

July 18, 2006  
File No. 5420 GEN

To: Members,  
Works and Utilities Committee

Re: Collision Statistics for Red Light Cameras

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## BACKGROUND

At its meeting of February 21, 2005, Council received and filed a report from the Board of Police Commissioners entitled "Photo Radar and Red Light Cameras" (IR05-4). This report was referred to the Works and Utilities Committee. During discussion of the report, the Committee requested an update on collision data for red light camera locations. At that time, the required collision data was not available from Saskatchewan Government Insurance (SGI). The data has now been received and the requested analysis has been completed. The purpose of this report is to provide collision statistics for the three intersections in Regina with red light cameras.

## DISCUSSION

In October 2000, the Regina Police Service began using red light cameras to issue violations to motorists who disobey the red light traffic signals. Cameras are deployed at the following intersections:

- Albert Street and Saskatchewan Drive;
- Lewvan Drive and Dewdney Avenue; and,
- Albert Street and Parliament Avenue.

A fourth location, Fleet Street and Victoria Avenue East, was taken out of service in 2004. One camera is used continuously at Albert Street and Saskatchewan Drive, but is switched between the northbound and westbound positions. The second camera is moved between the two other intersections. The Regina Police Service (RPS) manages the Red Light Camera Program including moving cameras and issuing violations. Any decision to increase the number of cameras, change camera technology, or to relocate a camera is the responsibility of the RPS.

Background Information – Collision data was considered for a 48-month period both before and after the installation of red light cameras, excluding October 2000 when the actual installation occurred. Red light cameras are installed to reduce the number of right angle collisions that occur as a result of drivers running red lights. Some studies suggest that rear-end collisions may increase as drivers respond to the presence of the technology. As a result, both right angle and rear-end collisions were considered before and after the installation of the cameras. The total collisions at each intersection and collision severity were also assessed. A summary of the analysis for each of the three installations is discussed below. The detailed analysis is included in Attachment A.

Collisions at Albert Street and Parliament Avenue – The intersection of Albert Street and Parliament Avenue is used by approximately 41,400 vehicles each day. The intersection is characterized by well-developed intersection geometry, clear sightlines, and relatively stable traffic flows. The posted speed limit for both streets is 50 km/h.

The total number of collisions and injury collisions increased slightly after the red light camera installation. This trend does not appear to be specifically associated with the cameras and is not statistically significant. Factors such as background traffic growth, temporary conditions and adverse weather will result in fluctuations in the annual collision record. There was a significant decrease in rear-end and right-angle collisions recorded since the installation of the camera.

Collisions at Albert Street and Saskatchewan Drive – The intersection of Albert Street and Saskatchewan Drive is used by approximately 53,100 vehicles each day. This location is subject to congestion and delay at peak times because of constraints to the intersection geometry and high-volume downtown traffic patterns. Both the north and south intersection approaches involve a vertical grade, which increases the difficulty in judging speed and distance of approaching traffic. The posted speed limit on both streets is 50 km/h.

There has been an improvement in intersection safety subsequent to camera installation. In particular, right angle collisions decreased by 39% in the 4-year period following camera installation. Rear end collisions increased by 12% subsequent to camera installation, however, injury collisions decreased significantly after camera installation.

Collisions at Dewdney Avenue and Lewvan Drive – The intersection of Dewdney Avenue and Lewvan Drive is used by approximately 47,500 vehicles each day. The intersection is typified by good geometry and clear sight lines. The posted speed limit on Dewdney Avenue is 50 km/h and Lewvan Drive has a posted speed limit of 70 km/h.

Traffic collisions have increased significantly at this intersection during the four years since installation. Much of the increase is likely attributable to significant growth in traffic on the corridor due to development to the north and west. Traffic volumes on the Lewvan Drive corridor have increased by 50% between 1998 and 2004. The collision statistics that are monitored to assess red light camera performance differ at the intersection of Lewvan Drive and Dewdney Avenue relative to the other locations. While the red light cameras appear to have reduced the number of right angle collisions, the number of rear-end collisions nearly doubled. The majority of these collisions were on Lewvan Drive and may be attributable to approach speeds. This pattern was not observed at any of the other red light camera locations and did not occur on Dewdney Avenue at this location. A more detailed safety review of Lewvan Drive, including this intersection, is underway and will be completed this fall.

Traffic Violations – The Regina Police Service provided the following statistics on Red Light Camera violations:

Table #1: Red Light Camera Violations

<b>Red Light Camera Violations</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Viewed Violations	6532	4748	4830
Issued Violations	2749	2532	2212
Percent Issued	42%	53%	46%

The numbers of violations viewed and issued decreased in 2004 partly due to the removal of the camera at Fleet Street and Victoria Avenue.

## BUDGET IMPLICATIONS

There are no budget implications associated with this report.

The Regina Police Service is presently researching the feasibility of digital red light cameras. The cost of installing wiring, stop lines and signing for a digital red light camera is approximately \$10,000 per intersection.

COMMUNICATION PLAN

A copy of this report will be provided to the Regina Police Service and SGI.

ENVIRONMENTAL IMPLICATIONS

There are no environmental implications associated with this report.

DELEGATED AUTHORITY

The disposition of this report is within the authority of this committee.

CONCLUSION

Red light cameras can have a significant impact on traffic collisions. The cameras seem to work well at more typical urban locations, such as Parliament Avenue and Albert Street. In particular the cameras influence driver behaviour to decrease right angle collisions. Right angle collisions decreased at all three red light camera locations.

At two installations rear-end collisions also decreased. At the Lewvan Drive and Dewdney Avenue intersection, rear-end collision increased significantly causing the overall total number of collisions to increase. The increase in traffic volumes (50%) and the higher speed limit on Lewvan Drive are likely the reason for this change.

RECOMMENDATION

Your Administration recommends that:

1. This report is forward to the Regina Board of Police Commissioners.
2. This report be received and filed.

Respectfully submitted,



Stella Madsen, General Manager  
Roadways & Traffic

Respectfully submitted,



D. Calam, Director  
Engineering Works

DA/slg

## Attachment A

### COLLISION ANALYSIS

Background – Collision data was considered for a 48-month period both before after the installation of the red light cameras, excluding October 2000 when the actual installation occurred. A 12-month analysis period represents the minimum acceptable study interval in traffic engineering practice. Due to the relatively low number of collisions and lower traffic volumes experienced in Regina, a longer study period has been used.

Collisions at Albert Street and Parliament Avenue – The intersection of Albert Street and Parliament Avenue is used by approximately 41,400 vehicles each day. The intersection is characterized by well-developed intersection geometry, clear sightlines, and relatively stable traffic flows. The posted speed limit for both streets is 50 km/h. Table 1 describes the collision record at Albert Street and Parliament Avenue before and after the installation of the red light camera.

Table 1: Collision Statistics at the Intersection of Albert Street and Parliament Avenue

<b>Indicator</b>		<b>Before (Sept 1996 to Sept 2000)</b>	<b>After (Nov 2000 to Nov 2004)</b>	<b>Change</b>
Collisions	Total	122	125	+2 %
	Property Damage Only	87	89	+2 %
	Injury	35	36	+3 %
	Fatal	none		
Rear End Collisions		51	46	-10 %
Right Angle Collisions		21	12	-43 %
Collisions Citing "Traffic Control Device Disregarded" as a Major Contributing Factor		15	11	-27 %

The total number of collisions and injury collisions increased slightly after the red light camera installation. This trend does not appear to be specifically associated with the cameras. Factors such as background traffic growth, temporary conditions and adverse weather will result in fluctuations in the annual collision record.

Overall, the red light camera appears to have improved the level of safety at which the intersection of Albert Street and Parliament Avenue is operating. There was a significant decrease in rear-end and right-angle collisions recorded since the installation of the camera.

Collisions involving a left turning vehicle striking an oncoming vehicle had a significant increase (85%) before and after the installation. This type of crash is not clearly identified on the reporting form and its identification requires the correlation of the collision configuration, major contributing factors, and charges laid. There was insufficient information to conclude whether the majority of these collisions were related to errors in driver judgement or red light infractions. For those collisions that did provide detailed information on causation, two out of 21 right angle collisions involved left turning vehicles before the installation, compared to four out of 12 right angle collisions after the camera installation.

Collisions at Albert Street and Saskatchewan Drive – The intersection of Albert Street and Saskatchewan Drive is used by approximately 53,100 vehicles each day. This location is subject to congestion and delay at peak times because of constraints to the intersection geometry and high-volume downtown traffic patterns. Both the north and south intersection approaches involve a vertical grade, which increases the difficulty in judging speed and distance of approaching traffic. The posted speed limit on both streets is 50 km/h. Table 2 describes the collision record at Albert Street and Saskatchewan Drive before and after the installation of the red light camera.

Table 2: Collision Statistics at the Intersection of Albert Street and Saskatchewan Drive

<b>Indicator</b>		<b>Before (Sept 1996 to Sept 2000)</b>	<b>After (Nov 2000 to Nov 2004)</b>	<b>Change</b>
Collisions	Total	242	227	-6 %
	Property Damage Only	175	167	-5 %
	Injury	67	60	-12 %
	Fatal	none		
Rear End Collisions		111	124	+12 %
Right Angle Collisions		38	23	-39 %
Collisions Citing “Traffic Control Device Disregarded” as a Major Contributing Factor		28	15	-46 %

There has been an improvement in intersection safety subsequent to camera installation. In particular, right angle collisions decreased by 39% in the 4-year period following camera installation. Many of the light running collisions involve a left-turning vehicle and a through vehicle as opposed to a right angle collision between two through vehicles. More detailed analysis indicated that left-turn crashes involving light running increased slightly from 7 out of 38 (18%) right angle collisions before installation to 5 out of 23 (22%) right angle collisions subsequent to the installation of the camera.

Rear end collisions increased by 12% subsequent to camera installation, however, injury collisions decreased significantly after camera installation. The number of multi-vehicle collisions remained unchanged at 94% of the total before and after the installation of the red light cameras.

Collisions at Dewdney Avenue and Lewvan Drive – The intersection of Dewdney Avenue and Lewvan Drive is used by approximately 47,500 vehicles each day. The intersection is typified by good geometry and clear sight lines. The posted speed limit on Dewdney Avenue is 50 km/h and Lewvan Drive has a posted speed limit of 70 km/h. Table 3 describes the collision record at Dewdney Avenue and Lewvan Drive before and after the installation of the red light camera.

Table 3: Collision Statistics at the Intersection of Lewvan Drive and Dewdney Avenue

<b>Indicator</b>		<b>Before (Sept 1996 to Sept 2000)</b>	<b>After (Nov 2000 to Nov 2004)</b>	<b>Change</b>
Collisions	Total	129	202	+57 %
	Property Damage Only	89	145	+63 %
	Injury	39	56	+44 %
	Fatal	1	1	0 %
Rear End Collisions		50	95	+90 %
Right Angle Collisions		28	25	-14 %
Collisions Citing "Traffic Control Device Disregarded" as a Major Contributing Factor		18	20	+11 %

Traffic collisions have increased significantly at this intersection during the 4 years after camera installation. There has been significant growth in this area and to the north. Traffic volumes on the Lewvan Drive corridor have increased by 50% between 1998 and 2004. The collision statistics for the intersection of Lewvan Drive and Dewdney Avenue differ from the other two locations where the red light cameras have been installed and monitored. While, the red light cameras appear to have been effective at reducing the number of right angle collisions, a significant increase occurred in the number of rear-end collisions.

Literature suggests that one adverse effect of red light camera use may be an increase in rear end collisions. During the 4 years after the installation of red light cameras, the number of rear-end collisions nearly doubled. The majority of these collisions were on Lewvan Drive. This pattern was not observed at any of the other red light camera locations and did not occur on Dewdney Avenue at this location. The most prominent difference between Lewvan Drive and the other streets, which approach intersections where red light cameras are installed, is the speed limit. Lewvan Drive is posted at 70 km/h, while all the other streets are posted at 50 km/h. Before the red light camera installation 72% of the rear-end collisions occurred on Lewvan Drive. After the installation, 80% of the rear-end collisions were on Lewvan Drive. Enhanced speed management on Lewvan Drive may reduce the number of rear end collisions while still allowing the cameras to be used to target right angle crashes. The existing camera technology is capable of enforcing speeding through the intersection; however, automated enforcement of speed is not currently permitted under provincial legislation.

The Administration will be completing a detailed traffic safety analysis of the Lewvan Drive corridor between 1<sup>st</sup> Avenue North and 13<sup>th</sup> Avenue, including the intersection with Dewdney Avenue. The analysis will include a review of traffic volumes, speeds, collision, traffic control and warning devices and other traffic behaviour. This review is expected to be complete in 2006.