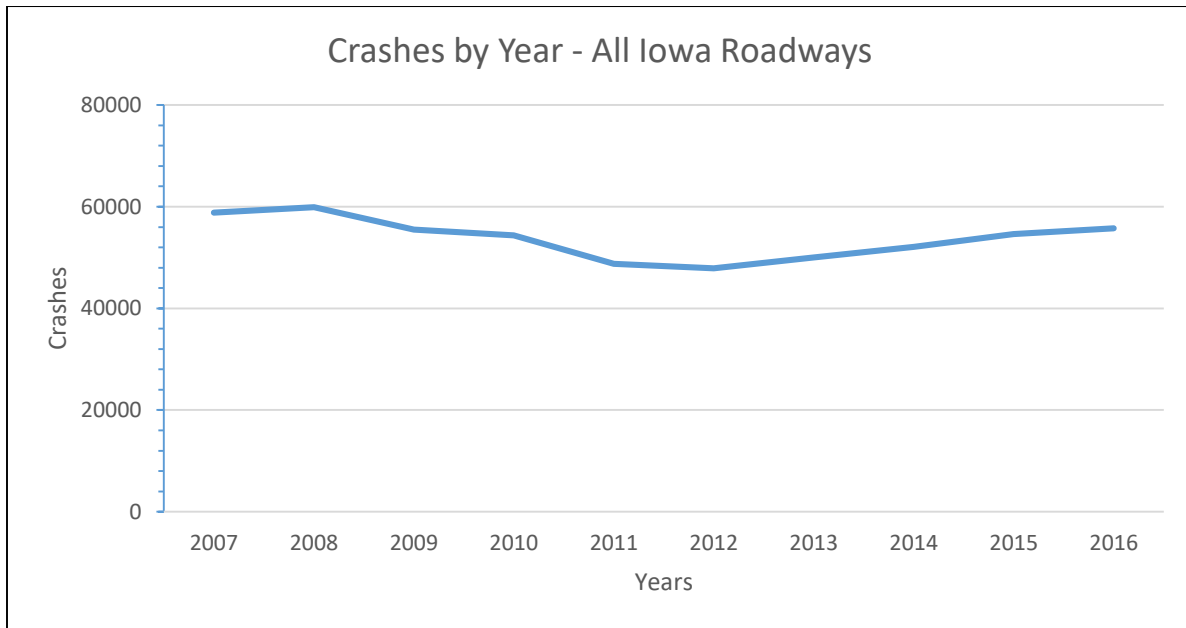
In 2012 Iowa State University developed a report titled, "Toolbox of Countermeasures to Reduce Red Light Running". The report documented that at signalized intersections, red-light running crashes make up 24.5% of all crashes and account for 31.7% of all fatal and major injury crashes. This toolbox is to aid practitioners in ways to identify and address red-light crashes at signalized intersections. The report focuses primarily on engineering and enforcement solutions. The report has two main parts; 1.) Guidelines to identify problem intersections and the causes of red-light running, and 2.) Roadway-based and enforcement countermeasures. This second part details 20 potential safety countermeasures that can be used at signalized intersections to address these types of crashes. Automated enforcement is one of those potential countermeasures.

The National Highway Traffic Safety Administration (NHTSA) conducted one of the most comprehensive reports to date on the causation of crashes in the United States. This report titled, "National Motor Vehicle Crash Causation Survey – Report to Congress" was published in 2008 and documents the investigation of 6,950 crashes nationwide. This study involved researchers being at the crash scene to assess relatively undisturbed information pertaining to the events and factors that led up to the crash and the opportunity to discuss the circumstances of the case with drivers, passengers, and witnesses while it was still fresh in their minds. The researchers on the scene were in an ideal position to gather first-hand information related to the vehicle, the roadway, the environmental conditions, and the human behavior factors. Some of the critical findings include:

- 95% of all crashes were caused by the drivers, 2.5% were caused by the vehicles, and 2.5% were caused by roadway/weather
- Of the 95% that were attributed to drivers:
 - o 40.6% was driver recognition error (inadequate surveillance, internal/external distraction, inattention, etc.)
 - o 34.1% was driver decision error (too fast for conditions, too fast for curve, false assumptions, illegal maneuver, misjudgment, etc.)
 - o 10.3% was driver performance error (overcompensation, poor control, etc.)
 - o 7.1% was driver non-performance error (sleep, heart attack/other physical impairment, etc.)
 - o 7.9% was other/unknown driver error

This report helps us better understand the primary causation of crashes. The speed at which a driver chose to drive was a primary cause in some of the crashes. Specifically, 8.4% were driving too fast for conditions and 4.9% were driving too fast for a curve. However, speed was not the primary causation in 86.7% of crashes caused by the driver, nor the crashes caused by vehicles or roadway/weather.

The chart below shows the gradual changes in total crashes for the entire state of Iowa over the past 10 years.



Review of Des Moines Annual Report:

We have completed our review of your 2016 automated traffic enforcement (ATE) report as required in Iowa Administrative Code 761--144. The following documents were considered by the DOT in connection with this review:

- "2016 Annual Report, Automated Traffic Enforcement on Primary Highways in Des Moines"
- I-235 Safety Audit, conducted November 24, 2014.
- Crash data obtained by the Iowa DOT using the Iowa crash database (includes all statewide reported crash reports)

Intersection speed and red light cameras:

The city has red-light violation cameras at two intersections on the primary highway system. DOT's findings and resulting action for these locations are set forth below.

East 15th Street and Maple Street

Findings:

- Camera activated 7/2011.
- Northbound approach subject to traffic camera enforcement.
- Crash data (from city):

Year	Crashes
2009	16
2010	10
2011	9 -- Camera activated
2012	5
2013	6
2014	1 – some crash data unavailable...so incomplete information
2015	10
2016	13
- Crash data (DOT provided – includes all crashes using 75 feet radius):

16 in 2004
18 in 2005
15 in 2006
19 in 2007
14 in 2008
17 in 2009
10 in 2010
9 in 2011 – Camera activated
6 in 2012
8 in 2013
3 in 2014
10 in 2015
12 in 2016

Resulting Action:

- Continue operation of red-light camera at this location.

Martin Luther King and School Street

Findings:

- Camera activated 7/2011.
- Eastbound approach subject to traffic camera enforcement.
- Crash data (from city):
 - Year Crashes
 - 2009 16
 - 2010 12
 - 2011 10 -- Camera activated
 - 2012 6
 - 2013 10
 - 2014 8 – some crash data unavailable...so incomplete information
 - 2015 11
 - 2016 13
- Crash data (DOT provided – includes all crashes using 75 feet radius):
 - 31 in 2004
 - 30 in 2005
 - 18 in 2006
 - 16 in 2007
 - 24 in 2008
 - 17 in 2009
 - 13 in 2010
 - 10 in 2011 – Camera activated
 - 7 in 2012
 - 13 in 2013
 - 9 in 2014
 - 11 in 2015
 - 13 in 2016
- This is an intersection of two, one-way streets. Traffic enters from the west and the north only.
 - o Approximately 90% of all crashes are a right-angle crash involving an eastbound and southbound vehicle
- The number of red-light citations at this location is very high:
 - 5,040 in 2012
 - 6,146 in 2013
 - 5,687 in 2014
 - 6,006 in 2015
 - 7,627 in 2016
 - o A majority of the citations are from the far right lane involving drivers turning right on red, over 5,000 of 6,146 citations in 2013.

- In the summer of 2015, the Iowa DOT installed two additional "PHOTO ENFORCED" signs (one on the left and one on the right) on School Street/exit ramp closer to MLK Blvd. An existing "PHOTO ENFORCED" sign was previously, and still is, located approximately 650+ feet from the intersection.
- The DOT and the city conducted an evaluation of the intersection and agreed to prohibit all right-turn-on-red movements for eastbound School Street to southbound MLK Blvd. This change will occur in fall 2017.

Resulting Action:

- Continue operation of red-light camera at this location.

Fixed Speed Cameras on I-235:

Fixed speed cameras: The city has one set of fixed speed cameras located on I-235 near Waveland Golf Course. DOT's findings and resulting action are set forth below.

I-235 Eastbound near Mile Marker 4.9:

- Cameras activated 10/2011.
- Crash data (city provided – mile marker 4.8 to 5.5):

Year	Crashes
2009	5
2010	9
2011	4 -- Cameras activated
2012	3
2013	6
2014	2 – some crash data unavailable...so incomplete information
2015	10
2016	9
- Crash data (DOT provided – includes all crashes from mile marker 4.8 to 5.5):

8 in 2004
15 in 2005 – I-235 construction
25 in 2006 – I-235 construction
12 in 2007 – I-235 construction
10 in 2008
5 in 2009
12 in 2010
3 in 2011 – Camera activated
5 in 2012
9 in 2013
1 in 2014
7 in 2015
8 in 2016
- This location experiences a low crash rate -- as per I-235 Safety Audit.
- The number of speed citations at this location is extremely high:

36,202 in 2012
42,156 in 2013
44,602 in 2014
55,384 in 2015
60,826 in 2016

- Iowa Administrative Code 761-144.4(1)(c) provides that automated enforcement should only be considered in extremely limited situations on interstate roads because they are the safest class of any roadway in the state and they typically carry a significant amount of non-familiar motorists.
 - o Local drivers are typically aware of speed cameras and therefore monitor their speed accordingly. Non-familiar drivers often do not see/read the photo enforced signs and therefore may not monitor their speed accordingly.
- The reviews conducted by the Iowa DOT over the last three years resulted in the following determination:

Remove the eastbound I-235 cameras near Mile Marker 4.9.

- o *Crash rate was low before the cameras were installed*
- o *Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.*

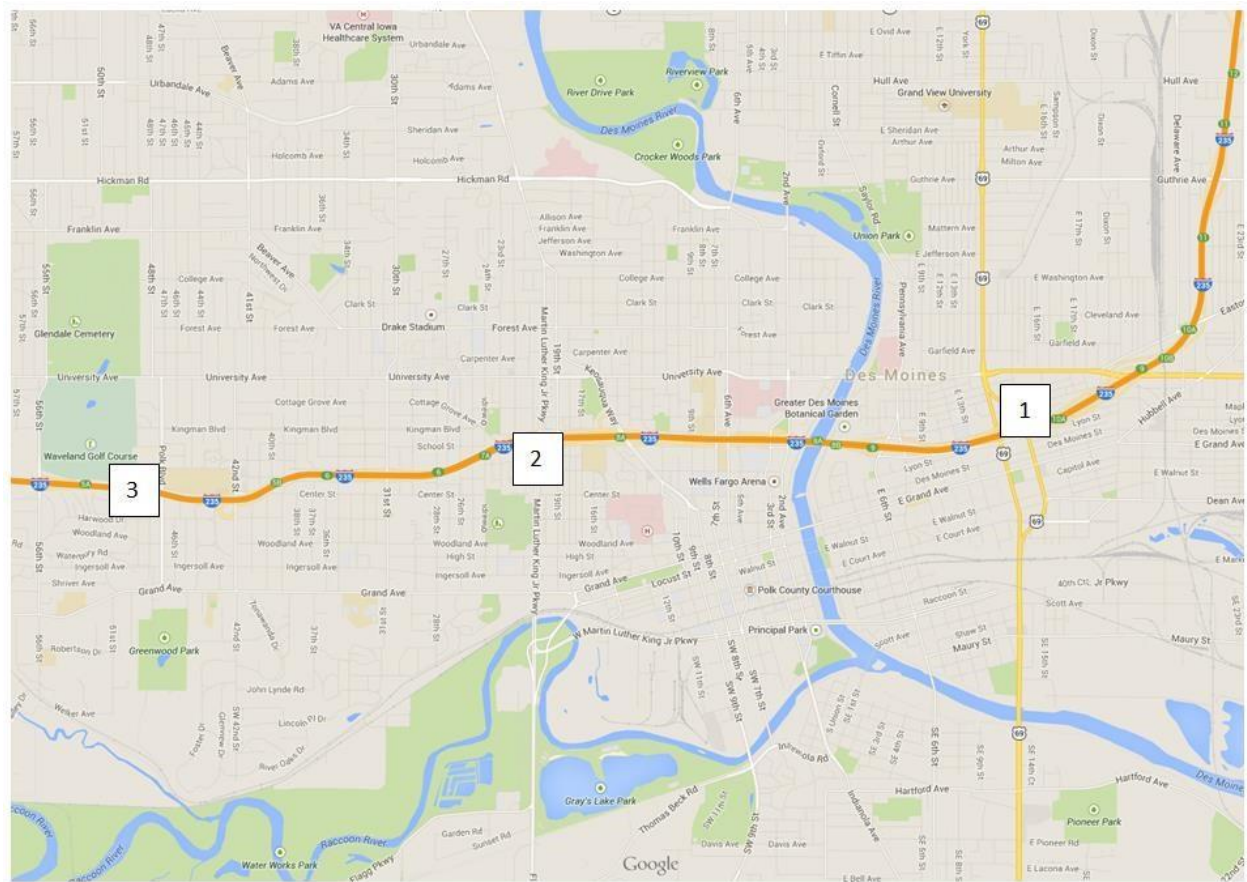
Resulting Action:

- Remove the eastbound I-235 cameras near Mile Marker 4.9.
 - o Crash rate was low before the cameras were installed
 - o Iowa Administrative Code 761-144.4(1)(c). Limited use on interstate roadways.

Summary:

Based on the results of this review, the red-light running cameras located at East 15th Street and Maple Street, and Martin Luther King and School Street, may continue to be operated in accordance with Iowa Administrative Code 761—144. Because of the pending lawsuit, the Iowa DOT will not take legal action against the City to remove the set of speed cameras on I-235 until the court has rendered a final decision.

Map of Des Moines ATE systems on the primary highway system:



1. East 15th St and Maple St
2. MLK and School St
3. I-235 EB near Waveland Golf Course