REPORT

TO

Mayor Martin J. Chávez

January 15, 2008

MAYOR'S AUTOMATED ENFORCEMENT STUDY GROUP

REPORT on the STOP PROGRAM

to

Mayor Martin J. Chávez

by

The Mayor's Blue Ribbon Study Group on Automated Enforcement

Randall Bertram
Deputy Chief, New Mexico State Police

Dr. Jim Brogan
University of New Mexico and
Alliance for Transportation Research Institute

Michele Fields
General Counsel, Insurance Institute for Highway Safety

Rob Fijol
Federal Highway Administration

Ron Forte
Office of the New Mexico Senate President Pro Tempore

Regis Pecos
Office of the New Mexico Speaker of the House

Michael Sandoval
Director, New Mexico Department of Transportation Traffic Safety Bureau

Jon Zaman
Council Services Office, City of Albuquerque

January 15, 2008

Mayor Chávez created this Study Group to advise him on the effectiveness and continuation of the STOP automated traffic enforcement program[1] *and to make recommendations that would advance public safety in Albuquerque.*

INTRODUCTION AND MAJOR RECOMMENDATION

There are 590 signalized intersections in the City of Albuquerque.

- Twenty (20) of these intersections have automated enforcement for red light running and speeding (less than 4% of total signalized intersections).
- Eighteen (18) of the above 20 intersections have automated enforcement on 2 of 4 approaches.
- One intersection (Montgomery and Eubank) has one approach with automated enforcement; one (Coors and Montaño) has 3 approaches automated.
- Thirty-nine (39) approaches to these intersections have cameras and speed detection devices; one approach has red light running detection only (Montgomery and Wyoming eastbound).[2]

All of these monitored intersections appear on the list of the top 50 crash intersections (2001-2003) in the state of New Mexico, identified by the UNM Division of Government Research, under contract to the New Mexico Department of Transportation (NM DOT). Nineteen (19) of 20 appear on the 2003-2005 most dangerous intersection list. [3]

The Albuquerque Police Department (APD) also operates 3 radar/photo vans, which are placed in schools zones, high collision areas, safety corridors, and other sites where the public has complained about unsafe driving. These vans are part of the STOP program and are operated by STOP officers (retired APD officers). Van sites are identified by APD at least one week in advance. Citations detected by vans are processed in the same manner as monitored intersection citations.

STOP EVALUATION

When the STOP program was implemented, a protocol was not in place to evaluate its effectiveness in preventing crashes and deterring violations at automated intersections. The tasks assigned the Study Group are further complicated by the following facts.

- The crash data collected to date (from APD's records database) require a great deal of manual processing to employ effectively.

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[1] Automated Enforcement refers to technology – both video cameras and embedded sensors - placed at intersections or in vans that detect excessive speeding and/or red light running (failure to regard traffic signal). Once a violation is detected, APD officers at a centralized location review the video and technical documentation to determine if a citation should be issued. The citation is transmitted by mail and includes pictures and date of the violation.

[2] See attached Exhibit 1.1 – *List of Automated Enforcement Intersections and Approaches with Information.* City of Albuquerque and Red Flex.

[3] See attached Exhibit 1.2 – *50 Top Crash Intersections State of New Mexico 2003-2005*, New Mexico Traffic Safety Bureau.

- Only four intersections are used in the analysis due to the staggered implementation of the 20 locations and the short time frame intersection cameras have been in operation.
- Statistical analysis is constrained due to the number of crashes identified as having occurred in or near these intersections (too low to determine year over year trends, given the number of years in operation).
- Control intersections were not established at initiation or later; this could have led to a more precise association between the automated intersections and safety results.
- Traffic volumes and changes in volumes have not been factored into the calculations, due in large part to infrequent counting.

There are improvement needs that would enhance the City's ability to analyze and evaluate safe travel on Albuquerque streets. These should be pursued to improve the STOP program.

- The APD records database (scheduled to be replaced in 2008) is limited in its capability to support analysis.
- There is limited continuing education of APD officers regarding traffic accident report completion and investigation (although the initial Police Academy training appears to be thorough).
- There is inconsistent quality control regarding accurate and thorough completion of crash reports.
- There is little crash trend analysis within APD, due to the lack of a full-time analyst.
- There are only irregular interactions, meetings, and sharing of data between APD and the Department of Municipal Development (DMD), the two City departments most responsible for operations of and safety on city streets.

While most of the existing data is inconclusive, there are signs of positive changes.

- Using gross data from the APD Records Division, total crash reports written citywide have declined significantly from FY/05 through FY/07, while Albuquerque's population has continued to increase.[4]
- Using analyzed data from UNM's Division of Government Research (DGR) under contract to the NMDOT, the Albuquerque injury and fatal rate per thousand residents reached its lowest point in 10 years in 2006 (the most recent year reported and the first full year after automated enforcement was implemented).[5]

[4] See attached Exhibit 1.3 - *Table of Total Crashes by Fiscal Year (ABQ and DGR 10 year data),* UNM Division of Government Research under contract to NM DOT and City of Albuquerque Police Department Records Database.

[5] See attached Exhibit 1.3.

- Several of the longest operating intersections show statistically significant reductions in crashes inside the intersection, typically the location with the most serious crashes. One monitored intersection showed a statistically significant increase in rear end collisions.[6]

Given the number of published, peer reviewed research and state of the practice guidebooks, which include extensive case studies and documented lessons learned from highly credible sources, APD should have anticipated the challenges arising from the implementation of this technology. It is surprising that Red Flex (the City contractor and provider of the automated enforcement system) did not guide APD more effectively in implementing automated enforcement, especially in developing and implementing effective public education and awareness campaigns.

Data about violations at the automated enforced intersections are much more complete. Yet, Red Flex provides only the most basic data to the City – by approach by date by type of violation (red light running and speeding). No trend analysis is provided, nor are operational explanations given for variations in the data. Combined with APD's lack of traffic analysis resources, the City is limited in its ability to assess the STOP program.

The Study Group examined the automated enforcement system, its operation and supporting processes, including both:

- violation detection and hand off from Red Flex to APD violation review and issuance; and,
- violator appeal through the hearing by the Administrative Hearing Office (AHO).

We find that sound processes exist. Functional systems, professional conduct, and demonstrated appropriate discretion are present throughout these processes. Over 30% of detected red light violations are not issued citations due to technical reasons, weather, and operational issues (examples of reasons not to issue include license plate obstructed, obstructed by another vehicle, safe turn on red, paper plates, sun glare, etc.). About 10% of the notices are appealed and over 25% of those have been dismissed by the Hearing Officer or police officer in 2007 (about 60% of the dismissals relate to missed deadlines during the early period of implementation by the AHO, which have now largely been corrected).[7]

SHOULD AUTOMATED ENFORCEMENT CONTINUE?

1. Despite the planning and evaluation problems and omissions, not to mention the polarization of the public and widespread lack of understanding regarding automated enforcement as implemented in Albuquerque, the Study Group still finds that automated enforcement is a traffic safety technique that should be allowed more time to demonstrate positive outcomes for the City.

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[6] The average cost of angle crashes at urban intersections has been shown to be about twice that of rear end crashes. See "Engineering Use of Accident Records" by J.W. Hall, University of New Mexico, 1996, Table 19, page 41. Also, see attached Exhibit 1.4 – *Tables of 4 Longest Operating AE Intersections and Crashes by Type*, UNM Division of Government Research under contract to NM DOT and City of Albuquerque Police Department Records Database.

[7] See attached Exhibit 8.2 – *2007 Appeals Report*, City of Albuquerque Administrative Hearing Office.

The Study Group recommends that the STOP program continue until the end of calendar year 2009, contingent upon action being taken by the City, as quickly as appropriate, on the other Study Group recommendations that follow. If these recommendations have been satisfactorily addressed by the end of 2009 and future evaluations are positive, the automated enforcement program should be continued beyond that date.

The Study Group makes this recommendation because of the following facts.

- Albuquerque is a relatively dangerous place in which to drive. Our crash rate per 100,000 residents is significantly higher than all but one of cities checked in the Southwest, exceeded only by the City/County of Denver. Our rate is between 20% and over 100% higher than the rate of every other city researched, including Phoenix, Tucson, Mesa, Tulsa, Oklahoma City, and Plano.[8]
- Excessive speed, failure to yield right of way, and disregarding traffic signals – what automated enforcement detects - are common causes of all crashes, including those with injuries and fatalities.[9]
- Violations detected at the automated intersections are going down, especially red light violations, which have been enforced for the longer period. There are indications that speeding violations will follow this track, but further observations are needed to determine if this will occur. APD feels strongly that these trends indicate improved driver behavior.[10]
- More law abiding driving may be having an impact on the overall number of crashes within the City, which has gone down significantly since Fiscal Year (FY) 2005.[11]
- Research conducted internationally and within the United States is clear. Automated enforcement is a cost effective method of improving safety on our roads for the driving public.[12]

The Study Group also finds that there are other opportunities to improve the STOP program in addition to those already mentioned. We also recognize that there are misconceptions about the program held by the public and other important stakeholders. We note the following findings and make recommendations to improve the program, as well as the public understanding and perception of STOP.

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[8] Police departments in different states may be required to respond or not respond to crashes on private property. Other conditions may also exist that influence these dramatic differences. While the City of Albuquerque responds to private property crashes, only those within public rights of way are included in this calculation. Also, see attached Exhibit 1.5 – *Table of Total Crashes in Other SW Cities Normalized by Population*, City of Albuquerque Office of Management and Budget.

[9] See attached Exhibit 1.6 - *Table of Fatal Crashes by Fiscal Year with Contributing Factors*, City of Albuquerque Police Department and Office of Management and Budget.

[10] See attached Exhibit 1.7 – *Graphs of Total AE Violations by Time, Type, and Intersection/Approach, Chart 1 – Total Violations by Type for All Intersections*, City of Albuquerque Office of Management and Budget based on data from Red Flex.

[11] See attached Exhibit 1.3 - *Table of Total Crashes by Fiscal Year (ABQ and DGR 10 year data)*, UNM Division of Government Research under contract to NM DOT and City of Albuquerque Police Department Records Database.

[12] See attached Exhibit 1.8 – *Automated Enforcement Bibliography and Example of Articles (not copyrighted)*, City of Albuquerque Office of Management and Budget.

ADDITIONAL FINDINGS AND RECOMMENDATIONS

PROGRAM EVALUATION, ANALYSIS, AND IMPROVEMENT

2. The Study Group finds that it is very difficult to create a defensible, effective evaluation protocol years after the implementation of automated enforcement. However, the research approach developed by APD and the City's Office of Management and Budget should be continued and enhanced.

The Study Group recommends that the City continue to evaluate the STOP program, establishing a more efficient, consistent means of categorizing, recording, and analyzing crashes around intersections.

- **Future evaluations should cover an expanded number of automated intersections to include the next longest operating set of intersections with automated enforcement.**
- **The City should utilize an outside expert to review and independently verify trend data**.
- **Senior managers in APD and DMD must meet regularly to review this data and other information about crashes and the street system to determine collaborative strategies to improve the safety of the City street system.**

SELECTION OF AUTOMATED ENFORCEMENT INTERSECTIONS AND APPROACHES

3. As noted earlier, the intersections selected for automated enforcement are among the most dangerous intersections in the state of New Mexico, measured by the number of crashes. The approaches chosen to be automated were selected by APD with some technical consultation from Red Flex. Yet, one conspicuous Albuquerque intersection is regularly among the top 10 most dangerous intersections and it is not automated (Coors and Irving). The Study Group finds that violations detected by automated enforcement often spike early after installation and then decline over time, as the public becomes more aware of this enforcement.[13] However, some intersections have produced very low numbers of violations from the outset and thereafter, while one in particular (Montgomery and Carlisle) is producing over 25% of the total violations.[14]

The Study Group recommends that all automated intersections and approaches be reviewed by an interdisciplinary committee to include DMD Traffic Engineering, APD, statistical expertise, and outside resources (e.g., NM DOT Highway Safety Division) to confirm or refine the placement of automated enforcement. This committee should establish technical standards for the selection of automated intersection; these standards should drive the placement or removal of any automated enforcement devices in the future.

[13] See attached Exhibit 1.7 – Intersection by Intersection Analysis of Violations.
[14] See attached Exhibit 1.1.

RED FLEX CONTRACT

4. The City is creating an unintended public impression by compensating Red Flex through a combination of fixed fees, citations issued, and percentage of fines received.[15] Some elements of the public interpret this as evidence of an incentive to generate revenues. This creates the perception that the STOP program is privatized law enforcement and a governmental revenue generating program, instead of a public safety program. This misconception would be reduced if Red Flex were compensated on a fixed fee basis only or by a flat rate for each violation captured, regardless of whether a notice is later issued by APD. Some States already prohibit red light contracts that include a percentage or per citation based compensation method.

The Study Group recommends that the City pursue renegotiations with Red Flex to change its compensation methods by eliminating the percentage of fines received.

As mentioned earlier, Red Flex should provide more analysis and evaluation of the data provided to APD and DMD or train City staff in the use of this data as a decision support tool.

RED FLEX ROLE IN ISSUING NOTICES

5. Red Flex operates and maintains the camera system, conducts the initial review of violations, and mails notices of violation. However, every citation is reviewed by a sworn APD officer (retired), and that officer independently decides whether or not the citation will be issued to the alleged violator.[16] These officers use their discretion when issuing citations; if there is doubt about the violation, the citation is not issued to the citizen. APD is the sole and final authority on issuance of notices of violation.

In order to improve public trust, the Study Group recommends periodic independent reviews (operational audits) of the STOP program to ensure that its mission of public safety is maintained, operating procedures followed, and processes performed with integrity.

ISSUES OF PRIVACY AND GOVERNMENTAL SURVEILLANCE USING STOP ENFORCEMENT TECHNOLOGY

6. The Study Group finds that the automated enforcement system is activated to take photographic and video evidence only when the system detects a red light or speed violation. It does not constantly or continuously record. The video/photo is only taken from the back of the vehicle, and does not depict the driver's or

[15] See attached Exhibit 4.1 – *Compensation Schedule in Current Red Flex Contract*, City of Albuquerque.
[16] See attached Exhibit 5.1- *Automated Enforcement Citation Process Map*, City of Albuquerque Office of Management and Budget.

passenger's face or identity. The images are used only for the issuance of red light and speed citations, for any subsequent appeals process, and to identify the cause of a collision which occurred during the course of a red light or speed violation. The images are not used to issue other citations, such as expired registration, seat belt, or cell phone violations, even if those violations are visible in the image. Therefore, STOP red light and speed enforcement in Albuquerque is not a surveillance program.

Photographic evidence is saved well after the period for appeals; the Study Group recommends that the City set and follow a photographic and video evidence retention schedule that purges this evidence after the end of the period for appeals.

PHOTO ENFORCEMENT AND THE CONSTITUTIONAL RIGHTS OF CITIZENS: *Issues of Due Process & Presumption of Innocence* [17]

7. Citizens have the right to be notified of their exact offense; details surrounding the allegation and laws set the time limits within which citizens must be charged and the offense adjudicated. When an officer makes a traditional traffic stop, the citizen usually receives immediate notice, while automated enforcement provides a notice through the mail within a set period of time. However, officers may also mail citations to citizens after a crash investigation is completed, sometimes many days after the incident. There are also other circumstances under which a violator is not notified of the charge(s) until a later time.

   It should also be noted that the appeals process of STOP violations must be scheduled and completed within 90 days of request. There have been over fourteen hundred (1400) instances of STOP violations being dismissed in 2007 because this deadline was not met. The AHO has improved its process and over the last 4 months only 20 notices have been dismissed for not complying with the 90 day rule.[18]

   A STOP violation is not a criminal charge; therefore, the administrative hearing process (and burden of proof for both the officer issuing the STOP citation and also for citizen defense) requires a different standard than in criminal court. If citizens are dissatisfied with the results of their administrative appeal, they may file a separate appeal in District Court.

   Furthermore, if the registered owner was not the driver, he/she need only notify the City of that fact and identify the actual driver, and the citation is transferred to that driver. If this driver doesn't pay or claims that he wasn't driving, the citation reverts back to the owner.

[17] See attached Exhibit 7.1 – *Summary of Legal Decisions concerning Photo Enforcement*, Insurance Institute for Highway Safety.
[18] See attached Exhibit 8.1 – *Administrative Hearing Process Map*, City of Albuquerque Office of Management and Budget.

The Study Group acknowledges that another option would involve photographing the driver's face and comparing it to the driver's license photo to determine if that person is the registered owner of the vehicle. If the STOP program utilized cameras that documented the driver, issues of privacy may arise (see Issue 6 above). The Study Group feels that the current method is more private and preferable.

The Study Group supports the decision to record violations by documenting the rear license plate and holding the vehicle owner responsible, unless the driver is subsequently identified by the owner.

ISSUES OF CONFIDENCE IN THE APPEALS PROCESS

8. Some citizens have expressed a lack of confidence in the appeals process, believing that there is no point in an appeal because everyone is found guilty - that, in effect, the hearing office is a kangaroo court. In fact, the citizen has prevailed (and the citation dismissed) in 27.5% of all cases appealed to the hearing office in 2007, although that dismissal rate is likely to decline since the timeliness of the hearings process has improved. [19]

The Study Group finds the hearing process to be professional and independent, but recommends an immediate independent assessment with periodic reviews thereafter to ensure the hearing process is functioning properly.

TRAFFIC ENGINEERING INTEGRITY AND TRAFFIC SIGNAL CYCLE TIMES:
Timing of signals is not set to maximize violations nor is it influenced by the technology provider (Red Flex).

9. City of Albuquerque's Professional Engineers (PE) set the timing of the phases of a signal cycle according to a procedure designed to give drivers time to perceive the signal change, make a decision of whether or not to stop, and to either stop safely or proceed through the intersection safely. This time period is called the clearance interval. This procedure follows the concepts and standard practices of the Institute of Transportation Engineers (ITE), an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs. The procedure assumes that the driver is not going substantially faster than the speed limit; drivers who are speeding will have less time to make a decision and stop.
    - In 1991, a new standard for traffic signal change intervals was implemented. Since then, minor changes in clearance intervals at some intersections have been made, based on changes in field conditions. No

[19] See attached Exhibit 8.2 – *January – December 2007 Appeals Report*, City of Albuquerque Administrative Hearing Office.

modifications to change intervals were made in intersections that are currently monitored prior to or after implementation of automated enforcement.

- Red Flex has no input into the signal timing; their equipment only senses the red light, but is not capable of controlling the signal cycle in any way.
- Green light signal timing is adjusted throughout the day in order to facilitate the flow of traffic, while the clearance interval never changes.

ITE maintains a strong code of ethics, which is attached to this report.[20]

The Study Group has confidence in the professionalism and integrity of the management of the City's Traffic Division.

AUTOMATED ENFORCEMENT IMPACT ON LAW ENFORCEMENT IN THE CITY

10. The STOP program has allowed for more effective deployment of APD officers within the City. For example, "cruising" on Montgomery Blvd. has dropped off since STOP program implementation. Previously, a dozen or more APD officers conducted tactical plans to address cruising using traditional enforcement efforts with little impact. Since STOP program implementation, cruising and related traffic violations on Montgomery have dropped off dramatically and many fewer officers are needed to address these problems.

    The STOP program also creates a new way to enforce APD policies for police vehicle operation. It issues citations to police officers for speeding and running red lights. These incidents are reviewed by APD for other policy violations. Officers must pay the fine themselves and are also disciplined for policy and legal violations. This accountability has resulted in a reduced number of complaints regarding APD officers' driving. The number of APD officers involved in crashes has also dropped.

The Study Group supports APD's efforts to deploy its resources effectively to improve public safety in Albuquerque; tools like automated enforcement can be helpful to police departments in optimizing their most critical resource - sworn officers.

AUTOMATED ENFORCEMENT AND THE ISSUANCE OF ERRONEOUS CITATIONS

11. Technological errors occur rarely; each automated enforcement citation is reviewed by an APD officer prior to being issued.[21] For speeding violations there are two separate technologies that detect speeding; if they vary in results at a

[20] See attached Exhibit 9.1 – *ITE Canon of Ethics*, Institute of Transportation Engineers.
[21] See attached Exhibit 11.2 – *Report of Rejected Citations*, City of Albuquerque Office of Management and Budget.

certain level (±3 mph), the citation is not issued.[22] There have been few instances of APD officer error in the reviewing of STOP citations. If errors are made, the citizen receiving the citation has the ability to have that error corrected through the administrative appeals process. The AHO reports that over 600 automated enforcement citations were dismissed at the appeals hearing by police officers in 2007.[23] AHO can not break down these dismissals by type (e.g., officer error).

It should be noted that when a street system condition is present that may call into question the fairness of notices being issued e.g., if a speed limit sign near an automated intersection has been knocked down, the City systematically reimburses drivers assessed violations during the time period where the condition existed. To date in FY/08, over $42,000 worth of paid violations have been reimbursed.

As noted earlier, the Study Group finds that the AHO processes are sound and effective, but recommends recording, tracking, and reporting greater detail about dismissals and sustained citations.

AUTOMATED ENFORCEMENT IMPACT ON STATE PREROGATIVES, OPERATIONS, AND REVENUE

12. Some members of the State Legislature and officials of the State government are reported to believe that the STOP program diverts revenue from Magistrate/Metro Courts, specifically the Facilities Fee Fund and other Court related funds.

    - The Study Group finds that the STOP program produces a new stream of revenue unrelated to the revenue generated by APD officer-issued citations.
    - These Court funds are supported directly by the number of officer-issued citations by any state, county, tribe, or city police force, operating in counties in New Mexico, that are subsequently paid by the violator.
    - The Study Group finds that citations issued by APD officers in the traditional manner have continued to be issued at a consistent rate over the last few years.
    - However, it should be noted that the number of guilty pleas has dropped and citation dismissal numbers and rates at Metro Court have risen since 2003.

    The City funds and provides staff for Traffic Arraignment Court, initially designed to reduce APD officer overtime and keep APD officers on the streets, protecting the Albuquerque public. This program costs the City over $500,000 per year. This arraignment court serves all police departments connected to Metro Court.

[22] See attached Exhibit 11.1 – *Red Flex Speeding Sensors Test*, Red Flex.
[23] See attached Exhibit 8.2 – *January – December 2007 Appeals Report*, City of Albuquerque AHO.

- Some officials believe that the Traffic Arraignment Court is the cause of the higher dismissal rate.
- City Attorneys are responsible for negotiating pleas at the Traffic Arrangement Court under a protocol developed by Metro Court judges. However, Metro Court judges oversee the program and sign all plea agreements.

The Study Group finds that the State is facing a problem unrelated to STOP that may or may not have its roots in the traditional means of traffic enforcement in Albuquerque/Bernalillo County. It may have its roots in the dismissal rate which may or may not be related to the practices of the Traffic Arraignment Court. It may or may not be related to police practices when issuing citations. Regardless, it is a genuine problem for the State and misunderstandings at the State level exist.

At the same time some legislators have suggested that treating automated enforcement as a civil penalty exceeds the City's home rule authority.[24] While the City's legal advisors and initial court reviews maintain the City's rights, the City's automated enforcement program may impact the ability of other cities in the state to pursue this type of public safety technique.

The City must work collaboratively with the State (e.g., Legislature, Administrative Office of the Courts, the New Mexico Finance Authority) and other jurisdictions to determine the causes of the decline in revenues in these Court funds in 2008.

The City must work with the State legislature, other cities, and the New Mexico Municipal League to clarify formally the rights of cities to pursue automated enforcement techniques, as civil or criminal violations in 2008.

[24] According to APD Chief Ray Schultz, based on conversations with the Chief Metro Judge, if automated enforcement citations were criminalized (which would require changes in both State and City statutes) and handled in the same manner that officer-issued citations are (i.e., through Metro Court processes), Metro Court would be overwhelmed by the added volume.

SEPARATE FUND FOR REVENUES AND EXPENDITURES GENERATED BY AUTOMATED ENFORCEMENT; EXPENDITURES LINKED TO PUBLIC SAFETY IMPROVEMENTS

13. The City's General Fund is by far and away the largest source of support for public safety in Albuquerque.[25] Most of it goes to support public safety (over 50% of the General Fund goes to the City services connected to its Public Safety Goal). However, given the newness of the STOP program and the public's interest, accounting for the revenues and expenditures of this program is important. Linking net revenues to certain public safety purposes is sound policy. It avoids the public perception that automated enforcement is designed as a governmental revenue program.

The Study Group supports the actions taken by the Mayor and City Council in December 2007 to set up a separate fund for automated enforcement revenues and expenditures. [26]

FINES FOR RED LIGHT RUNNING AND SPEEDING

14. Recent research reveals that automated enforcement is effective is changing driving behavior due to the strong certainty of detection and punishment, i.e., "getting caught." This research suggests that lower fines are capable of influencing behavior when certainty of detection is high. The City has lowered fines on one occasion and is considering reducing them to the total penalty assessment of an officer-issued citation under State statute.[27]

    It should be noted that trends regarding the number of red light and speeding violations are leveling off.[28] It is possible that, after years of operation, as has occurred in other jurisdictions, violations will be reduced to the point that the automated enforcement program will require a subsidy. Under these circumstances no resources would be available for public safety improvements supported through this fund.[29] However, this is not likely to manifest itself for many years, especially if the automated intersections are not increased or changed.[30]

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[25] See http://www.cabq.gov/budget/fy08approved/

[26] See attached Exhibit 13.1 – *City Resolution Establishing Fund of STOP Revenues and Expenditures*, City of Albuquerque Office of City Clerk.

[27] The Study Group notes that automated enforcement citations do not have the consequences of officer-issued citations, which carry points that could impact future driving privileges and insurance rates. STOP citations do not have these consequences. Failure to pay a STOP citation results in additional fees, while failure to pay/appear for an officer-issued citation results in a warrant and potential jail sentence.

[28] See attached Exhibit 1.7.

[29] The Study Group notes that over 25% of the 40 (11/40) approaches are not generating revenues at a high enough level to cover their fixed monthly fees, not to mention percentage of fines collected for speeding violations. See attached Exhibit 1.7- Violations by Intersection/Approach.

[30] See attached Exhibit 14.2 – *Projections on Impacts to Fund*, City of Albuquerque Office of Management and Budget.

The Study Group supports tying the automated enforcement fines to the levels defined in state law (including special fees). Assuming that current trends in violations remain stable, the number of intersections and approaches remain the same, automated enforcement charges are reduced to state levels (fines and fees), and escalating repeat violator fines for red light running are eliminated, the automated enforcement fund should produce significant working capital per year through 2009.

The Study Group recommends that the City consider reducing automated enforcement fines to the state level (fines and fees).

The Study Group recommends that the elevating levels of fines for repeat red light violators be eliminated.

Payment schedules for low income violators should also be considered, if they can be effectively and efficiently administered.

PUBLIC EDUCATION

15. The Study Group has noted throughout this report the numerous misconceptions of the STOP program held by the public and among important stakeholders. Perhaps except for program evaluation, public education (including awareness and information) is the most important issue incompletely addressed by APD's implementation of automated enforcement. There are significant disconnects in the public's understanding of STOP purposes. These disconnects must be repaired for the STOP program to succeed in achieving its important long term purposes. The end result desired by STOP is safer highways, streets, and roads.

The City must place top priority on ensuring that the public has an accurate understanding of the purposes, the operation, the processes, the results of the STOP program, and, especially, the need to improve traffic safety and driver compliance with traffic safety laws in Albuquerque.

A public awareness campaign must be initiated as soon as it can be developed and include:

- **basic education on the program, how it operates, what are the processes, etc.;**
- **spokespersons who emphasize that red light running and speeding are life threatening and violators will be caught;**
- **roadside signs placed at the entrances of the city;**
- **media coverage, including radio, print, television and internet;**
- **billboards and bumper stickers;**
- **mailings to residents;**
- **website information;**
- **public service announcements;**
- **warning periods for any new intersections or approaches.**

The public must be reassured repeatedly that traffic engineers have done their job by making sure that the intersections are properly engineered.

The misconceptions outlined in this report must be addressed and corrected.

HOW SHOULD THE NET REVENUES BE USED

16. The Study Group supports the creation of a separate fund to segregate the revenues and expenditures associated with the STOP program. The Study Group has noted that it is likely that revenues will eventually decline at a faster rate than STOP expenditures. Therefore, it is imperative that net revenues be used for non-recurring projects that advance traffic safety. Much ground needs to be made up regarding public and stakeholder education and awareness. This should be a continuous process, focusing on safety throughout the life of automated enforcement in Albuquerque. Public confidence in automated enforcement must be as high as public understanding of the safety challenges faced by Albuquerque drivers.

The Study Group recommends that the STOP fund revenues be used for the operation of the STOP program. A reserve should be maintained to meet future operating expenses if net revenues are not sustainable. This reserve should start at 20% of the current fund and be adjusted as required.

Any net revenues should be used for non-recurring activities that address any of the following purposes:

- **Educating the public about the importance of safe, law abiding vehicle operation;**
- **Educating the public and other stakeholders about the specific purposes, operations, and appeal rights of violators of STOP;**
- **Funding non-recurring discrete traffic safety improvement projects, like intersection upgrades, special APD tactical operations and enforcement plans, and DUI enforcements;**
- **Conducting independent reviews of the STOP program to ensure that its mission, operations, and benefits are being maintained or improved.**

ATTACHMENTS

ISSUE 1: Should automated enforcement be continued?
Exhibit 1.1 – List of Automated Enforcement Intersections and Approaches with Information
Exhibit 1.2 – 50 Top Crash Intersections State of New Mexico 2003-2005
Exhibit 1.3 – Table of Total Crashes by Fiscal Year (ABQ and DGR 10 year data)
Exhibit 1.4 – Tables of 4 Longest Operating AE Intersections and Crashes by Type
Exhibit 1.5 – Table of Total Crashes in Other SW Cities Normalized by Population
Exhibit 1.6 – Table of Fatal Crashes by Fiscal Year with Contributing Factors
Exhibit 1.7 – Graphs of Total AE Violations by Time, Type, and Intersection/Approach
Exhibit 1.8 – Automated Enforcement Bibliography and Example of Articles (not copyrighted)

ISSUE 2: Program Evaluation
Exhibit 2.1 – Division of Government Research 2005 ABQ Community Traffic Report

ISSUE 4: Red Flex Contract
Exhibit 4.1 - Compensation Schedule in Current Red Flex Contract

ISSUE 5: Red Flex Role in Issuing Notices
Exhibit 5.1 - Automated Enforcement Citation Process Map

ISSUE 7: Constitutional Rights
Exhibit 7.1 – Summary of Legal Decisions concerning Photo Enforcement

ISSUE 8: Confidence in Appeals Process
Exhibit 8.1 - Administrative Hearing Process Map
Exhibit 8.2 – January – December 2007 Appeals Report

ISSUE 9: Traffic Engineering Integrity
Exhibit 9.1 - ITE Canon of Ethics

ISSUE 11: Erroneous Citations
Exhibit 11.1 – Red Flex Speeding Sensors Test
Exhibit 11.2 – Report of Rejected Citations

ISSUE 13: Separate Fund
Exhibit 13.1 - City Resolution Establishing Fund of STOP Revenues and Expenditures

ISSUE 14: Amount of Fines
Exhibit 14.1 – Table of Fines & Fees
Exhibit 14.2 – Projections on Impacts to Fund

Intersection	Code & Direction	Red-Light	Speed	2001-2003 Most Dangerous	2003-2005 Most Dangerous	Date 1st Live	Total Red-Light Cites	Total Speed Cites	Total Cites (RL + Speed)	Very low Combined Violations	# Months Live	Ave Cite/Month	Most Recent Month Cites
	CECO-01 - WB	X	X				8	74	82	X	11	7	0
Central & Coors	COCE-01 - SB	X	X	X	X	12/06	144	10	154	X	11	14	5
	COMO-01 - SB	X	X				2,394	1,580	3,974		15	265	14
	COMO-02 - SB	X	X				4,112	790	4,902		15	327	175
Coors & Montaño	MOCO-01 - EB	X	X	X	X	08/06	1,122	1,290	2,412	X	15	161	49
	COPA-01 - NB	X	X				5,516	1,160	6,676		19	351	187
Coors & Paseo del Norte	COPA-02 - SB	X	X	X	X	02/06	22,840	2,328	25,168		19	1325	283
	COQU-01 - SB	X	X				60	18,036	18,096		12	1508	216
Coors & Quail	COQU-02 - NB	X	X	X	X	11/06	44	17,108	17,152		12	1429	500
	JULO-01 - SB	X	X				2,656	2,092	4,748		9	528	7
Juan Tabo & Lomas	LOJU-01 - EB	X	X	X	X	02/07	5,720	96	5,816		9	646	61
	MESM-01 - WB	X	X				4,004	7,438	11,442		17	673	297
Menaul & San Mateo	SMME-01 - NB	X	X	X	X	06/06	8,374	4,082	12,456		17	733	268
	WYME-01 - SB	X	X				8,016	440	8,456		17	497	180
Wyoming & Menaul	MEWY-01 - WB	X	X	X	X	06/06	1,880	9,362	11,242		17	661	192
	MOCA-01 - EB	X	X				6,362	20,286	26,648		9	2961	596
Montgomery & Carlisle	MOCA-02 - WB	X	X	X	X	02/07	4,296	39,104	43,400		9	4822	2026
Montgomery & Eubank	MOEU-01 - WB	X	X	X	X	05/05	1,603	1,600	3,203	X	29	110	85
	MOSM-01 - EB	X	X				4,592	9,236	13,828		29	477	385
Montgomery & San Mateo	SMMO-01 - NB	X	X	X	X	05/05	20,579	260	20,839		29	719	217
	PAJE-01 - WB	X	X				4,150	1,318	5,468		15	365	89
Paseo del Norte & Jefferson	PAJE-02 - EB	X	X	X	X	08/06	11,498	2,216	13,714		15	914	261
	MOWY-01 - EB	X	n/a				4,304	n/a	4,304		17	253	50
Montgomery & Wyoming	WYMO-01 - NB	X	X	X	X	06/06	4,712	1,922	6,634		17	390	113
	COEL-01 - SB	X	X				5,458	1,252	6,710		9	746	308
Coors & Ellison	COEL-02 - NB	X	X	X	X	02/07	2,398	2,036	4,434		9	493	240
	CAME-01 - SB	X	X				132	1,828	1,960		15	131	17
Carlisle & Menaul	CAME-02 - NB	X	X	X	n/a	08/06	180	2,224	2,404		15	160	99
	WYAC-01 - NB	X	X				256	1,768	2,024		9	225	123
Wyoming & Academy	WYAC-02 - SB	X	X	X	X	02/07	204	720	924	X	9	103	29
	EULO-01 - SB	X	X				2,426	2,202	4,628		9	514	129
Eubank & Lomas	LOEU-01 - WB	X	X	X	X	02/07	3,272	1,540	4,812		9	535	200
	CELO-01 - EB	X	X				60	2,286	2,346		9	261	427
Central & Louisiana	CELO-02 - WB	X	X	X	X	02/07	156	1,082	1,238		9	138	335
	EUCE-01 - NB	X	X				146	38	184	X	7	26	3
Eubank & Central	EUCE-02 - SB	X	X	X	X	04/07	18	842	860	X	7	123	28
	LOME-01 - NB	X	X				58	3,756	3,814		7	545	176
Louisiana & Menaul	MELO-01 - EB	X	X	X	X	04/07	82	7,364	7,446		7	1064	407
	LOWY-01 - EB	X	X				260	378	638	X	7	91	43
Lomas & Wyoming	WYLO-01 - SB	X	X	X	X	04/07	132	1,586	1,718		7	245	60

EXHIBIT 1.1

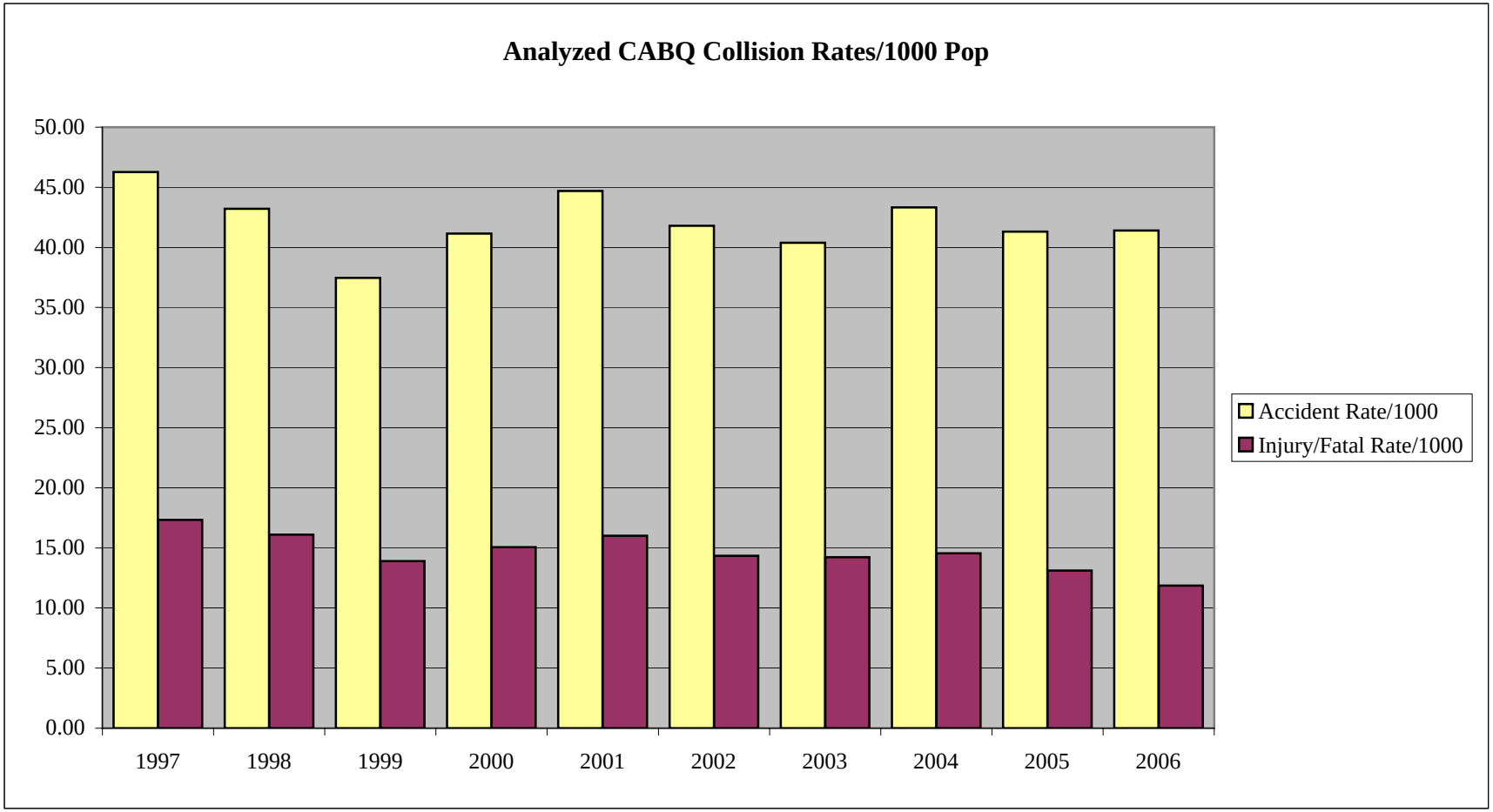
THE FIFTY WORST INTERSECTIONS IN NEW MEXICO
FOR CRASHES IN JANUARY 2003 THROUGH DECEMBER 2005
RANKED BY TOTAL FATAL AND INJURY CRASHES
PRODUCED FOR THE NEW MEXICO TRAFFIC SAFETY BUREAU
BY THE DIVISION OF GOVERNMENT RESEARCH, UNM
CONTRACT # C04425

CITY	STREET	STREET	FAT-INJ RANK	FAT-INJ TOTAL	TOTAL	% FAT-INJ	ALCOHOL TOTAL	% ALCOHOL
ALBUQUERQUE	COORS BLVD NW	PASEO DEL NORTE BLVD NE	1	147	469	31.3	17	3.6
ALBUQUERQUE	JEFFERSON ST NE	PASEO DEL NORTE BLVD NE	2	121	350	34.6	8	2.3
ALBUQUERQUE	MONTGOMERY BLVD NE	SAN MATEO BLVD NE	3	105	341	30.8	8	2.3
ALBUQUERQUE	COORS BLVD NW	QUAIL RD NW	4	92	299	30.8	9	3.0
ALBUQUERQUE	CENTRAL AVE W	COORS BLVD NW	5	88	224	39.3	9	4.0
ALBUQUERQUE	COORS BLVD NW	IRVING BLVD NW	5	88	290	30.3	6	2.1
ALBUQUERQUE	7 BAR LOOP NW	COORS BLVD NW	7	84	227	37.0	5	2.2
ALBUQUERQUE	MONTGOMERY BLVD NE	WYOMING BLVD NE	7	84	331	25.4	20	6.0
ALBUQUERQUE	EUBANK BLVD NE	MONTGOMERY BLVD NE	9	83	224	37.1	14	6.3
ALBUQUERQUE	MONTGOMERY BLVD NE	PAN AMERICAN EAST HWY NE	10	82	216	38.0	4	1.9
ESPANOLA	NM 584	RIVERSIDE DR	10	82	191	42.9	18	9.4
ALBUQUERQUE	COORS BLVD BY-PASS NW	ELLISON DR NW	12	79	276	28.6	8	2.9
ALBUQUERQUE	COORS BLVD NW	ILIFF RD NW	13	70	195	35.9	2	1.0
SANTA FE	CERRILLOS RD	ST FRANCIS DR	14	68	171	39.8	10	5.8
ALBUQUERQUE	COORS BLVD NW	MONTANO RD NW	15	64	196	32.7	10	5.1
ALBUQUERQUE	BRIDGE BLVD SW	COORS BLVD SW	16	62	146	42.5	7	4.8
ALBUQUERQUE	CENTRAL AVE E	SAN MATEO BLVD NE	16	62	144	43.1	10	6.9
ALBUQUERQUE	CENTRAL AVE W	UNSER BLVD NW	16	62	138	44.9	9	6.5
ALBUQUERQUE	ACADEMY RD NE	WYOMING BLVD NE	19	59	155	38.1	5	3.2
FARMINGTON	20TH ST	MAIN ST	19	59	139	42.4	1	0.7
ALBUQUERQUE	CANDELARIA RD NE	SAN MATEO BLVD NE	21	58	156	37.2	4	2.6
ALBUQUERQUE	OSUNA RD NE	SAN MATEO BLVD NE	21	58	154	37.7	10	6.5
LAS CRUCES	MAIN ST	SOLANO DR	21	58	143	40.6	4	2.8
SANTA FE	AIRPORT RD	CERRILLOS RD	21	58	200	29.0	9	4.5
ALBUQUERQUE	ALAMEDA BLVD NW	COORS BLVD NW	25	57	203	28.1	4	2.0
ALBUQUERQUE	MENAUL BLVD NE	SAN MATEO BLVD NE	25	57	187	30.5	4	2.1
ALBUQUERQUE	EUBANK BLVD NE	MENAUL BLVD NE	27	56	167	33.5	4	2.4
ALBUQUERQUE	PAN AMERICAN EAST HWY NE	PASEO DEL NORTE BLVD NE	27	56	210	26.7	10	4.8
ALBUQUERQUE	JUAN TABO BLVD NE	MONTGOMERY BLVD NE	29	55	150	36.7	6	4.0
ALBUQUERQUE	CARLISLE BLVD NE	MONTGOMERY BLVD NE	30	54	190	28.4	5	2.6
ALBUQUERQUE	CENTRAL AVE E	LOUISIANA BLVD NE	30	54	166	32.5	7	4.2
ALBUQUERQUE	ACADEMY RD NE	SAN MATEO BLVD NE	32	53	167	31.7	6	3.6
ALBUQUERQUE	EUBANK BLVD NE	LOMAS BLVD NE	32	53	182	29.1	4	2.2
ALBUQUERQUE	LOMAS BLVD NE	LOUISIANA BLVD NE	34	52	137	38.0	12	8.8
ESPANOLA	RIVERSIDE DR	SANTA CRUZ RD	34	52	120	43.3	10	8.3
ALBUQUERQUE	JUAN TABO BLVD NE	LOMAS BLVD NE	36	51	166	30.7	2	1.2
ALBUQUERQUE	COORS BLVD BY-PASS NW	EAGLE RANCH RD NW	37	50	119	42.0	4	3.4
ALBUQUERQUE	INDIAN SCHOOL RD NE	SAN MATEO BLVD NE	37	50	132	37.9	5	3.8
FARMINGTON	30TH ST	MAIN ST	37	50	144	34.7	2	1.4
SANTA FE	CERRILLOS RD	ST MICHAELS DR	37	50	130	38.5	8	6.2
SANTA FE	SAN MATEO RD	ST FRANCIS DR	37	50	99	50.5	6	6.1
ALBUQUERQUE	CENTRAL AVE E	GIRARD BLVD NE	42	49	117	41.9	5	4.3
ALBUQUERQUE	GOLF COURSE RD NW	PASEO DEL NORTE BLVD NW	42	49	142	34.5	1	0.7
ALBUQUERQUE	LOMAS BLVD NE	SAN MATEO BLVD NE	42	49	131	37.4	5	3.8
FARMINGTON	CLIFFSIDE DR	MAIN ST	42	49	128	38.3	2	1.6
RIO RANCHO	RIO RANCHO DR	SOUTHERN BLVD	42	49	140	35.0	7	5.0
ALBUQUERQUE	CENTRAL AVE E	TRAMWAY BLVD NE	47	48	132	36.4	4	3.0
ALBUQUERQUE	JEFFERSON ST NE	MONTGOMERY BLVD NE	47	48	122	39.3	3	2.5
RIO RANCHO	RIO RANCHO DR	SARA RD	47	48	119	40.3	4	3.4
ALBUQUERQUE	CENTRAL AVE E	EUBANK BLVD NE	50	47	138	34.1	4	2.9

EXHIBIT 1.2

Analyzed CABQ Collisions[1]

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Collisions (analyzed)	19,420	18,135	16,794	18,484	20,306	19,390	19,089	20,940	20,433	20,906
Injury & Fatal	7,274	6,758	6,235	6,764	7,273	6,659	6,727	7,026	6,489	5,989
Injury	7,221	6,713	6,185	6,713	7,208	6,606	6,678	6,957	6,433	5,926
Fatal	53	45	50	51	65	53	49	69	56	63
Non-Injury	12,146	11,377	10,559	11,720	13,033	12,731	12,362	13,914	13,944	14,917
Population[2]	419,681	419,681	448,362	449,140	454,291	464,011	472,814	483,249	494,477	504949
Accident Rate/1000	46.27	43.21	37.46	41.15	44.70	41.79	40.37	43.33	41.32	41.40
Injury/Fatal Rate/1000	17.33	16.10	13.91	15.06	16.01	14.35	14.23	14.54	13.12	11.86



[1] Data from NMDOT analyzed by UNM's DGR under contract to NMDOT - cleaned data with private property collisions removed.

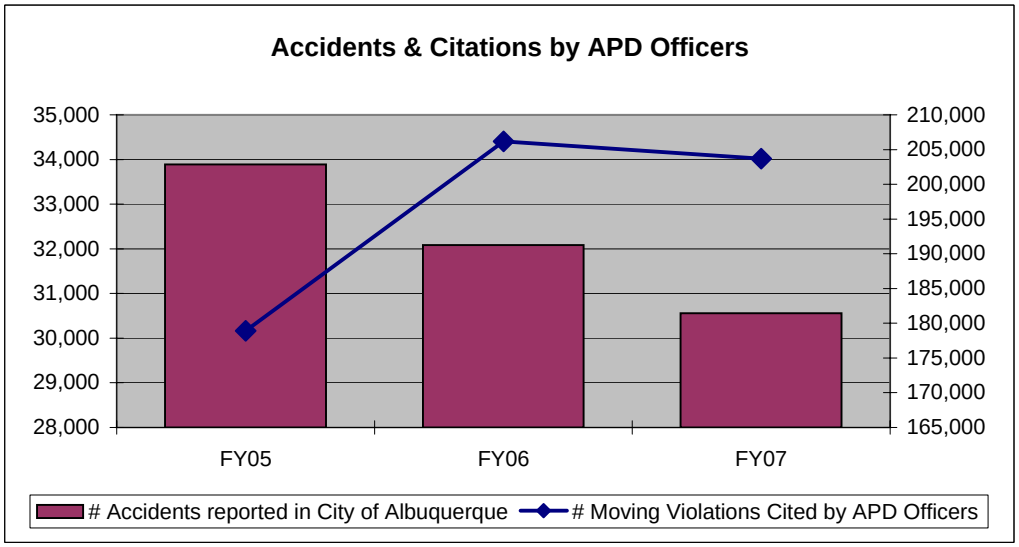
[2] Population from US Census Bureau/American Community Survey

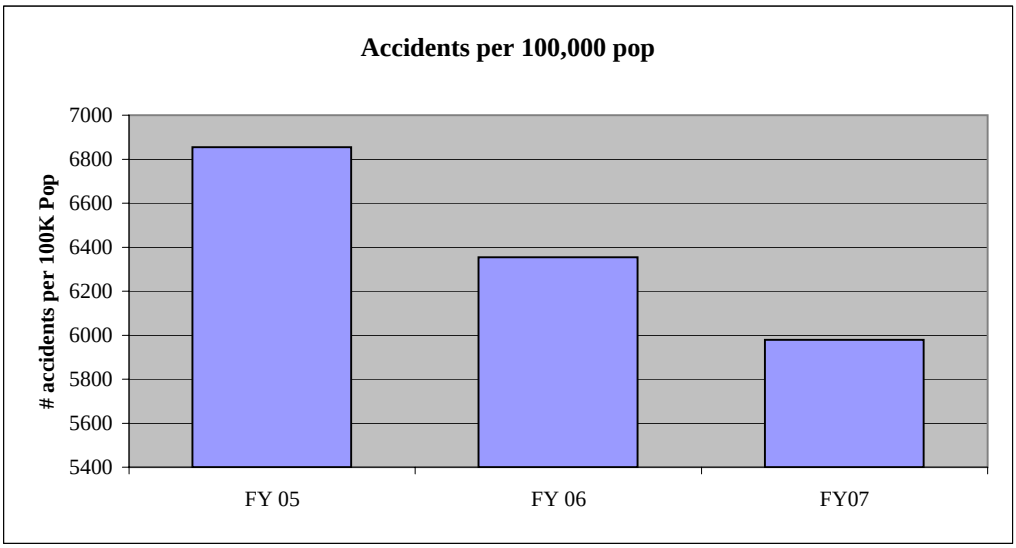
EXHIBIT 1.3

Accidents in CABQ & Moving Violations Written by APD Officers

Accidents reported in CABQ - includes private property	FY 05	FY 06	FY07
# accident reports (case #'s issued)	33,892	32,087	30,556

Moving violation citations written by APD Officers	FY 05	FY 06	FY 07
# moving citations NE	33,383	32,000	32,541
# moving citations Valley	40,373	40,650	35,790
# moving citations Westside	55,372	43,044	44,835
# moving citations Southeast	n/a	39,084	38,111
# moving citations Foothills	24,673	23,670	22,885
# traffic citations Open Space	1,032	4,174	4,184
# moving citations by Traffic Division	24,066	23,557	25,334
Total moving citations issued	178,899	206,179	203,680





Accident Rates Adjusted for Population	FY 05	FY 06	FY07
# accident reports	33,892	32,087	30,556
CABQ Population by fiscal year	494,477	504,949	511,008
# accident reports per 100K Pop	6854.11	6354.5	5979.55

EXHIBIT 1.3

Average Monthly Change in Accidents by Intersection

	Disregard Traffic Signal	Failure to Yield	Other	Total Inside Intersection	Rear End	Other	Total outside Intersection
Juan Tabo and Lomas (Live 19 mos)							
Prior to Red Light	0.400	0.440	0.520	1.360	2.240	2.000	4.240
After Red Light	0.368	0.158	0.000	0.526	3.421	2.105	5.526
Results: Accidents increased/reduced	Reduced	√ **Reduced**	√ **Reduced**	√ **Reduced**	√ **Increased**	Increased	Increased
Paseo & Coors (Live 19 mos)							
Prior to Red Light	0.360	0.200	0.160	0.720	8.760	5.040	14.520
After Red Light	0.263	0.053	0.000	0.316	8.789	4.158	13.263
Results: Accidents increased/reduced	Reduced	√ **Reduced**	√ **Reduced**	√ **Reduced**	Increased	Reduced	Reduced
Eubank & Montgomery (Live 28 mos)							
Prior to Red Light	0.1875	0.6250	0.1875	1.0000	3.6250	2.6250	6.2500
After Red Light	0.1429	0.3571	0.3929	0.8929	3.3929	2.7143	6.1071
Results: Accidents increased/reduced	Reduced	Reduced	Increased	Reduced	Reduced	Increased	Reduced
San Mateo and Montgomery (Live 28 mos)							
Prior to Red Light	0.375	0.563	0.250	1.188	4.938	4.313	9.250
After Red Light	0.393	0.571	0.357	1.321	5.214	3.857	9.071
Results: Accidents increased/reduced	Increased	Increased	Increased	Increased	Increased	Reduced	Reduced
All Intersections Above							
Prior to Red Light	0.341	0.427	0.293	1.061	5.024	3.500	8.744
After Red Light	0.287	0.319	0.223	0.830	5.032	3.223	8.319
Results: Accidents increased/reduced	Reduced	Reduced	Reduced	Reduced	Increased	Reduced	Reduced

√ in bold/color means statistically significant change

Annualized Number of Accidents

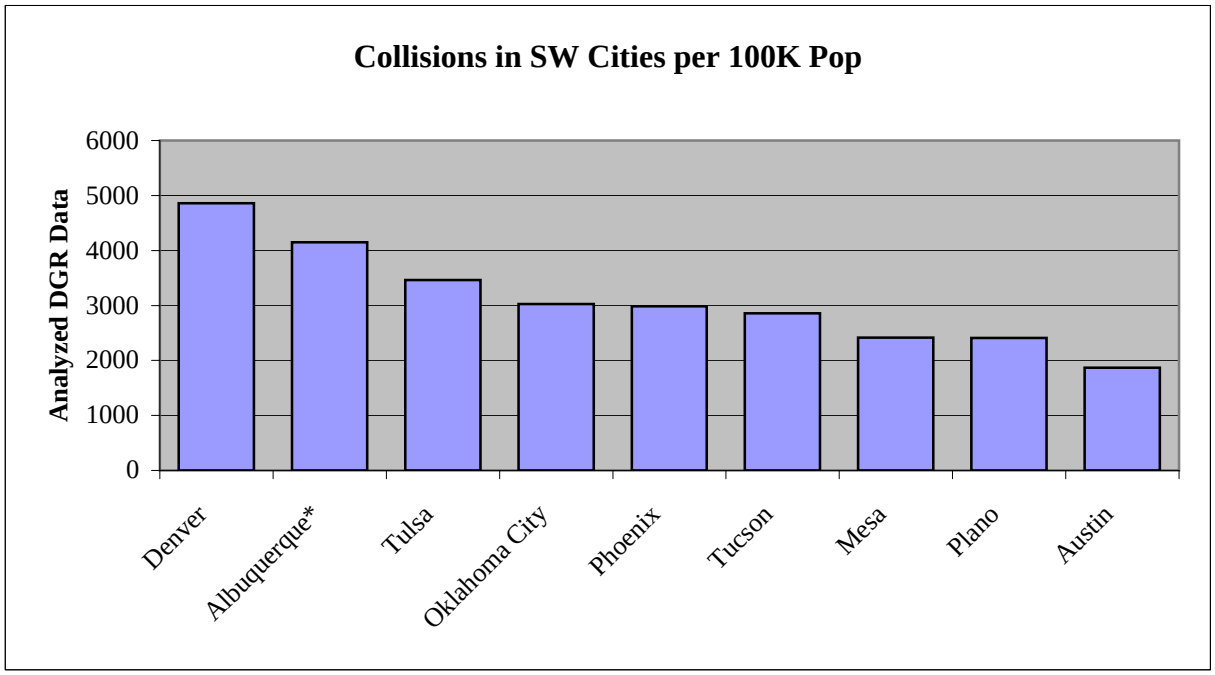
Juan Tabo and Lomas (Live 19 mos)							
Prior to Red Light	4.800	5.280	6.240	16.320	26.880	24.000	50.880
After Red Light	4.421	1.895	0.000	6.316	41.053	25.263	66.316
Results: Accidents increased/reduced	Reduced	√ **Reduced**	√ **Reduced**	√ **Reduced**	√ **Increased**	Increased	Increased
Paseo & Coors (Live 19 mos)							
Prior to Red Light	4.320	2.400	1.920	8.640	105.120	60.480	174.240
After Red Light	3.158	0.632	0.000	3.789	105.474	49.895	159.158
Results: Accidents increased/reduced	Reduced	√ **Reduced**	√ **Reduced**	√ **Reduced**	Increased	Reduced	Reduced
Eubank & Montgomery (Live 28 mos)							
Prior to Red Light	2.2500	7.5000	2.2500	12.0000	43.5000	31.5000	75.0000
After Red Light	1.7143	4.2857	4.7143	10.7143	40.7143	32.5714	73.2857
Results: Accidents increased/reduced	Reduced	Reduced	Increased	Reduced	Reduced	Increased	Reduced
San Mateo and Montgomery (Live 28 mos)							
Prior to Red Light	4.500	6.750	3.000	14.250	59.250	51.750	111.000
After Red Light	4.714	6.857	4.286	15.857	62.571	46.286	108.857
Results: Accidents increased/reduced	Increased	Increased	Increased	Increased	Increased	Reduced	Reduced
All Intersections Above							
Prior to Red Light	15.870	21.930	13.410	51.210	234.750	167.730	411.120
After Red Light	14.008	13.669	9.000	36.677	249.812	154.015	407.617
Results: Accidents increased/reduced	Reduced	Reduced	Reduced	Reduced	Increased	Reduced	Reduced

√ in bold/color means statistically significant change

EXHIBIT 1.4

Comparison of Crash Statistics in other Southwest Cities - Adjusted for Population

City	State	Collision Reports 2005	Population	Collisions/ 100K Pop
Denver	CO	26,507	545,198	4862
Albuquerque*	NM	20,533	494,477	4152
Tulsa	OK	12,821	370,477	3461
Oklahoma City	OK	15,622	515,751	3029
Phoenix	AZ	41,143	1,377,890	2986
Tucson	AZ	14,488	507,362	2856
Mesa	AZ	10,747	445,455	2413
Plano	TX	6,068	251,648	2411
Austin	TX	12,671	678,457	1868



Albuquerque Data - Analyzed by NMDOT/DGR with private property accidents removed

EXHIBIT 1.5

SUMMARY OF FATAL ACCIDENTS

FISCAL YEARS 2004 - 2008

		FY 04		FY 05		FY 06		FY 07		FY 08	TOTALS
		Jul - Dec 03	Jan - Jun 04	Jul - Dec 04	Jan - Jun 05	Jul - Dec 05	Jan - Jun 06	Jul - Dec 06	Jan - Jun 07	Jul - Dec 07	
# of fatal accidents		23	27	22	18	25	24	24	21	18	**202**
# occurring in an intersection		6	10	9	5	10	11	7	7	8	**73**
# occurring in an Automated Enforcement intersection		0	0	0	0	1	0	0	1	0	**2**
# occuring in an ACTIVE Automated Enforcement intersection		0	0	0	0	0	0	0	1	0	**1**
# Vehicles Involved	Single vehicle	15	14	12	11	15	11	14	11	8	**111**
	Multiple vehicles	8	13	10	7	10	12	10	10	10	**90**
Vehicle type of deceased	Passenger car	5	8	7	2	5	10	4	4	5	**50**
	Motorcycle	5	8	3	3	2	4	4	6	3	**38**
	Van/pickup/SUV	2	4	3	3	5	0	3	1	2	**23**
	Semi-truck/Bus	0	0	1	0	1	0	0	0	0	**2**
	Pedestrian	10	5	8	9	7	7	11	6	6	**69**
Lighting	Daylight	9	10	8	6	11	10	11	9	10	**84**
	Dawn	0	0	0	0	0	0	2	0	0	**2**
	Dusk	1	0	1	1	0	0	0	0	0	**3**
	Dark, lighted	7	12	5	5	8	10	6	7	5	**65**
	Dark, not lighted	0	3	3	5	2	1	3	4	2	**23**
Weather	Clear	17	23	15	15	22	21	22	21	17	**173**
	Raining	0	1	2	1	0	0	0	0	0	**4**
	Snowing	0	1	0	0	0	0	0	0	0	**1**
	Fog	0	0	0	0	0	0	0	0	0	**0**
	Dust	0	0	0	0	0	0	0	0	0	**0**
	Wind		0	0	1	0	0	0	0	0	**1**
Road Condition	Dry	16	21	14	15	22	21	21	19	16	**165**
	Wet	0	3	3	2	0	0	1	1	1	**11**
	Snow	0	0	0	0	0	0	0	1	0	**1**
	Ice	0	0	0	0	0	0	0	2	0	**2**
	Loose material	0	0	0	0	0	0	1	0	0	**1**
Top 10 Contribuiting Factors	Alcohol/drugs	4	9	6	6	11	8	3	7	3	**57**
	Driver inattention	3	7	4	5	9	10	6	5	6	**55**
	Excessive speed	4	5	6	5	6	5	6	8	4	**49**
	Pedestrian error	5	4	5	6	6	3	6	3	5	**43**
	Improper driving	1	5	3	2	1	2	5	8	1	**28**
	Failure to yield right of way	2	5	5	0	5	2	2	0	2	**23**
	Disregarded traffic signal	2	2	1	3	2	2	3	1	1	**17**
	Speed too fast for conditions	1	3	2	0	3	0	0	3	3	**15**
	Improper turn	1	0	0	0	0	0	4	0	2	**7**
	Drove left of center	0	0	1	0	1	1	0	1	1	**5**

Notes:
1) "Single vehicle" includes vehicle vs. pedestrian. "Multiple vehicles" includes vehicle vs. bicycle.
2) FY 06: AE became active at accident intersection on 02/17/06.
3) FY 08 dates: 07/01/07 to 12/08/07.

EXHIBIT 1.6

Total Violations by Type for All Intersections

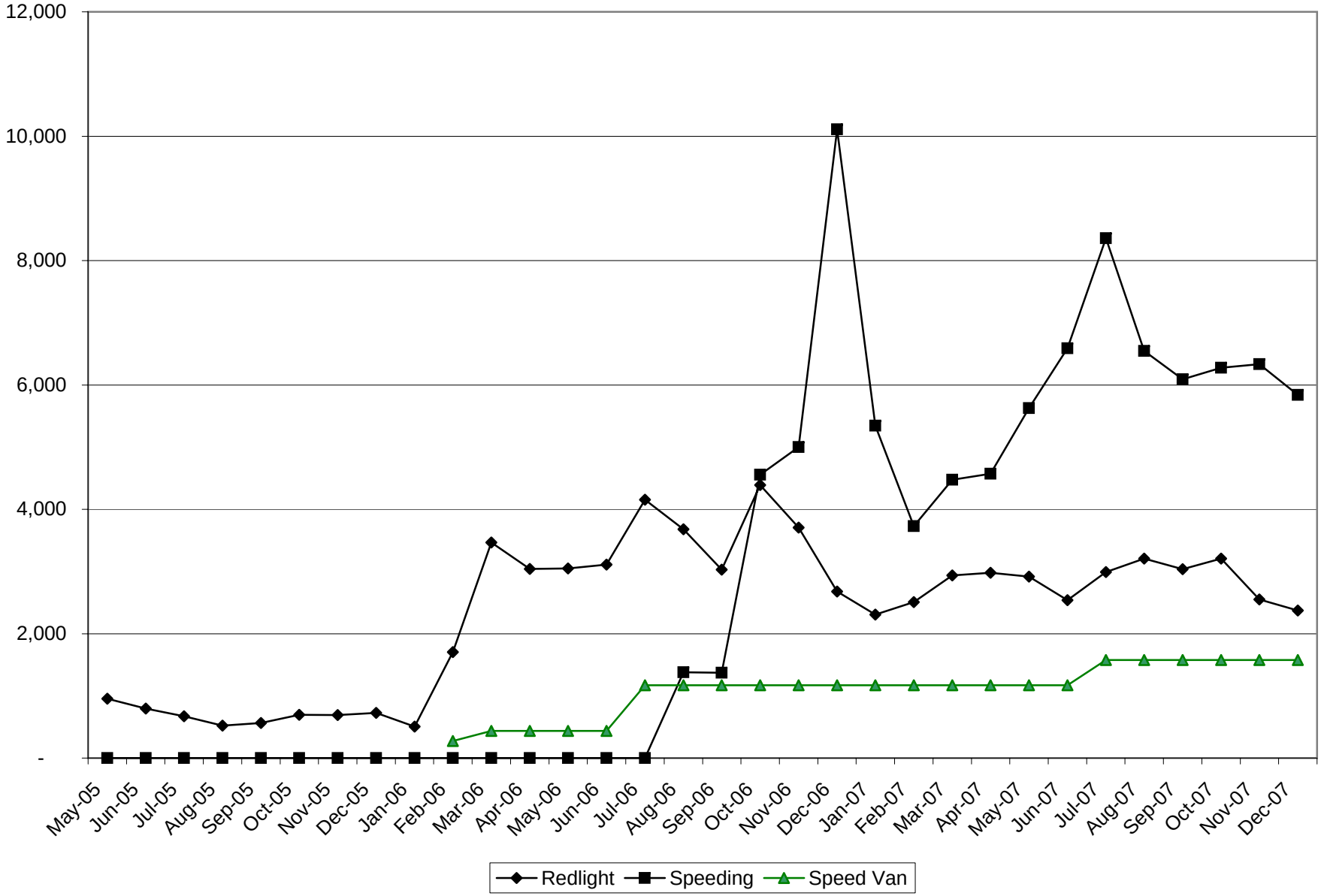
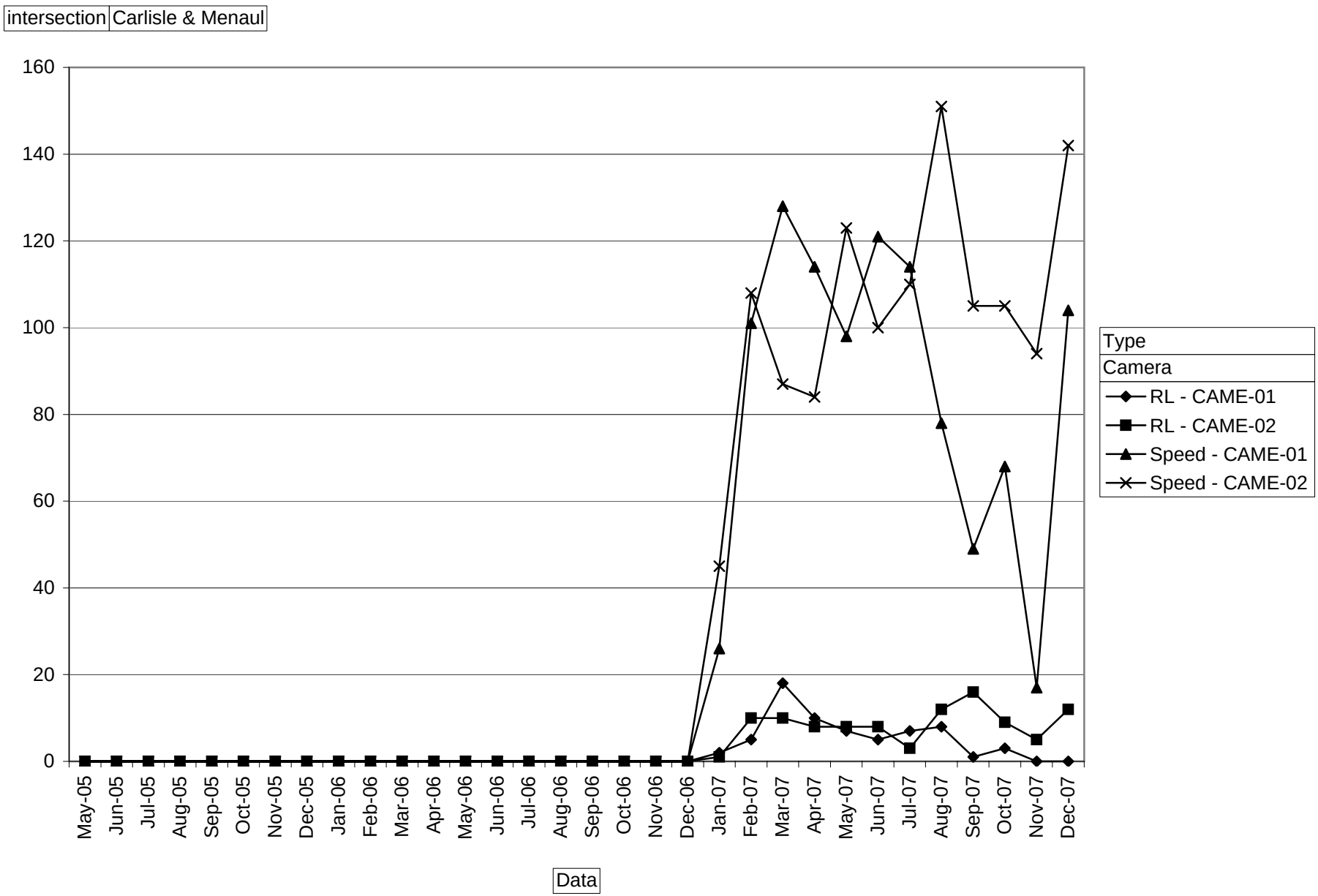


Exhibit 1.7


intersection
Carlisle & Menaul
160
140
120
100
80
60
40
20
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
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Dec-06
Jan-07
Feb-07
Mar-07
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Jul-07
Aug-07
Sep-07
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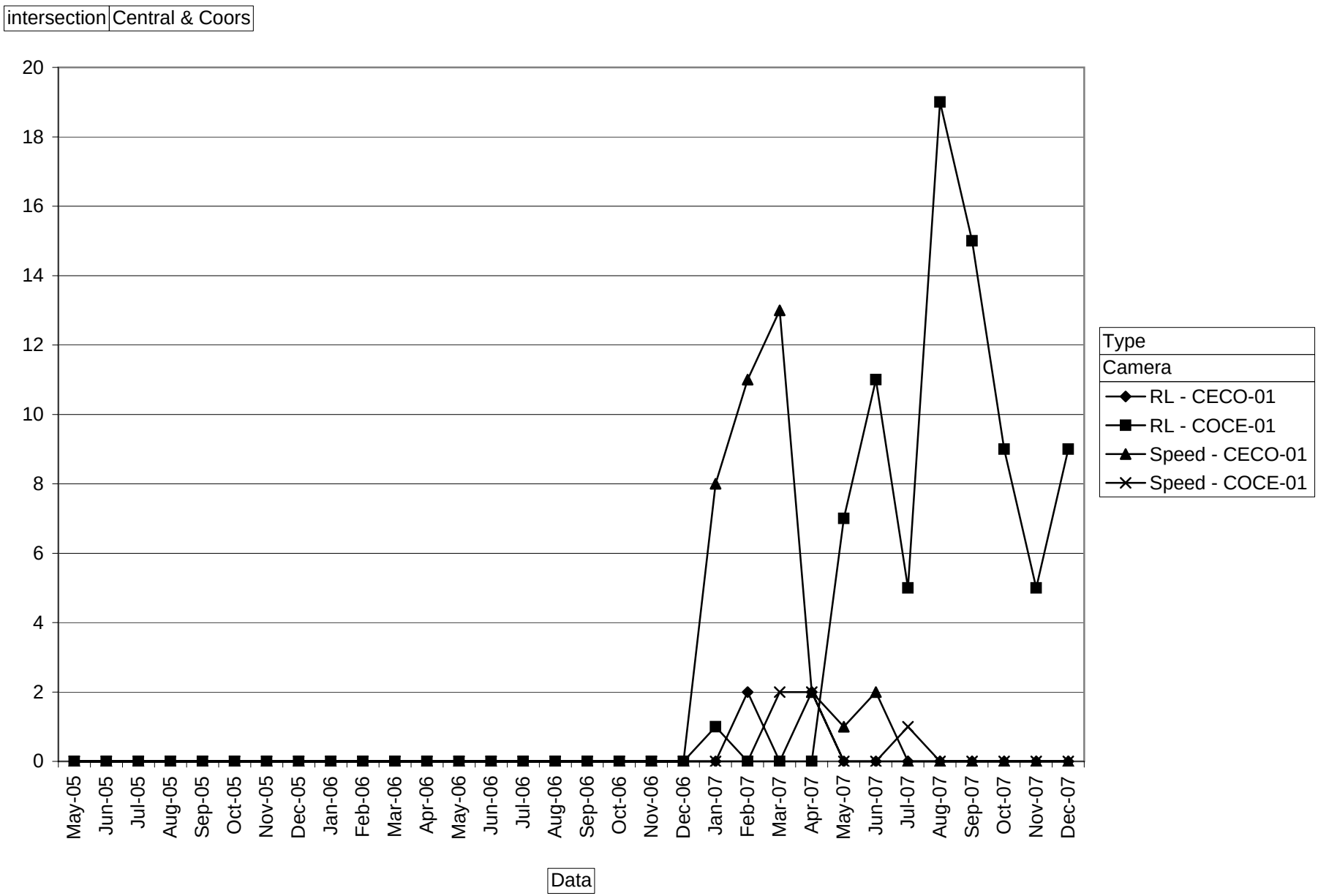
Dec-07
Data
Type
Camera
RL - CAME-01
RL - CAME-02
Speed - CAME-01
Speed - CAME-02

Exhibit 1.7


intersection
Central & Coors
20
18
16
14
12
10
8
6
4
2
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
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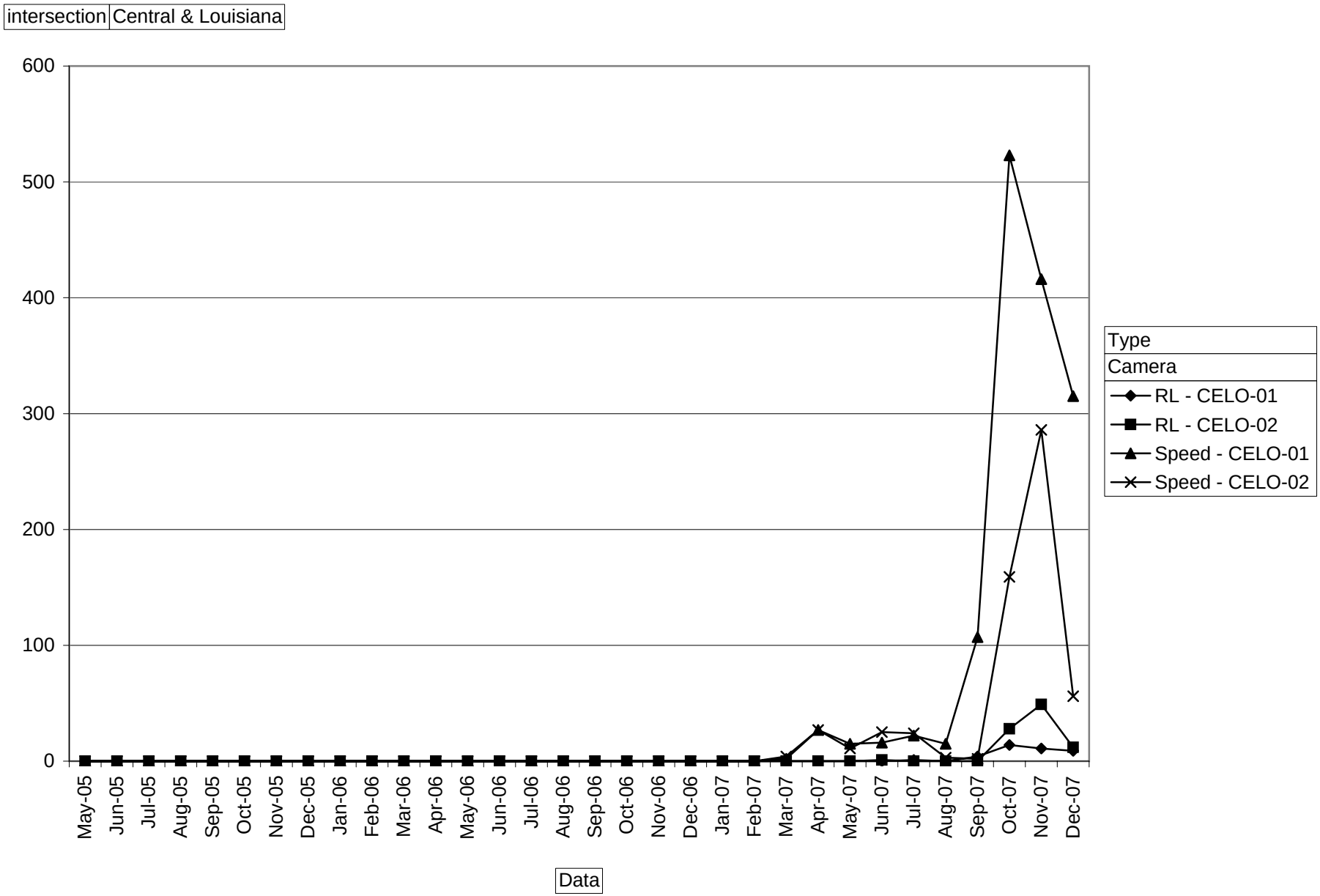
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - CECO-01
RL - COCE-01
Speed - CECO-01
Speed - COCE-01

Exhibit 1.7


intersection
Central & Louisiana
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
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Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
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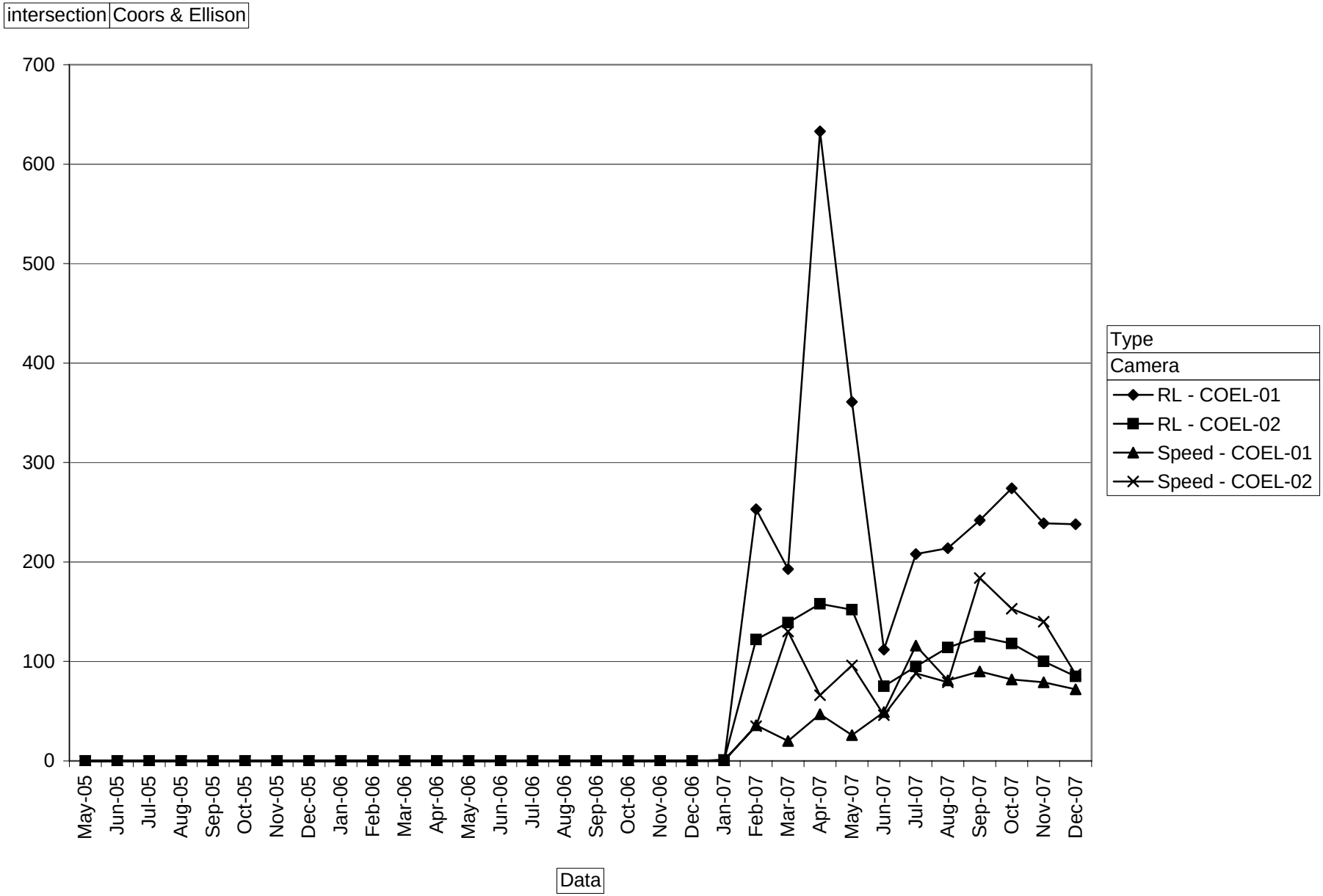
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - CELO-01
RL - CELO-02
Speed - CELO-01
Speed - CELO-02

Exhibit 1.7


intersection
Coors & Ellison
700
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
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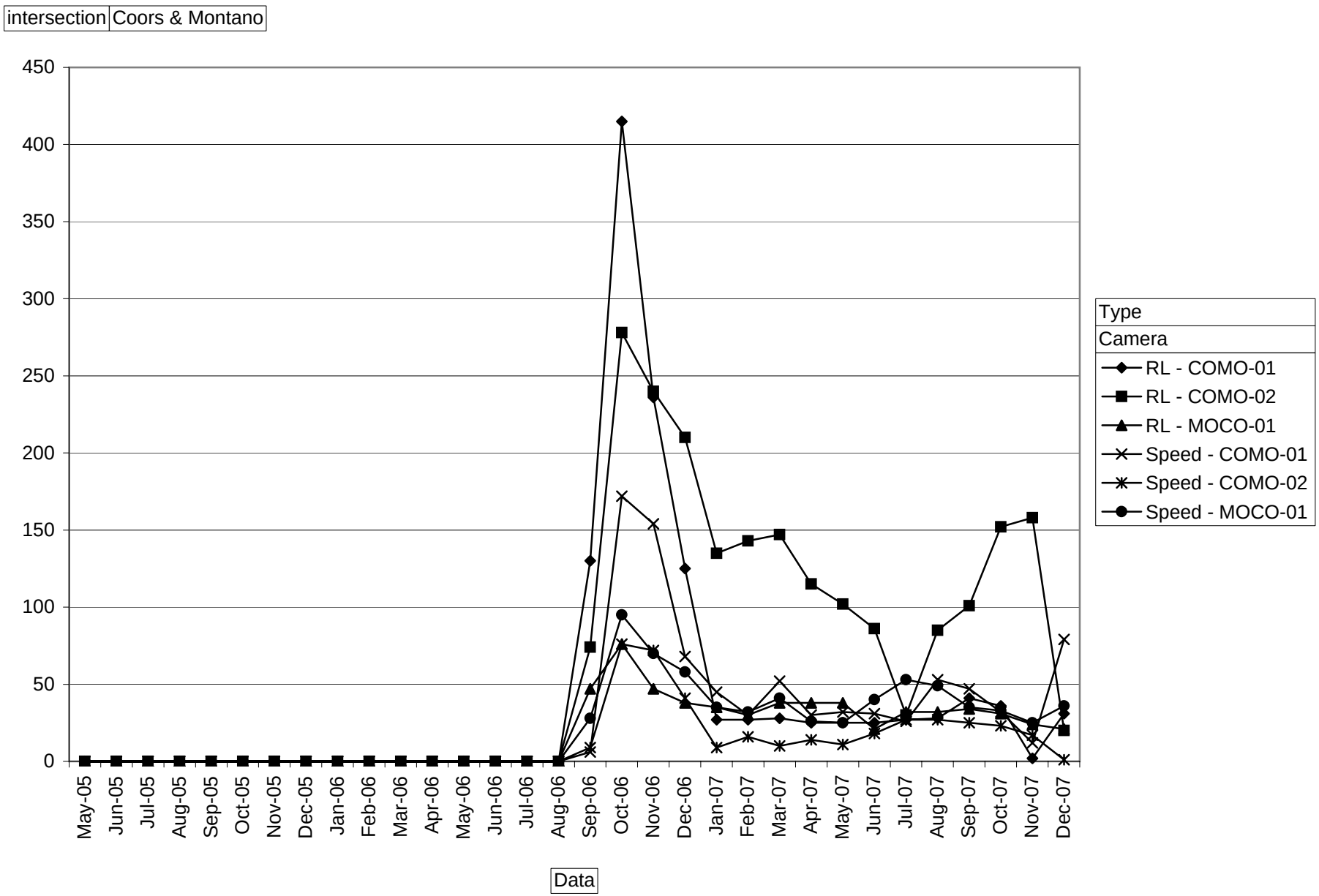
Nov-07
Dec-07
Data
Type
Camera
RL - COEL-01
RL - COEL-02
Speed - COEL-01
Speed - COEL-02

Exhibit 1.7


intersection
Coors & Montano
450
400
350
300
250
200
150
100
50
0
May-05
Jun-05
Jul-05
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Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
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Jun-06
Jul-06
Aug-06
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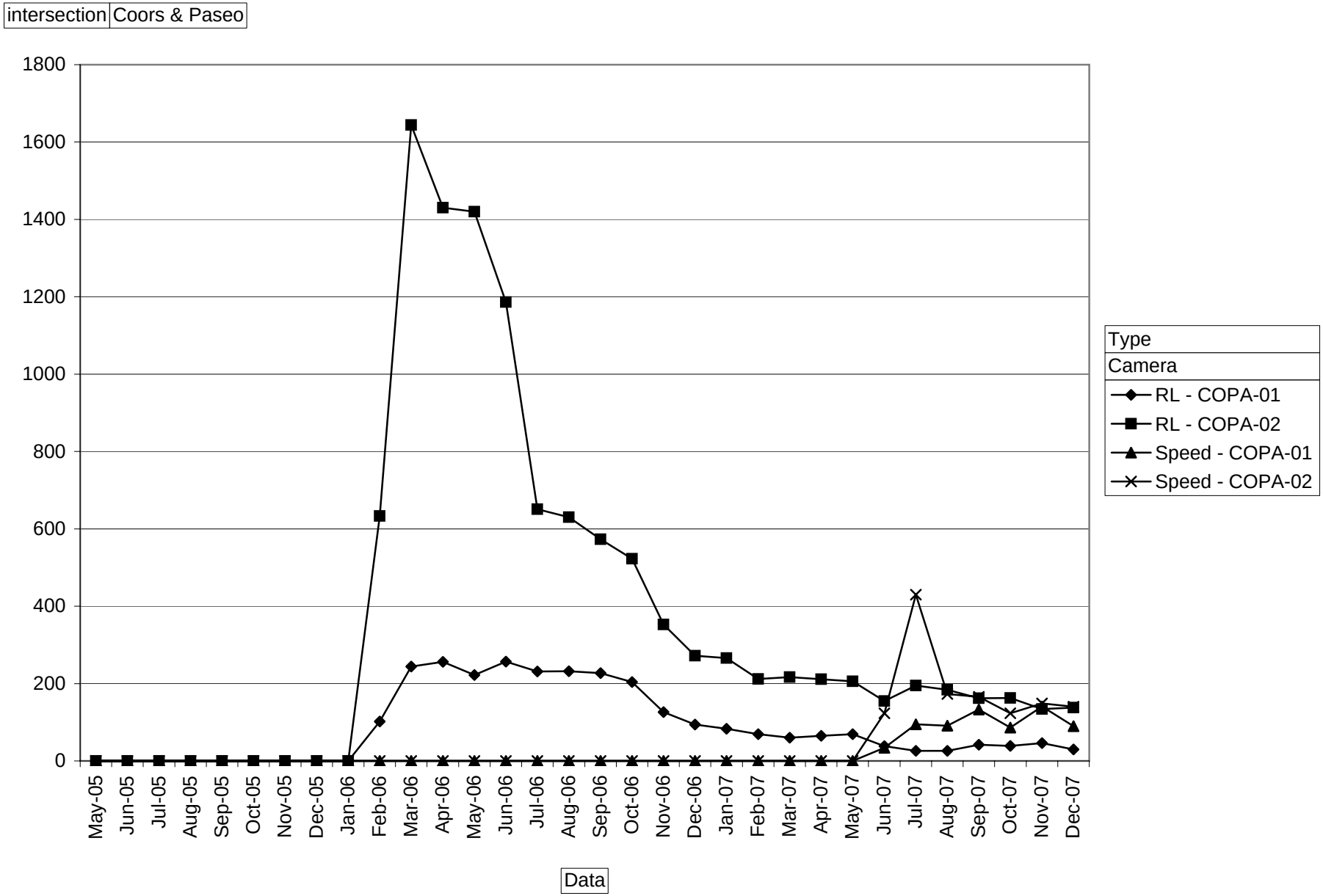
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - COMO-01
RL - COMO-02
RL - MOCO-01
Speed - COMO-01
Speed - COMO-02
Speed - MOCO-01

Exhibit 1.7


intersection
Coors & Paseo
1800
1600
1400
1200
1000
800
600
400
200
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
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Aug-06
Sep-06
Oct-06
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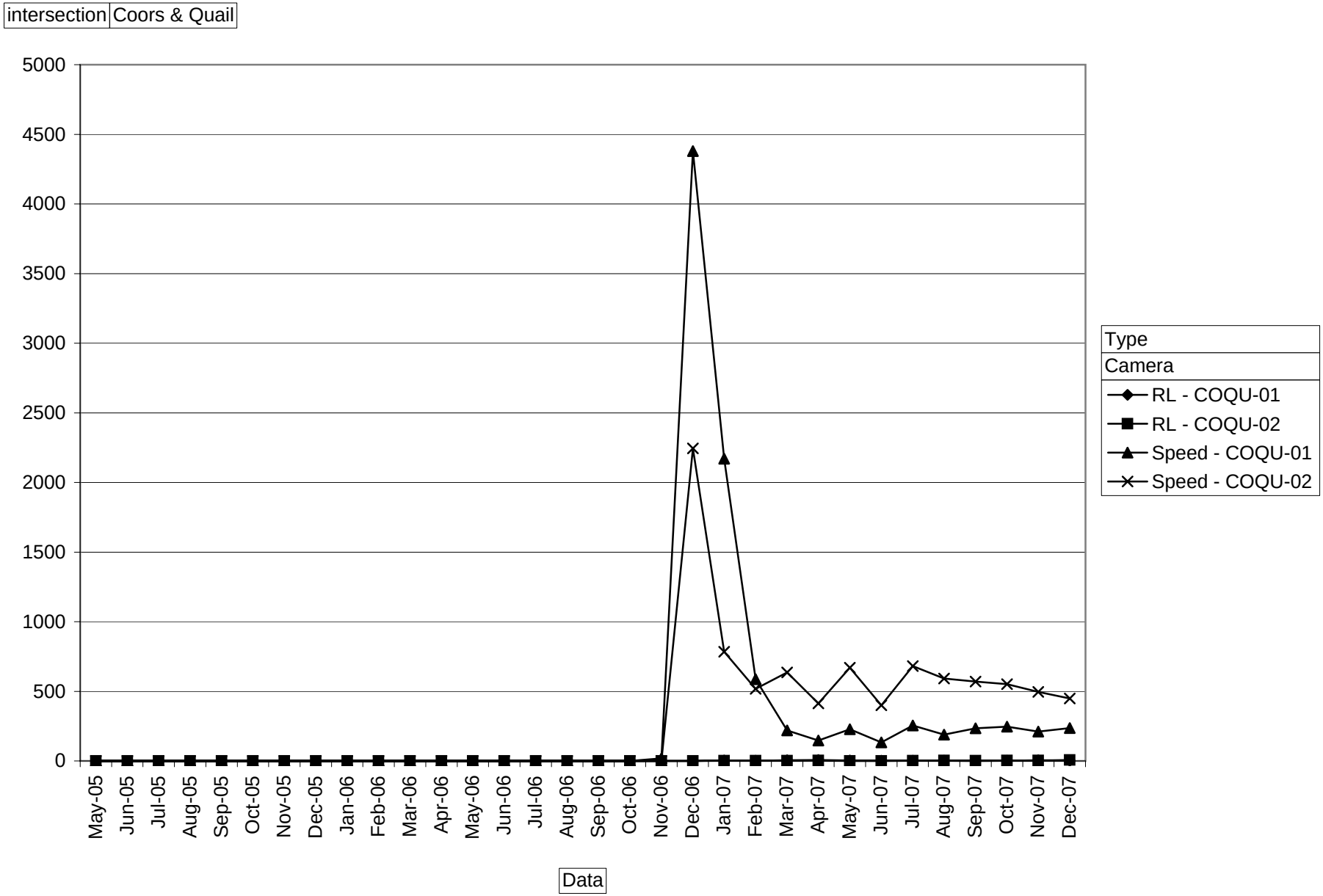
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - COPA-01
RL - COPA-02
Speed - COPA-01
Speed - COPA-02

Exhibit 1.7


intersection
Coors & Quail
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
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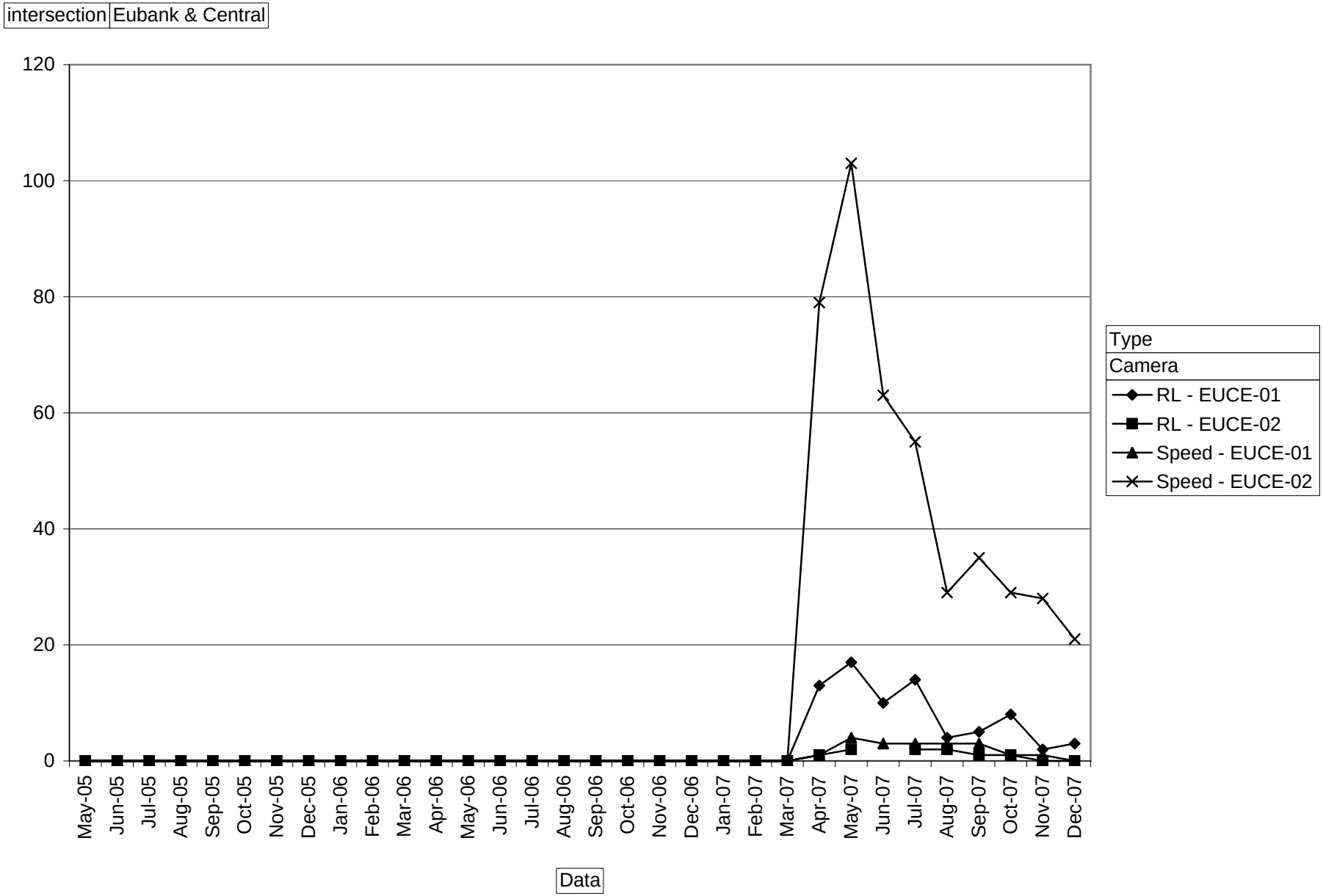
Nov-07
Dec-07
Data
Type
Camera
RL - COQU-01
RL - COQU-02
Speed - COQU-01
Speed - COQU-02

Exhibit 1.7


intersection
Eubank & Central
120
100
80
60
40
20
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
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Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
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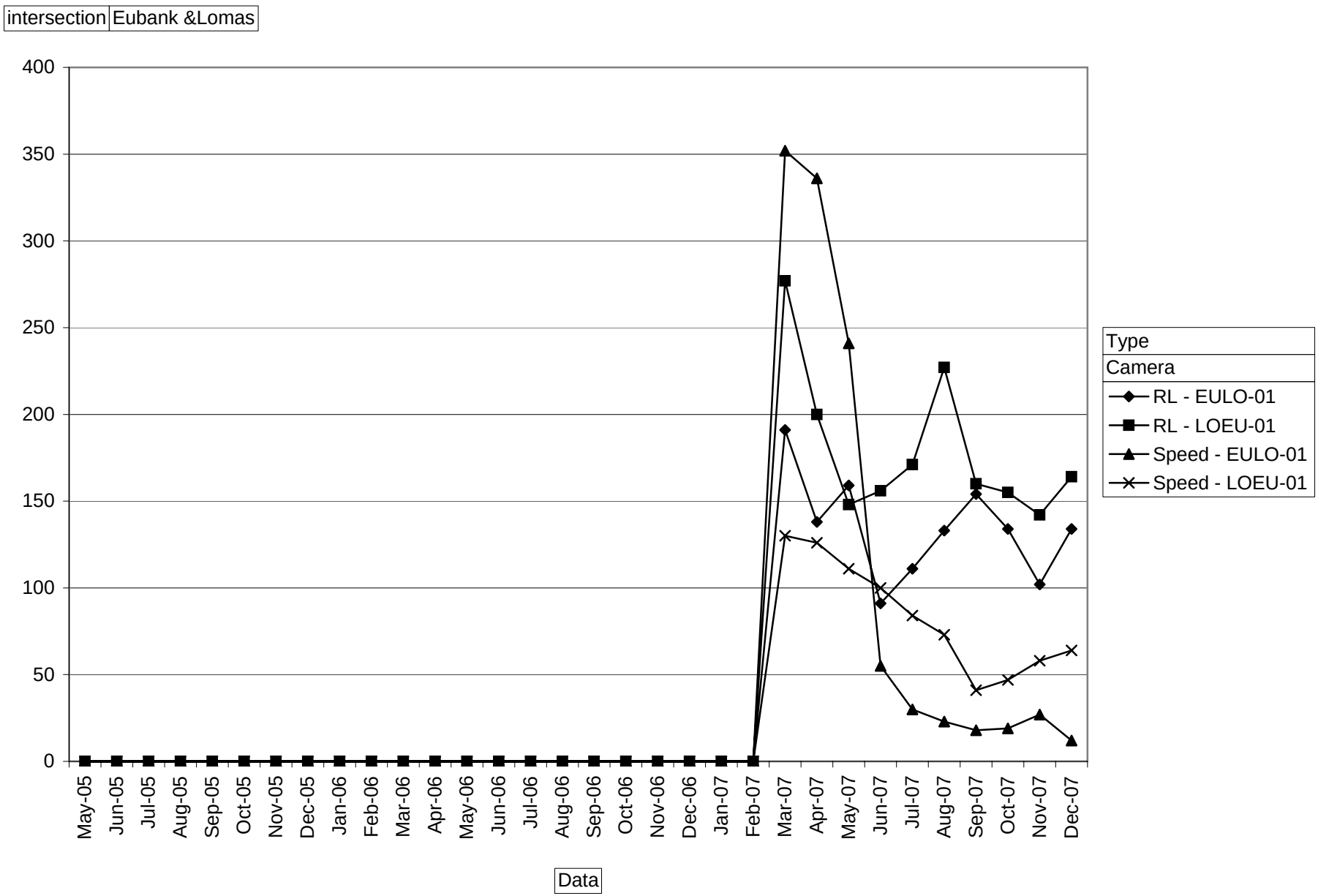
Dec-07
Data
Type
Camera
RL - EUCE-01
RL - EUCE-02
Speed - EUCE-01
Speed - EUCE-02

Exhibit 1.7


intersection
Eubank &Lomas
400
350
300
250
200
150
100
50
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
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Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - EULO-01
RL - LOEU-01
Speed - EULO-01
Speed - LOEU-01

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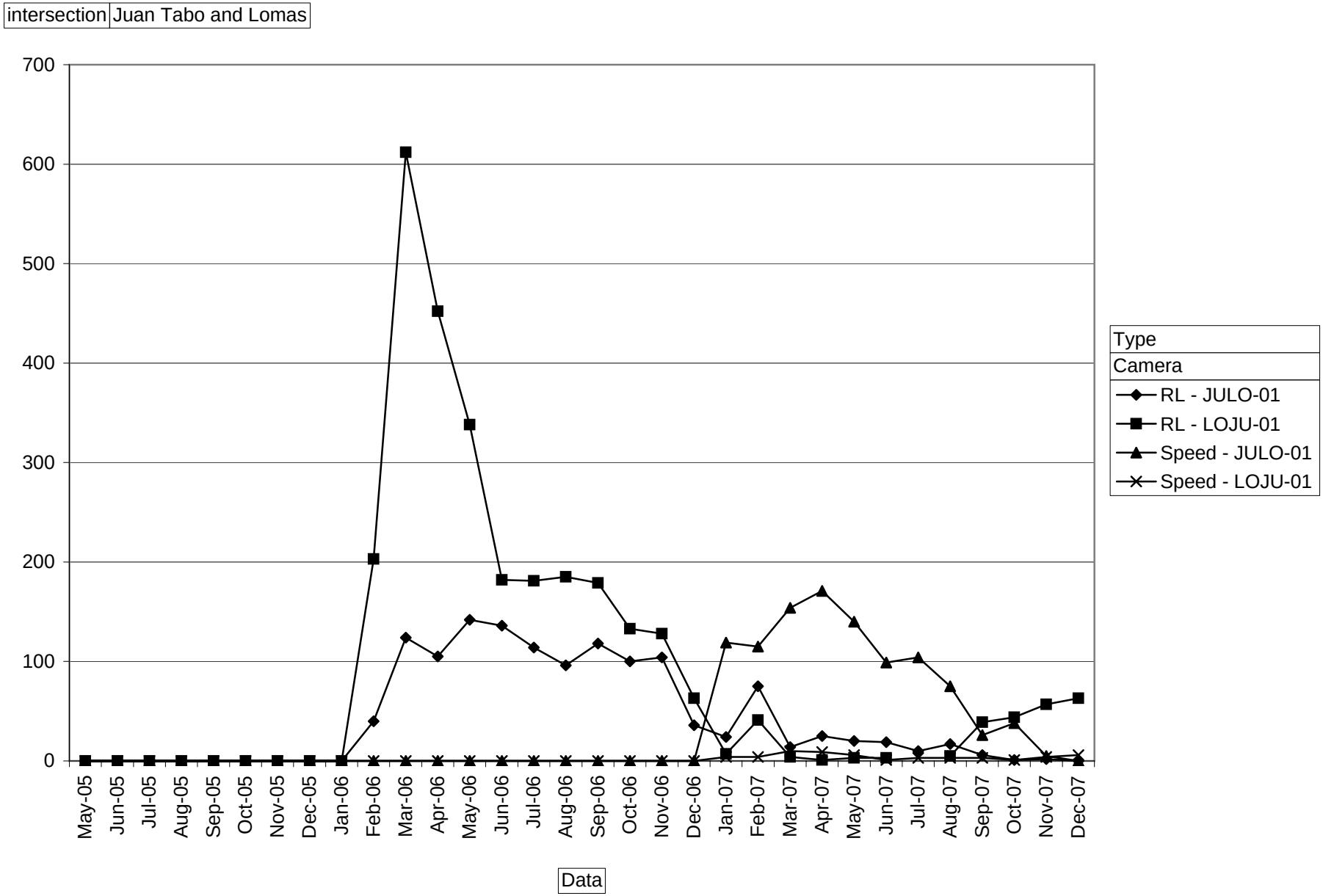
intersection
Juan Tabo and Lomas
700
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
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Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - JULO-01
RL - LOJU-01
Speed - JULO-01
Speed - LOJU-01

Exhibit 1.7

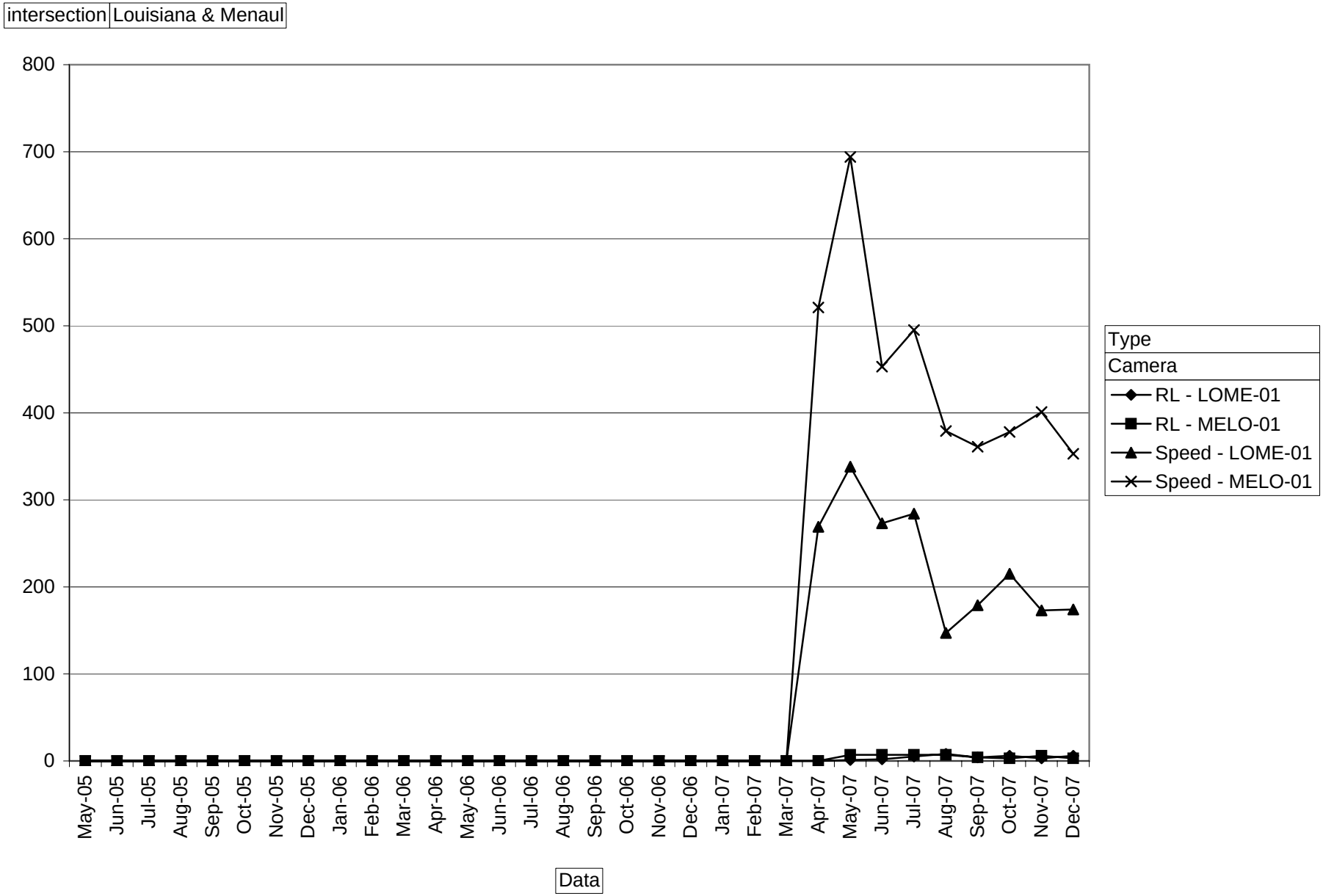
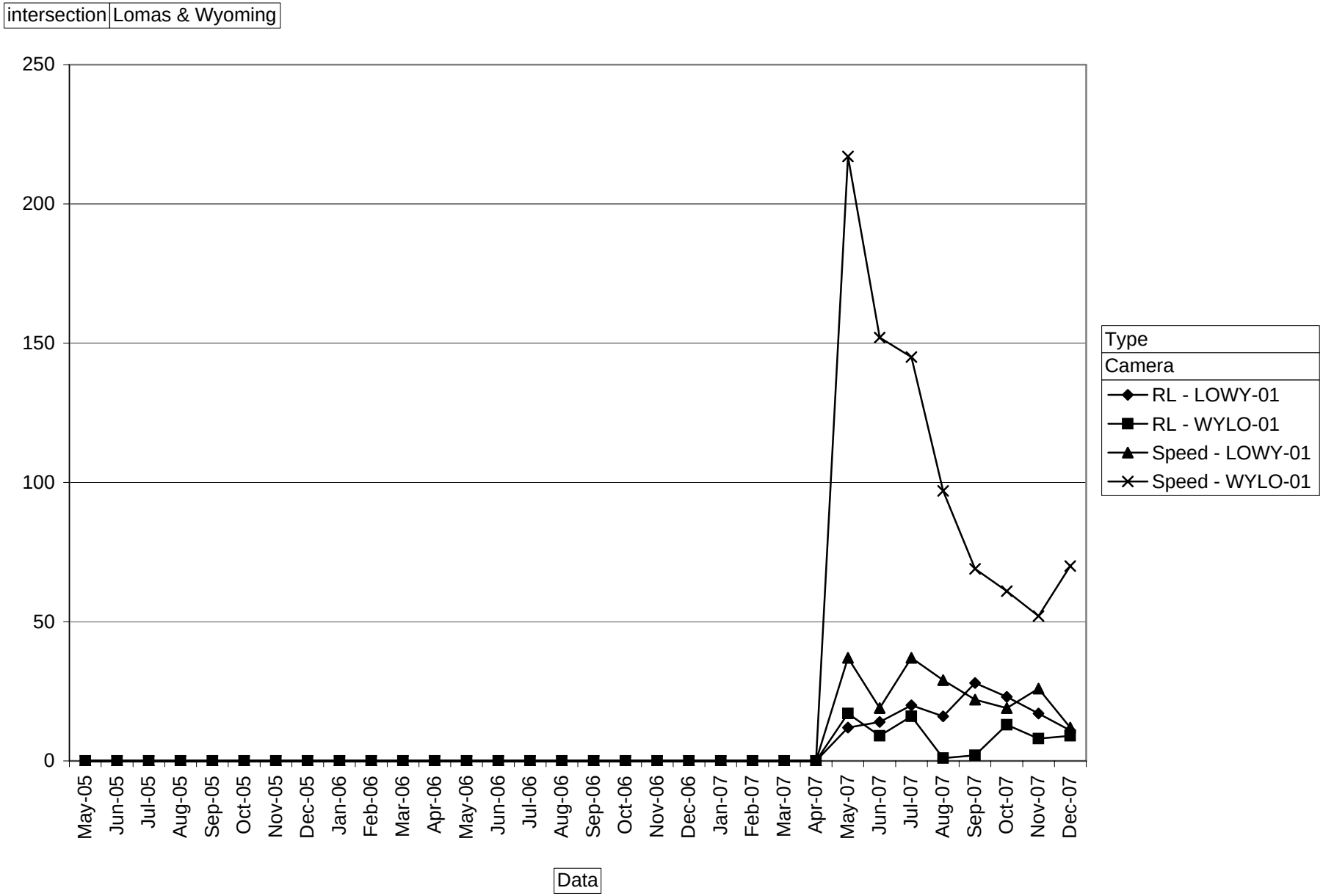

intersection
Louisiana & Menaul
800
700
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - LOME-01
RL - MELO-01
Speed - LOME-01
Speed - MELO-01

Exhibit 1.7


intersection
Lomas & Wyoming
250
200
150
100
50
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
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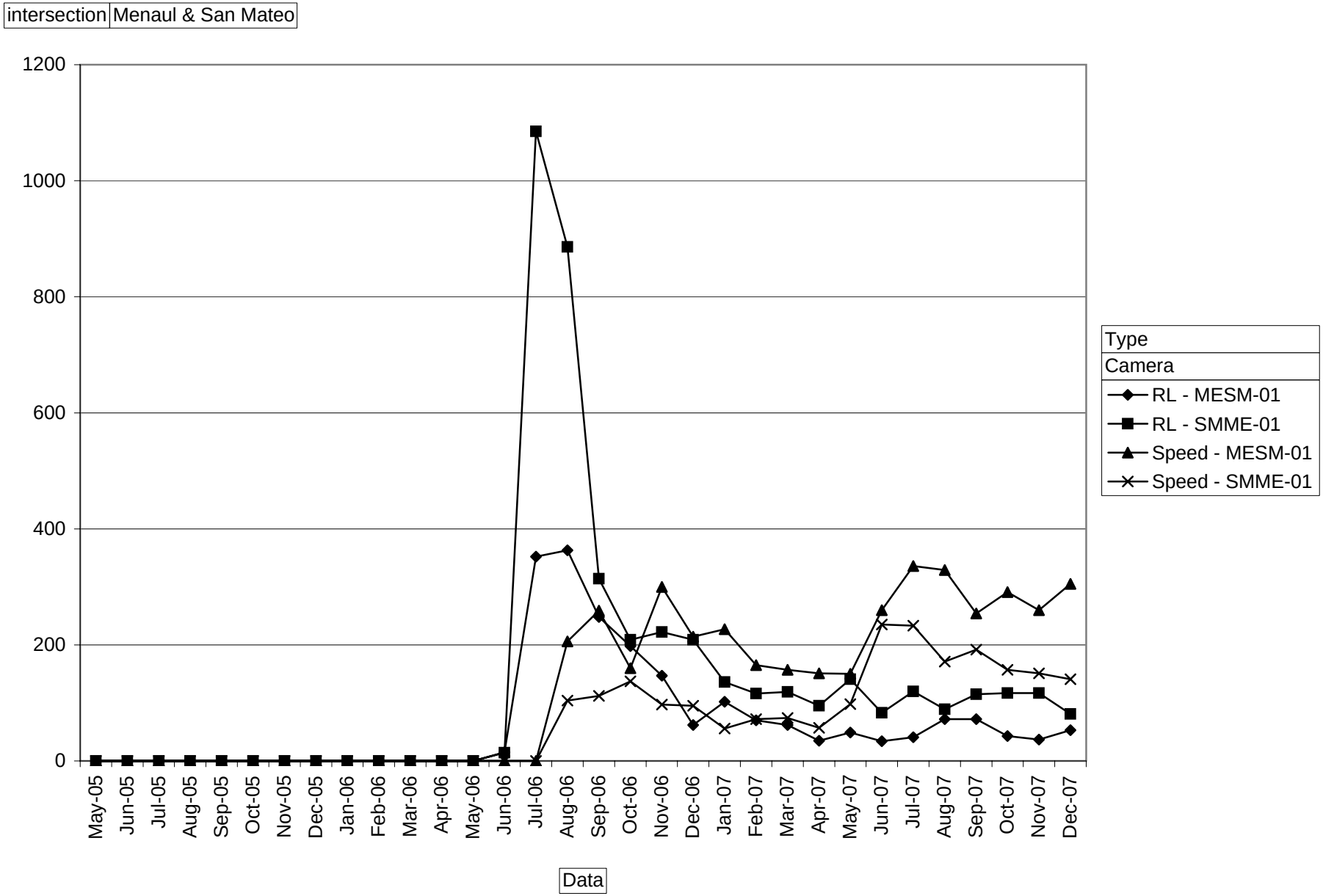
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - LOWY-01
RL - WYLO-01
Speed - LOWY-01
Speed - WYLO-01

Exhibit 1.7


intersection
Menaul & San Mateo
1200
1000
800
600
400
200
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
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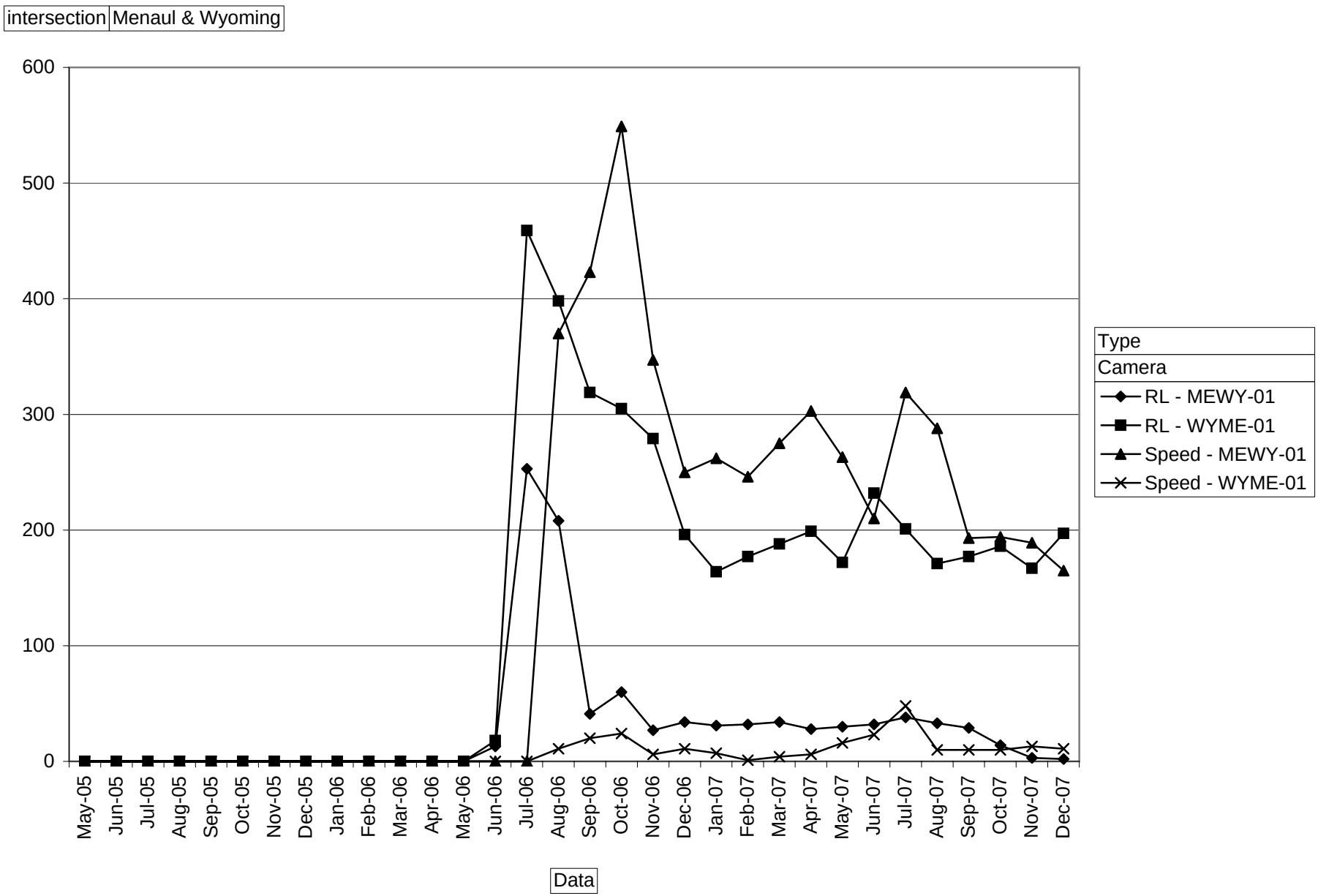
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - MESM-01
RL - SMME-01
Speed - MESM-01
Speed - SMME-01

Exhibit 1.7


intersection
Menaul & Wyoming
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
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Aug-06
Sep-06
Oct-06
Nov-06
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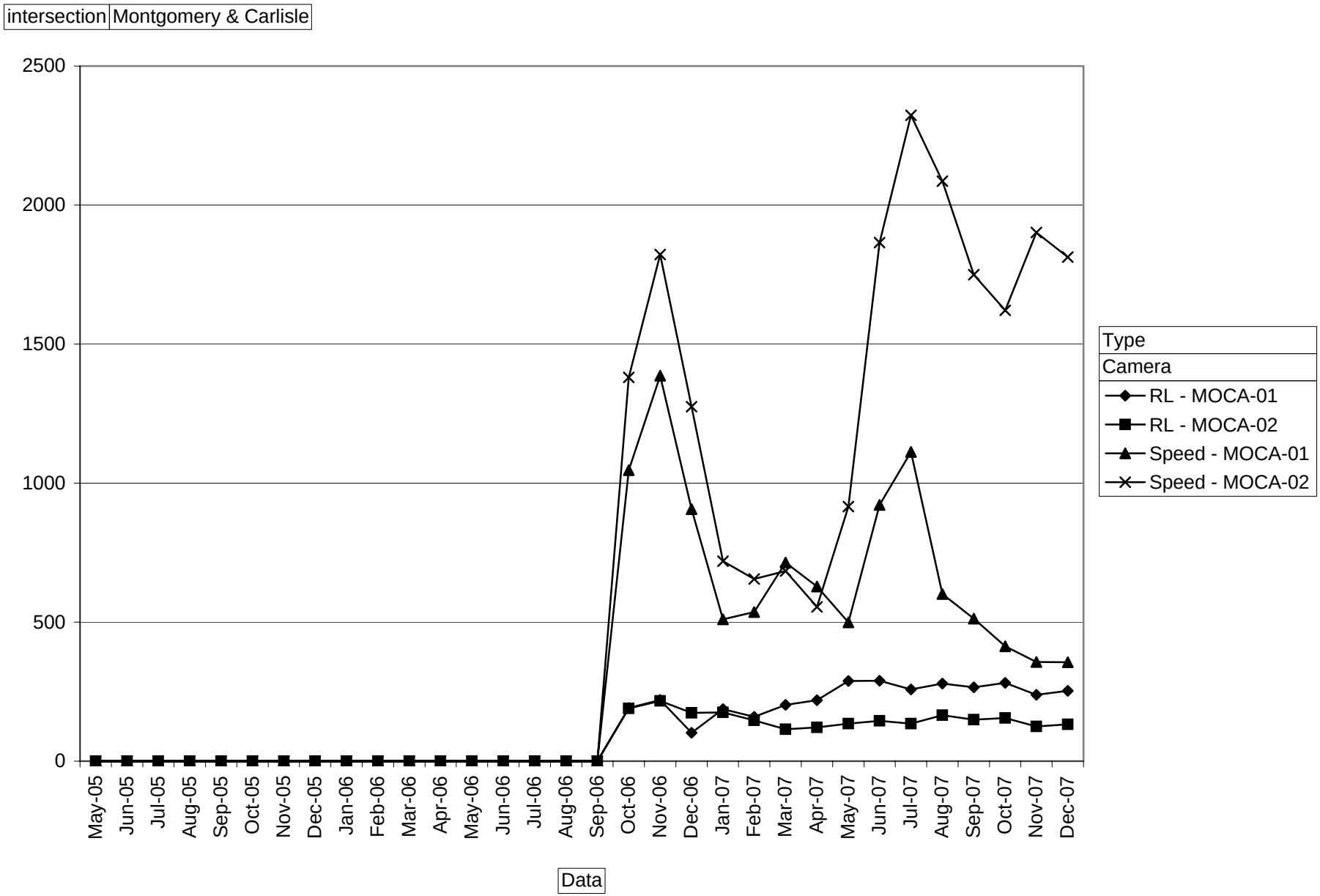
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - MEWY-01
RL - WYME-01
Speed - MEWY-01
Speed - WYME-01

Exhibit 1.7


intersection
Montgomery & Carlisle
2500
2000
1500
1000
500
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
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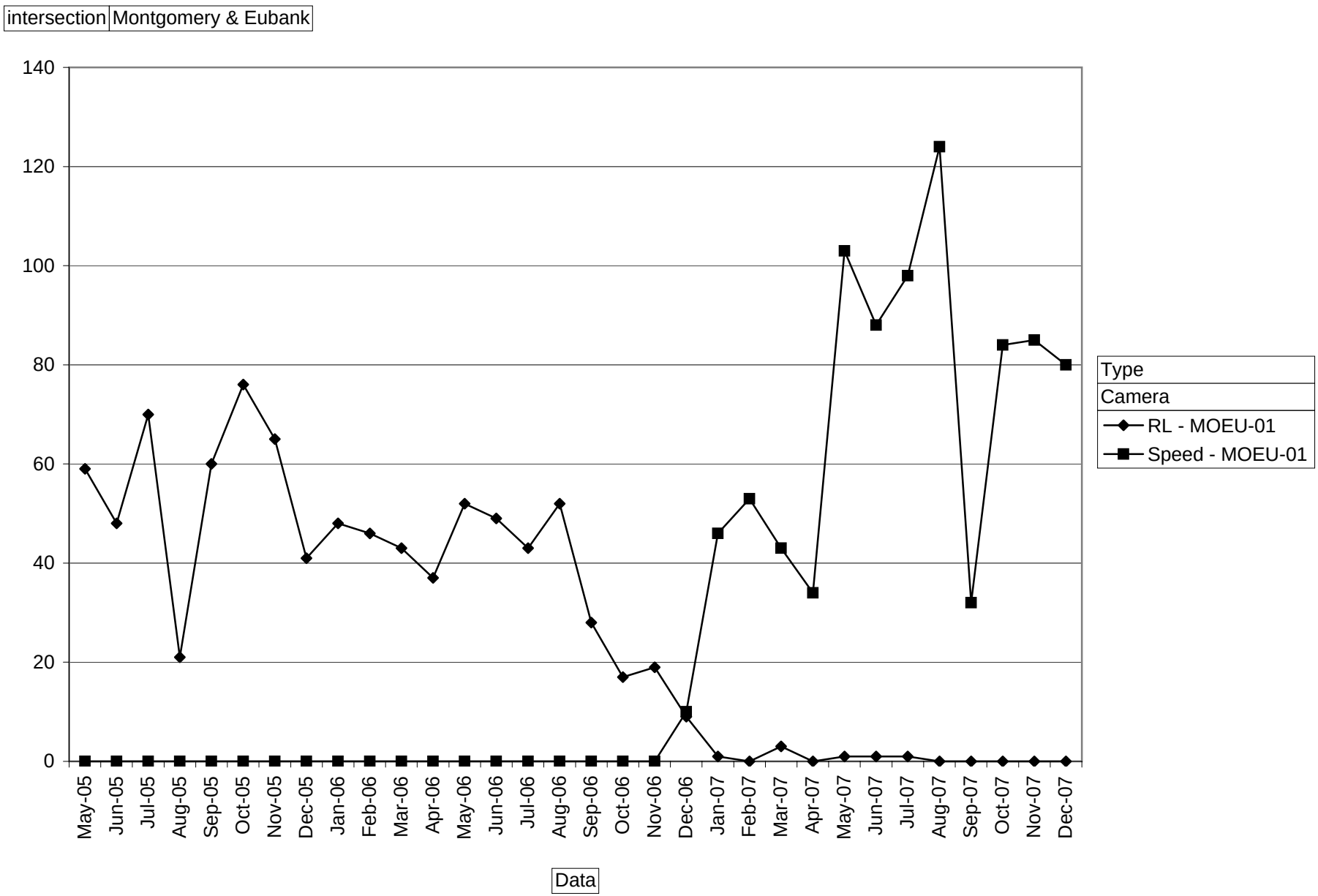
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - MOCA-01
RL - MOCA-02
Speed - MOCA-01
Speed - MOCA-02

Exhibit 1.7


intersection
Montgomery & Eubank
140
120
100
80
60
40
20
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
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Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
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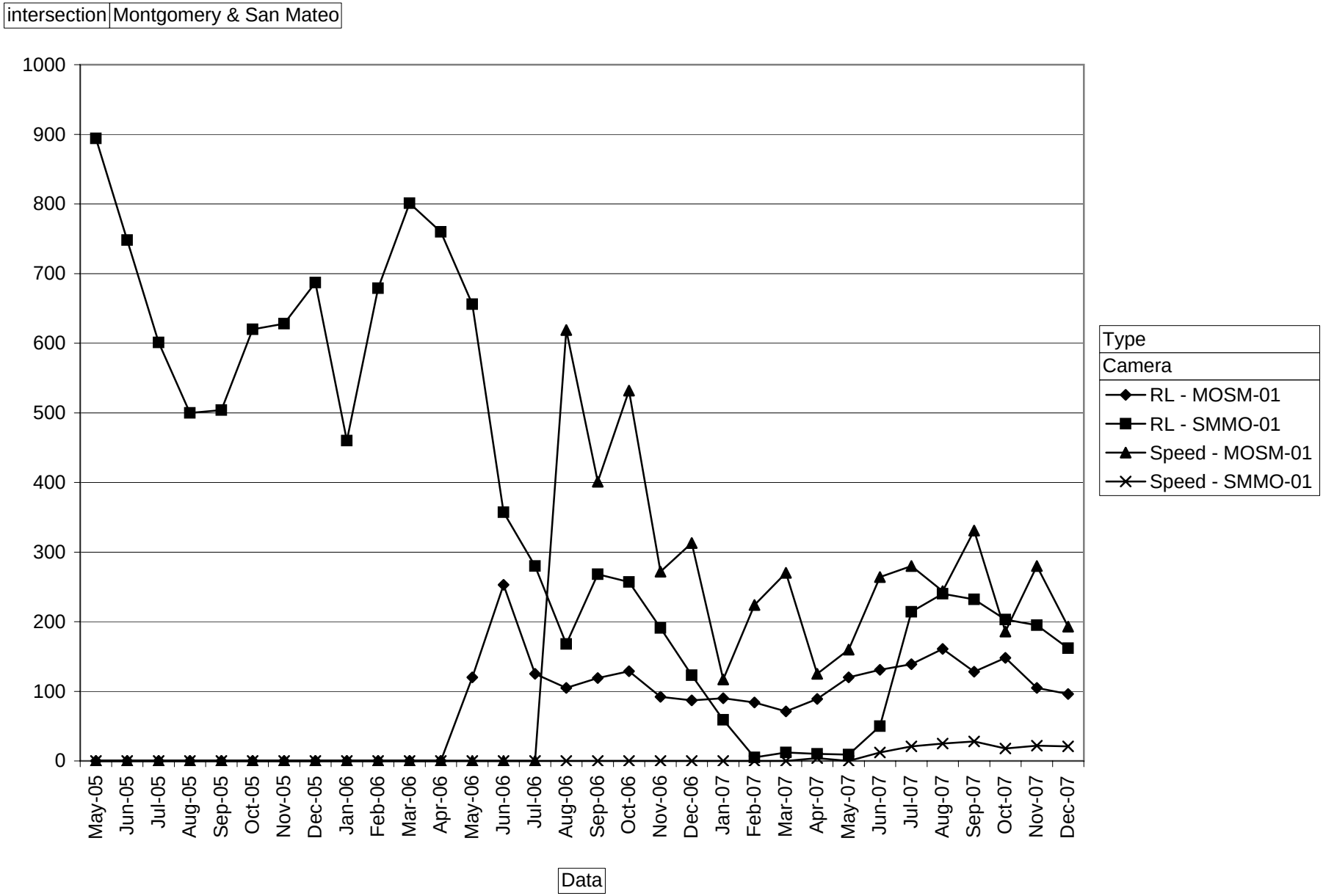
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - MOEU-01
Speed - MOEU-01

Exhibit 1.7


intersection
Montgomery & San Mateo
1000
900
800
700
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
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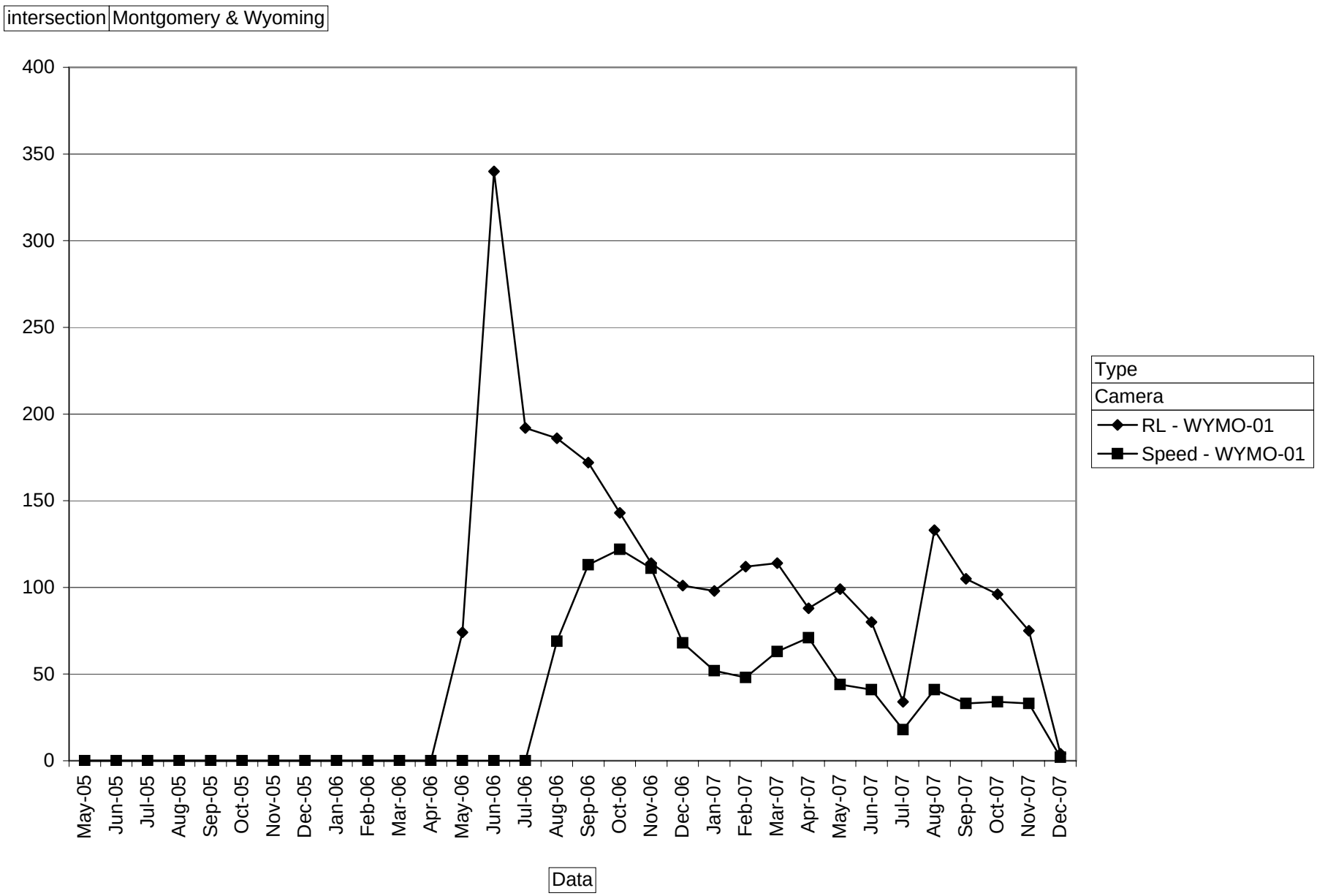
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - MOSM-01
RL - SMMO-01
Speed - MOSM-01
Speed - SMMO-01

Exhibit 1.7


intersection
Montgomery & Wyoming
400
350
300
250
200
150
100
50
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
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Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
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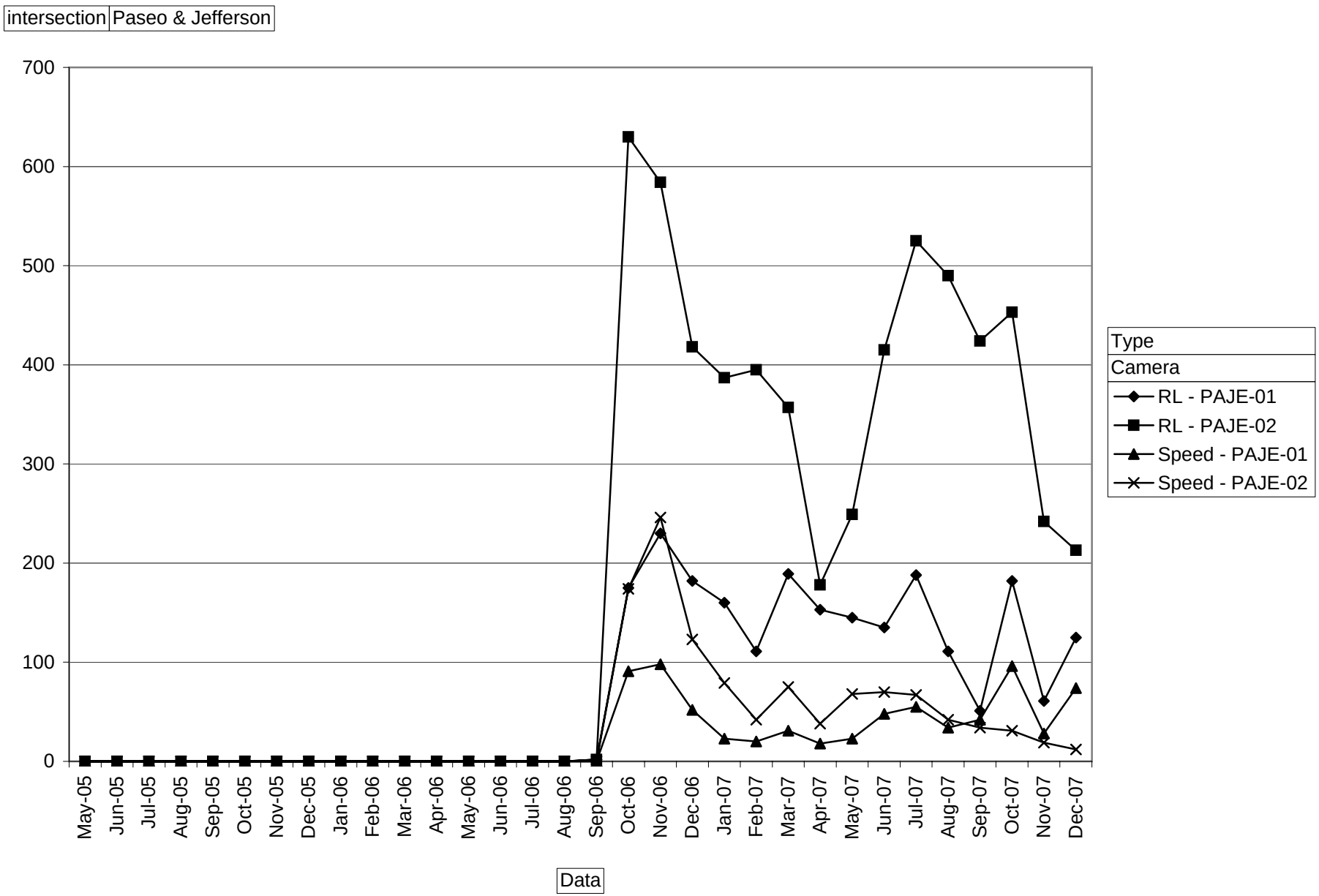
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - WYMO-01
Speed - WYMO-01

Exhibit 1.7


intersection
Paseo & Jefferson
700
600
500
400
300
200
100
0
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Oct-05
Nov-05
Dec-05
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
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Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - PAJE-01
RL - PAJE-02
Speed - PAJE-01
Speed - PAJE-02

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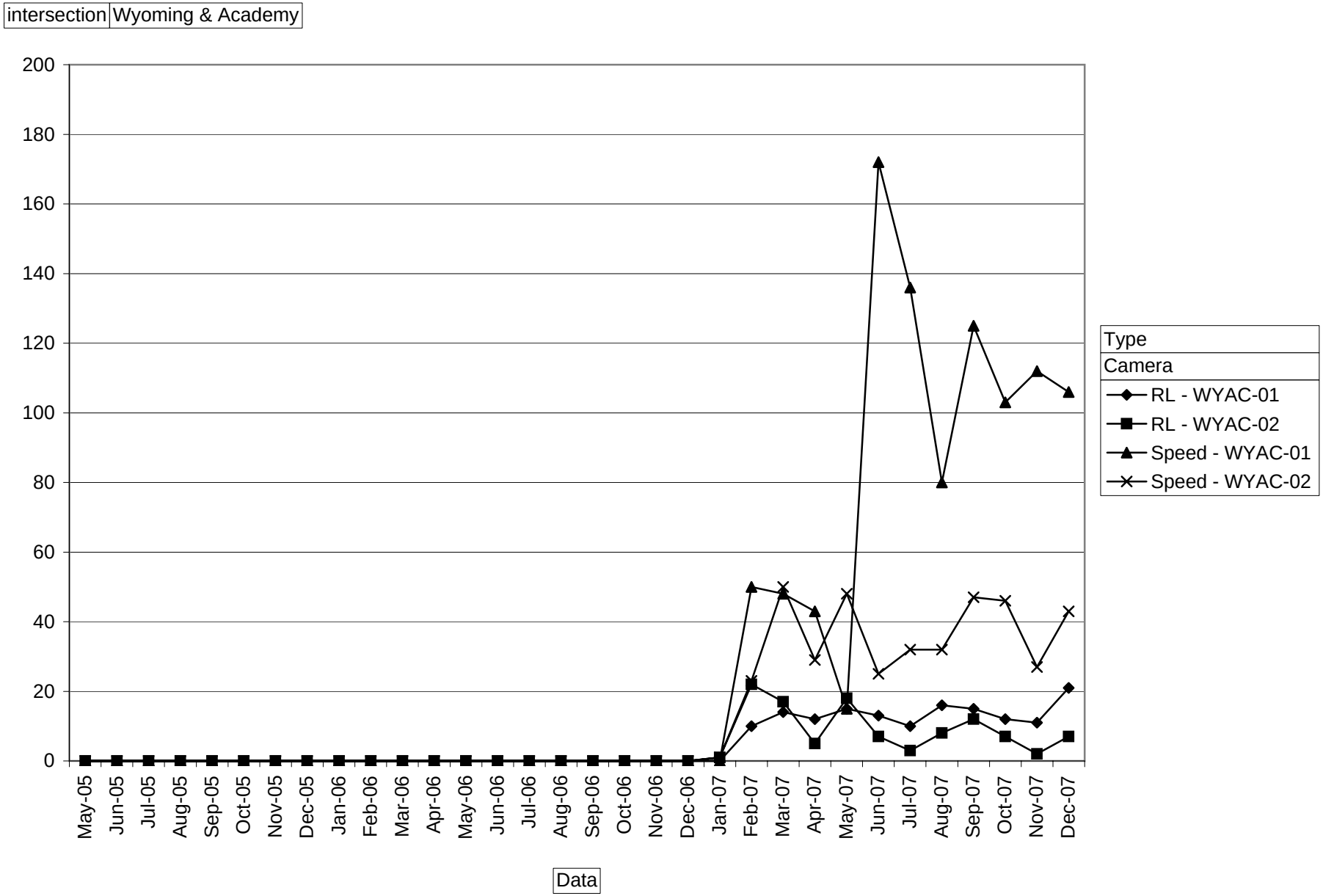
intersection
Wyoming & Academy
200
180
160
140
120
100
80
60
40
20
0
May-05
Jun-05
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Aug-05
Sep-05
Oct-05
Nov-05
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Oct-06
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Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Data
Type
Camera
RL - WYAC-01
RL - WYAC-02
Speed - WYAC-01
Speed - WYAC-02

Exhibit 1.7

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EXECUTIVE SUMMARY

Safety Evaluation of Red-Light Cameras—Executive Summary

FHWA Contact: Michael Griffith, HRDS-02, 202–493–3316

This document is an Executive Summary of the report *Safety Evaluation of Red-Light Cameras,* FHWA-HRT-05-048, published by the Federal Highway Administration in April 2005.

Abstract

The fundamental objective of this research was to determine the effectiveness of red-light-camera (RLC) systems in reducing crashes. The study involved an empirical Bayes (EB) before-after research using data from seven jurisdictions across the United States to estimate the crash and associated economic effects of RLC systems. The study included 132 treatment sites, and specially derived rear end and right-angle unit crash costs for various severity levels. Crash effects detected were consistent in direction with those found in many previous studies: decreased right-angle crashes and increased rear end ones. The economic analysis examined the extent to which the increase in rear end crashes negates the benefits for decreased right-angle crashes. There was indeed a modest aggregate crash cost benefit of RLC systems. A disaggregate analysis found that greatest economic benefits are associated with factors of the highest total entering average annual daily traffic (AADT), the largest ratios of right-angle to rear end crashes, and with the presence of protected left-turn phases. There were weak indications of a spillover effect that point to a need for a more definitive, perhaps prospective, study of this issue.

Introduction and Background

RLC systems are aimed at helping reduce a major safety problem at urban and rural intersections, a problem that is estimated to produce more than 100,000 crashes and approximately 1,000 deaths per year in the United States.[1] The size of the problem, the promise shown from the use of RLC systems in

U.S. Department of Transportation
Federal Highway Administration

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296

www.tfhrc.gov

other countries, and the paucity of definitive studies in the United States established the need for this national study to determine the effectiveness of the RLC systems jurisdiction-wide in reducing crashes at monitored intersections. This study included collecting background information from literature and other sources, establishing study goals, interviewing and choosing potential study jurisdictions, and designing and carrying out the study of both crash and economic effects. A description of all project efforts is in the complete report summarized by this document and, to a lesser extent, in two Transportation Research Board (TRB) papers that were also prepared.[2,3]

TRIMARC/Northrop Grumman Mission Systems

Figure 1: A photo taken from a camera of a crash involving red-light running.

A literature review found that estimates of the safety effect of red-light-running programs vary considerably. The bulk of the results appear to support a conclusion that red light cameras reduce right-angle crashes and could increase rear end crashes; however, most of the studies are tainted by methodological difficulties that would render useless any conclusions from them. One difficulty, failure to account for regression to the mean[1] (RTM), can exaggerate the positive effects, while another difficulty, ignoring possible spillover effects[2] to intersections without RLCs, will lead to an underestimation of RLC benefits, more so if sites with these effects are used as a comparison group.

While it is difficult to make definitive conclusions from studies with failed methodology validity, the results of the review did provide some level of comfort for a decision to conduct a definitive, large-scale study of installations in the United States. It was important for the new study to capitalize on lessons learned from the strengths and weaknesses of previous evaluations, many of which were conducted in an era with less knowledge of potential pitfalls in evaluation studies and methods to avoid or correct them.

The lessons learned required that the number of treatment sites be sufficient to assure statistical significance of results, and that the possibility of spillover effects be considered in designating comparison sites, perhaps requiring a study design without a strong reliance on the use of comparison sites. Previous research experience also pointed to a need for the definition of the term, "red-light-running crashes," to be consistent, clear, and logical and for provision of a mechanism to aggregate the differential effects on crashes of various impact types and severities.

Methodological Basics

The general crash effects analysis methodology used is

[1] "Regression to the mean" is the statistical tendency for locations chosen because of high crash histories to have lower crash frequencies in subsequent years even without treatment.

[2] Spillover effect is the expected effect of RLCs on intersections other than the ones actually treated because of jurisdiction-wide publicity and the general public's lack of knowledge of where RLCs are installed.

different from those used in past RLC studies. This study benefits from significant advances made in the methodology for observational before-after studies, described in a landmark book by Hauer.[4] The book documented the EB procedure used in this study. The EB approach sought to overcome the limitations of previous evaluations of red-light cameras, especially by properly accounting for regression to the mean, and by overcoming the difficulties of using crash rates in normalizing for volume differences between the before and after periods.

The analysis of economic effects fundamentally involved the development of per-crash cost estimates for different crash types and police-reported crash severities. In essence, the application of these unit costs to the EB crash frequency effect estimates. The EB analysis was first conducted for each crash type and severity and site before applying the unit costs and aggregating the economic effect estimates across crash types and severity and then across jurisdictions. The estimates of economic effects for each site allowed for exploratory analysis and regression modeling of cross-jurisdiction aggregate economic costs to identify the intersection and RLC program characteristics associated with the greatest economic benefits of RLC systems.

Details of the development of the unit crash-cost estimates can be found in a recent paper and in an internal report available from FHWA.[5,6] Unit costs were developed for angle, rear end, and "other" crashes at urban and rural signalized intersections. The crash cost to be used had to be keyed to police crash severity based on the KABCO[3] scale. By merging previously developed costs per victim keyed on the AIS injury severity scale into U.S. traffic crash data files that scored injuries in both the Abbreviated Injury Scale (AIS) and KABCO scales, estimates for both economic (human capital) costs and comprehensive costs per crash were produced. In addition, the analysis produced an estimate of the standard deviation for each average cost. All estimates were stated in Year 2001 dollar costs.

Data Collection

The choice of jurisdictions to include in the study was based on an analysis of sample size needs and the data available in potential jurisdictions. It was vital to ensure that enough data were included to detect that the expected change in safety has appropriate statistical significance. To this end, extensive interviews were conducted for several potential jurisdictions known to have significant RLC programs and a sample size analysis was done. The final selection of seven jurisdictions was made after an assessment of each jurisdiction's ability to provide the required data. The jurisdictions chosen were El Cajon, San Diego, and San Francisco, CA; Howard County, Montgomery County, and Baltimore, MD; and Charlotte, NC.

Data were required not only for RLC-equipped intersections but also for a reference group of signalized intersections not equipped with RLCs but similar to the RLC locations. These sites were to be used in the calibration of safety performance functions (SPFs) used in the EB analysis and to investigate possible spillover effects. To account for time trends between the period before the first RLC installation and the period after that, crash and traffic volume data were collected to calibrate SPFs from a comparison group of approximately 50 unsignalized intersections in each jurisdiction.

Following the site/jurisdiction selection, the project team collected and coded the required data. Before the actual data

[3] The KABCO severity scale is used by the investigating police officer on the scene to classify injury severity for occupants with five categories: K, killed; A, disabling injury; B, evident injury; C, possible injury; O, no apparent injury.[7] These definitions may vary slightly for different police agencies.

Table 1. Combined results for seven jurisdictions

	Right-angle crashes		Rear end crashes	
	Total crashes	Definite injury	Total crashes	Definite injury
EB estimate of crashes expected in the after period without RLC	1,542	351	2,521	131
Count of crashes observed in the after period	1,163	296	2,896	163
Estimate of percentage change (standard error)	- 24.6 (2.9)	- 15.7 (5.9)	14.9 (3.0)	24.0 (11.6)
Estimate of the change in crash frequency	- 379	- 55	375	32

Note: A negative sign indicates a decrease in crashes.

analyses, preliminary efforts involving file merging and data quality checks were conducted. This effort included the crash data linkage to intersections and the defining of crashes expected to be affected by RLC implementation. Basic red-light-running crashes at the intersection proper were defined as "right-angle," "broadside," or "right- or left-turning-crashes" involving two vehicles, with the vehicles entering the intersection from perpendicular approaches. Also included were crashes involving a left-turning vehicle and a through vehicle from opposite approaches. "Rear end crashes" were defined as a rear end crash type occurring on any approach within 45.72 m (150 ft) of the intersection. In addition, "injury crashes" were defined as including fatal and definite injuries, excluding those classified as "possible injury."

Results

Because the intent of the research was to conduct a multi-jurisdictional study representing different locations across the United States, the aggregate effects over all RLC sites in all jurisdictions was of primary interest. Table 1 shows the combined results for the seven jurisdictions. There is a significant decrease in right-angle crashes, but there is also a significant increase in rear end crashes. Note that "injury" crashes are defined by severity as K, A, or B crashes; but the frequencies shown do not contain a category for "possible injury" crashes captured by KABCO-level C; thus, these crashes could better be labeled "definite injury" crashes.

As seen in table 2, the direction of these effects (and the magni-

Table 2. Results for individual jurisdictions for total accidents

Jurisdiction number* (in random order)	Percent change in right-angle crashes (standard error)	Percent change in rear end crashes (standard error)
1	- 40.0 (5.4)	21.3 (17.1)
2	0.8 (9.0)	8.5 (9.8)
3	- 14.3 (12.5)	15.1 (14.1)
4	- 24.7 (8.7)	19.7 (11.7)
5	- 34.3 (7.6)	38.1 (14.5)
6	- 26.1 (4.7)	12.7 (3.4)
7	- 24.4 (11.2)	7.0 (18.5)

*The identification of jurisdictions is not provided because of an agreement with the jurisdictions; such information is irrelevant to the findings.

Note: A negative sign indicates a decrease in crashes.

Table 3. Unit crash cost estimates by severity level used in the economic effects analysis

Crash severity level	Right-angle crash cost	Rear end crash cost
O (standard deviation)	$8,673 (1,285)	$11,463 (3,338)
K+A+B+C (standard deviation)	$64,468 (11,919)	$53,659 (9,276)

tude to a lesser degree) was remarkably consistent across jurisdictions. The analysis indicated a modest spillover effect on right-angle crashes; however, that this was not mirrored by the increase in rear end crashes seen in the treatment group, which detracts somewhat from the credibility of this result as evidence of a general deterrence effect.

For the analysis of economic effects, it was recognized that there were low sample sizes of fatal and serious (A-level) crashes in the after period for some intersections. In addition, the initially developed cost estimates for B- and C-level rear end crashes indicated some anomalies in the order (e.g., C-level costs were higher, very likely because on-scene police estimates of "minor injury" often ultimately include expensive whiplash injuries), the B- and C-level costs were combined by Pacific Institute for Research and Evaluation (PIRE) into one cost. Considering these issues and the need to use the same cost categories across all intersections in all seven jurisdictions, two crash cost levels were ultimately used in all analyses: Injury (K+A+B+C) and Non-injury (O). These unit costs are shown in table 3 along with the standard deviation of these costs.

Table 4 shows the results for the economic effects including and excluding property-damage only (PDO) crashes. The latter estimates are included in recognition of the fact that several jurisdictions considerably under-report PDO collisions. Those estimates (with PDOs excluded) show a positive aggregate economic benefit of more than $18.5 million over approximately 370 site years, which translates into a crash reduction benefit of approximately $50,000 per site year. With PDOs included, the benefit is approximately $39,000 per site year. The implication from this result is that the lesser severities and generally lower unit costs for rear end injury crashes together ensure that the increase in rear end crash frequency does not negate the decrease in the right-angle crashes targeted by red-light-camera systems.

Further analysis indicated that right-angle crashes appear slightly more severe in the after period in two jurisdictions, but not in the other five. Because such an effect would mean that the benefits in table 4 are slightly overestimated, an attempt was made to estimate the possible size of the benefit reduction. If such a shift were real, and if its effects could be assumed to be correctly estimated from individual KABCO unit costs already deemed to be inappropriate for such purposes, the overall cost savings reported in the last row of table 4 could be decreased by approximately $4 million; however, there would still be positive economic benefits, even if it is assumed that the unit cost shifts were real and correctly estimated.

Table 4. Economic effects including and excluding PDOs (Using a combined unit cost for K+A+B+C)

	All severities combined			PDOs excluded		
	Right-Angle crash	Rear end crash	All crashes	Right-Angle crash	Rear end crash	All crashes
EB estimate of crash costs before RLC installation	$66,814,067	$69,347,624	$161,843,021	$61,687,367	$52,681,148	$134,407,104
Recorded cost of crashes after RLC installation (370 site years)	$48,319,090	$75,222,780	$147,470,550	$43,868,392	$53,944,539	$115,901,685
Percentage of change in crash cost (s.e.)*	- 27.7 (0.6)	8.5 (0.7)	- 8.9 (0.4)	- 28.9 (0.6)	2.4 (0.8)	- 13.8 (0.5)
Crash cost decrease (per site year)			$14,372,471 ($38,845)			$18,505,419 ($50,015)

* A negative number indicates a decrease.

Examination of the aggregate economic effect per after-period year for each site indicated substantial variation, much of which could be attributable to randomness. It was reasonable to suspect that some of the differences may be due to factors that impact RLC effectiveness; therefore, a disaggregate analysis, which involved exploratory univariate analysis and multivariate modeling was undertaken to try to identify factors associated with the greatest and least economic benefits. The outcome measure in these models was the aggregate economic effect per after period site year.

The disaggregate analysis found that greatest economic benefits are associated with the highest total entering AADTs, the largest ratios of right-angle to rear end crashes, higher proportions of entering AADT on the major road, shorter cycle lengths and intergreen periods, and with the presence of protected left-turn phases. The presence of warning signs and high publicity levels also appear to be associated with greater benefits. These results do not provide numerical guidance for trading off the effects of various factors. The intent of identifying these factors is that in practice RLC implementers would identify program factors such as warning signs that increase program effectiveness and give the highest priority for RLC implementation to the sites with most or all of the positive binary factors present (e.g., left-turn protection) and with the highest levels of the favorable continuous variables (e.g. higher ratios of right-angle to rear end crashes).

Conclusions

This statistically defendable study found crash effects that were consistent in direction with those found in many previous studies, although the positive effects were somewhat lower that those reported in many sources. The conflicting direction effects for rear end and right-angle crashes justified the conduct of the economic effects analysis to assess the extent to which the increase in rear end crashes

negates the benefits for right-angle crashes. This analysis, which was based on an aggregation of rear end and right-angle crash costs for various severity levels, showed that RLC systems do indeed provide a modest aggregate crash-cost benefit.

The opposing effects for the two crash types also implied that RLC systems would be most beneficial at intersections where there are relatively few rear end crashes and many right-angle ones. This was verified in a disaggregate analysis of the economic effect to try to isolate the factors that would favor (or discourage) the installation of RLC systems. That analysis revealed that RLC systems should be considered for intersections with a high ratio of right-angle crashes to rear end crashes, higher proportion of entering AADT on the major road, shorter cycle lengths and intergreen periods, one or more left turn protected phases, and higher entering AADTs. It also revealed the presence of warning signs at both RLC intersections and city limits and the application of high publicity levels will enhance the benefits of RLC systems.

The indications of a spillover effect point to a need for a more definitive study of this issue. That more confidence could not be placed in this aspect of the analysis reflects that this is an observational retrospective study in which RLC installations took place over many years and where other programs and treatments may have affected crash frequencies at the spillover study sites. A prospective study with an explicit purpose of addressing this issue seems to be required.

In closing, this economic analysis represents the first attempt in the known literature to combine the positive effects of right-angle crash reductions with the negative effects of rear end crash increases and identify factors that might further enhance the effects of RLC systems. Larger crash sample sizes would have added even more information. The following primary conclusions are based on these current analyses:

Even though the positive effects on angle crashes of RLC systems is partially offset by negative effects related to increases in rear end crashes, there is still a modest to moderate economic benefit of between $39,000 and $50,000 per treated site year, depending on consideration of only injury crashes or including PDO crashes, and whether the statistically non-significant shift to slightly more severe angle crashes remaining after treatment is, in fact, real.

Even if modest, this economic benefit is important. In many instances today, the RLC systems pay for themselves through red-light-running fines generated. However, in many jurisdictions, this differs from most safety treatments where there are installation, maintenance, and other costs that must be weighed against the treatment benefits.

The modest benefit per site is an average over all sites. As the analysis of factors showed, this benefit can be increased through careful selection of the sites to be treated (e.g., sites with a high ratio of right-angle to rear end crashes as compared to other potential treatment sites) and program design (e.g., high publicity, signing at both intersections and jurisdiction limits).

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Researchers—This study was performed by Forrest M. Council, BMI-SG; Bhagwant Persaud, Ryerson University; Kimberly Eccles, BMI-SG; Craig Lyon, Ryerson University; and Michael S. Griffith, Federal Highway Administration.

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Key Words—Red light camera, empirical Bayes, Crash evaluation, Economic analysis, Signalized intersection

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APRIL 2005

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Albuquerque Community Report, 2005

Demographics
In 2005, there were 407,855 licensed drivers in Albuquerque. Of these, there were 208,052 females and 199,803 males. The population of Albuquerque was 499,632. The total number of crashes in 2005 was 20,433, yielding a crash rate of 41 per thousand people (total number of crashes 20,433 divided by total population 499,632 times 1,000). The corresponding rate for the state was 25 per thousand people.

General Crash Information
Since 1996 the number of crashes has shown no consistent pattern. Fatal and injury crashes have shown no consistent pattern since 1996. Belt usage (as a percentage) has increased from last year, while belt usage in crashes involving visible and incapacitating injuries has also increased. There were no fatalities in the seven intersections with the most crashes in 2005. Of these intersections, four involve Coors Blvd. NW.

Alcohol-related Crash Information
Information about alcohol-involved crashes is included in all sections of this report. Of the 2,275 people convicted of DWI in Albuquerque, 72 percent were first-time DWI convictions (number of first convictions 1,643 divided by the total number of people convicted 2,275 times 100). The corresponding percent for the state is 61.

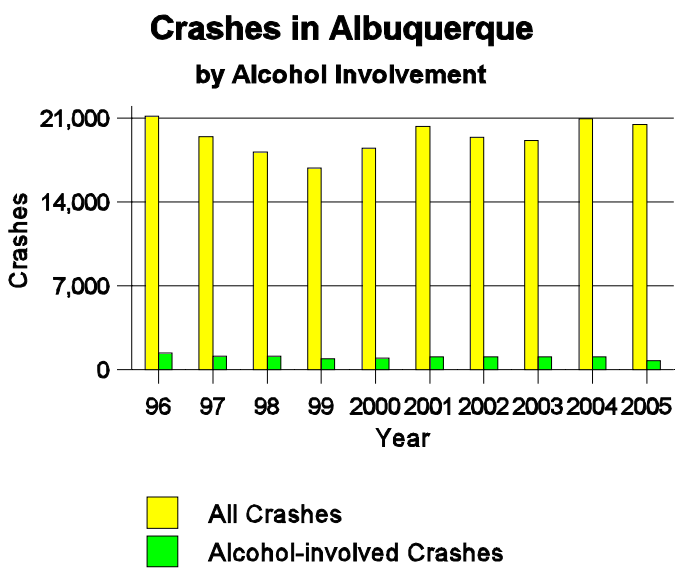
Crash Specifics
Crashes involving other vehicles were the most common class, accounting for 85 percent of all crashes. Crashes involving other vehicles and pedestrians were the most common crash classes which resulted in fatalities. Passenger cars were the vehicle type most often involved in crashes, accounting for 52 percent of all vehicles in crashes. Pickups accounted for 19 percent of vehicles involved in crashes. Together these two vehicle types comprised 72 percent of the vehicles involved in injury crashes. The three most common top contributing factors were driver inattention, following too close, and failing to yield. There were 56 fatal crashes in 2005. The most common top contributing factor for the fatal crashes was alcohol involvement.

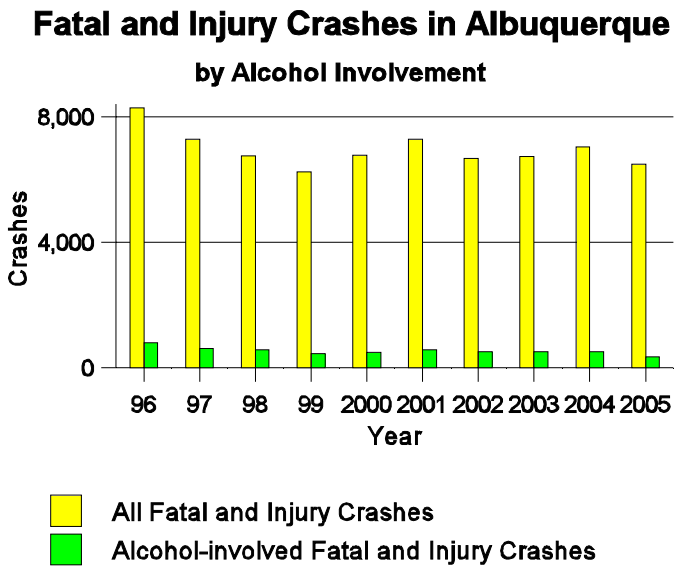
People in Crashes
Overall, males were 54 percent of drivers in crashes, although they account for only 49 percent of licensed drivers in Albuquerque. There were 206 pedestrians involved in crashes. In 2005, four 'teenagers' and six young adults were killed in crashes in Albuquerque. Statewide 17 percent of alcohol-involved drivers were under 21; in Albuquerque 17 percent were under 21.

Note: The 1999 crash file contains 15% fewer crashes than the 1998 file. This may be due to problems implementing the new system after the old system failed, or to under reporting. Care should be used in interpreting differences between 1999 and other years in this report.

- Location of arrest/conviction was determined by police agency/court location, not driver residence.
- Crashes and drivers were counted by the city of occurrence/residence.
- Population was counted according to the Census definition.
  The city population data is from the most current 2005 estimates.
- Young adults are people between the ages of 20 and 24.
- 'Teenagers' are people between the ages of 15 and 19.
- Tables only include variable values for which there are data.

Exhibit 2.1





Passenger Vehicle Seatbelt Usage and Injuries in Albuquerque, 2003-2005

Injury Level	2005		2004		2003	
	Total	No Belt	Total	No Belt	Total	No Belt
Killed	27	11	35	13	23	13
Incapacitating injury	438	16	638	69	598	67
Visible injury	994	47	1,180	86	1,133	97
Complaint of injury	6,621	51	7,281	72	6,971	88
Unhurt	34,590	143	38,215	260	33,823	309
Total	42,670	268	47,349	500	42,548	574

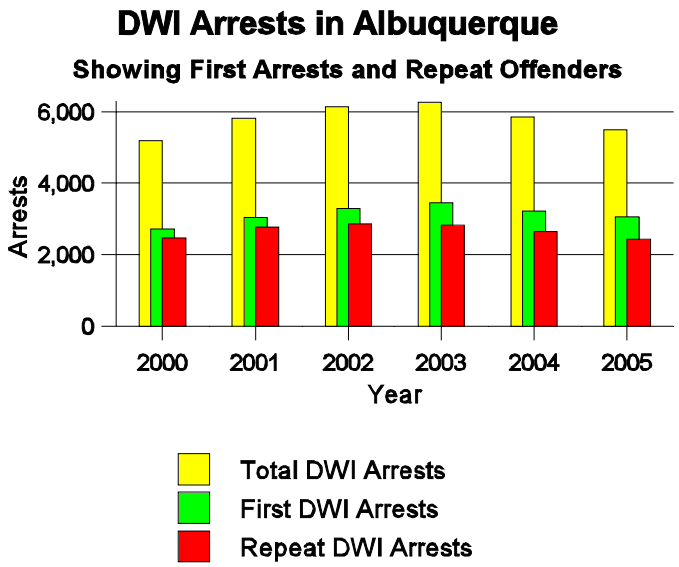
The Seven Intersections in Albuquerque with the Most Crashes, 2005

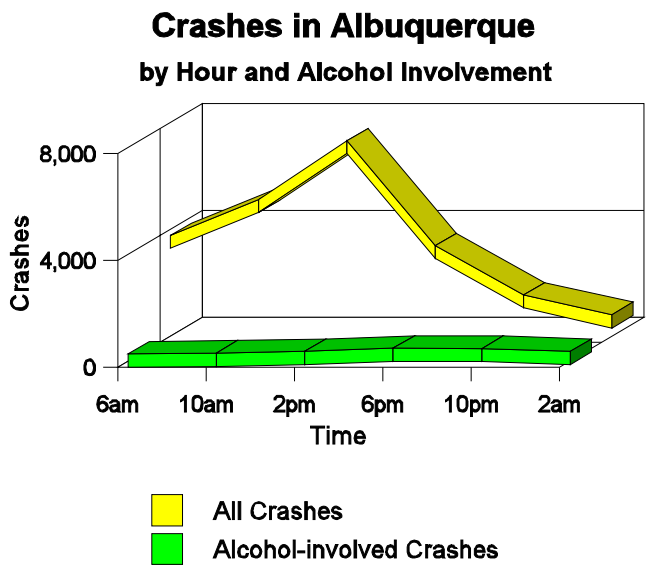
Intersection	Crashes			People	
	Total	Fatal	Injury	Killed	Injured
Central Ave W @ Coors Blvd NW	90	0	37	0	57
Coors Blvd NW @ Irving Blvd NW	93	0	23	0	41
Coors Blvd NW @ Paseo Del Norte Blvd NW	159	0	35	0	53
Coors Blvd NW @ Quail Rd NW	116	0	32	0	43
Jefferson St NE @ Paseo Del Norte Blvd NE	116	0	39	0	52
Montgomery Blvd NE @ Pan American East Hwy NE	91	0	35	0	50
Montgomery Blvd NE @ San Mateo Blvd NE	124	0	32	0	41

Lifetime DWI Convictions for Drivers
Convicted of DWI Violations in Albuquerque, 2005

Convictions	Since 2000	Since 1981
1st	1,932	1,643
2nd	298	408
3rd	41	140
4th	4	53
5th	0	17
6th	0	7
7th	0	4
8th	0	2
9th	0	1
10 or more	0	0
Total	2,275	2,275

Convictions are counts of people convicted of DWI by 7/2006 for violations in 2005 in Albuquerque.
Convictions are not comparable to arrests.





Crashes in Albuquerque by Class, 2005

Class	Crashes					People	
	Total	% of Total	Fatal	% of Fatal	Injury	Killed	Injured
Other vehicle	17,437	85	24	43	5,523	30	8,346
Pedestrian	198	1	21	38	160	21	170
Fixed object	1,341	7	4	7	339	6	402
Veh. on other roadway	12	0	0	0	1	0	2
Parked vehicle	846	4	0	0	87	0	110
Overturn	217	1	4	7	136	4	174
Other non-collision	114	1	1	2	38	1	42
Pedalcyclist	171	1	1	2	137	1	139
Railroad train	1	0	1	2	0	1	0
Animal	12	0	0	0	3	0	3
Other object	84	0	0	0	9	0	11
Total	20,433	100	56	100	6,433	64	9,399

Crashes in Albuquerque by Vehicle Type, 2005

Vehicle Type	Vehicles					People	
	Total	% of Total	Fatal	% of Fatal	Injury	Killed	Injured
Passenger car	21,498	52	40	34	7,380	19	5,691
Pickup	7,920	19	13	11	2,453	6	1,295
Semi	803	2	5	4	155	1	22
Bus	199	0	1	1	39	0	30
Motorcycle	398	1	7	6	301	7	316
Pedalcyclist	179	0	1	1	141	1	138
Pedestrian	206	0	21	18	167	21	167
Van/4 WD	7,124	17	20	17	2,345	9	1,563
Other	169	0	4	3	34	0	13
Unknown	2,849	7	4	3	550	0	164
Total	41,345	100	116	100	13,565	64	9,399

Crashes in Albuquerque by Top Contributing Factor, 2005

Contributing	Crashes					People	
	Total	% of Total	Fatal	% of Fatal	Injury	Killed	Injured
Alcohol involvement	785	4	30	54	337	36	527
Red light running	1,614	8	3	5	693	5	1,114
Failing to yield	2,921	14	2	4	1,059	2	1,625
Excessive speed	1,588	8	4	7	524	4	754
Driving left of center	208	1	1	2	56	1	90
Following too close	4,273	21	3	5	1,405	3	2,029
Improper turning	1,101	5	0	0	239	0	368
Improper overtaking	298	1	0	0	52	0	64
Improper backing	465	2	0	0	37	0	46
Inop. traffic control	41	0	0	0	6	0	7
Mechanical defect	332	2	0	0	101	0	147
Driver inattention	5,630	28	2	4	1,628	2	2,275
Improper driving	4	0	1	2	0	1	0
Other	1,173	6	10	18	296	10	353
Total	20,433	100	56	100	6,433	64	9,399

People in Crashes by Age and Sex in Albuquerque, 2005

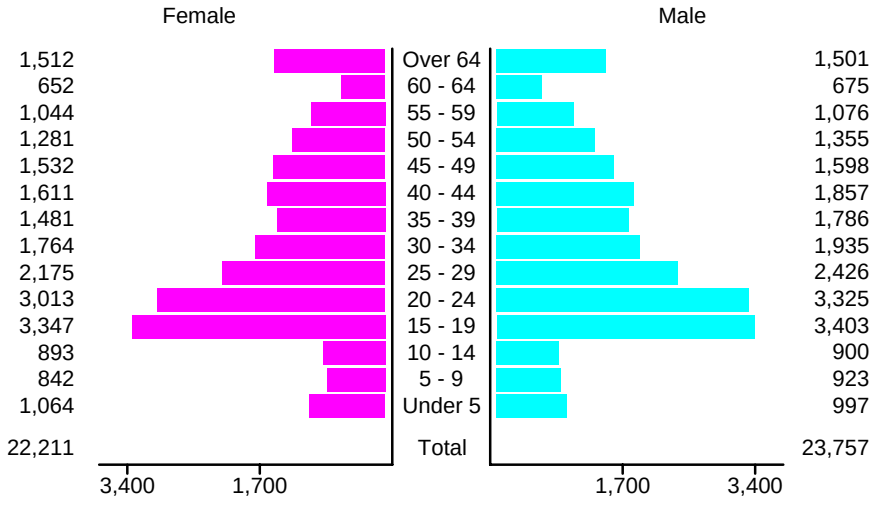
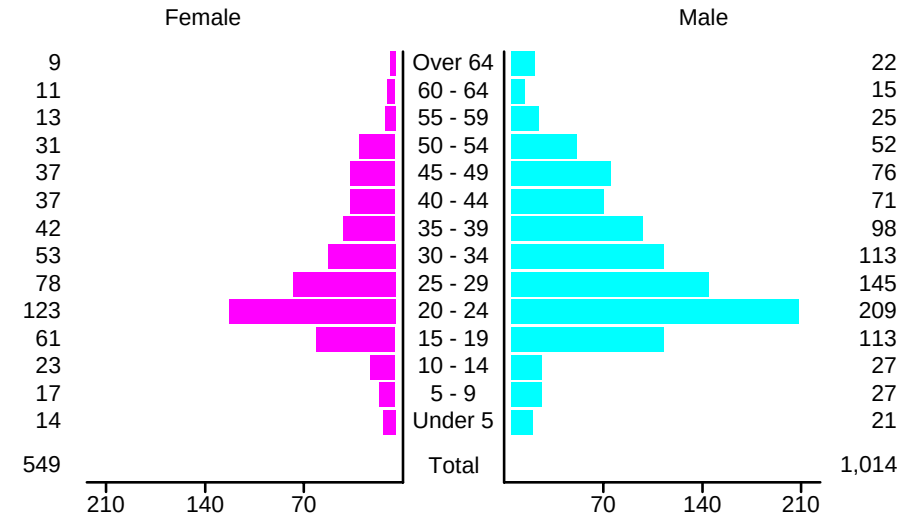
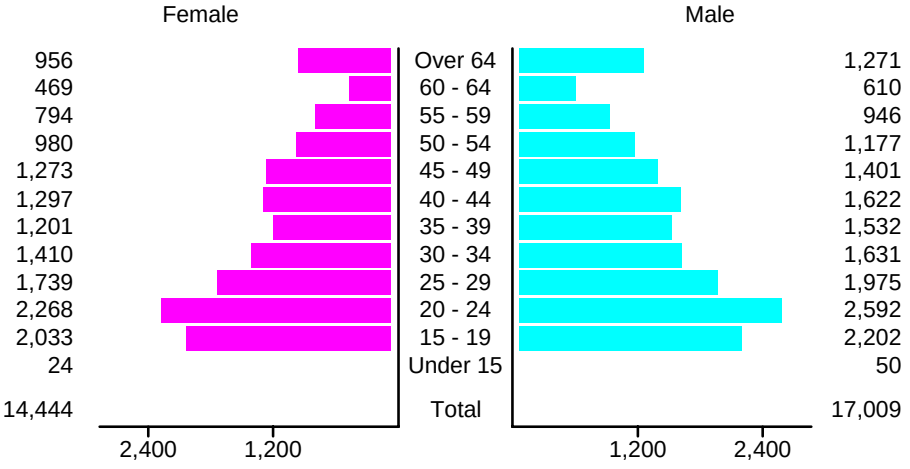


Exhibit 2.1

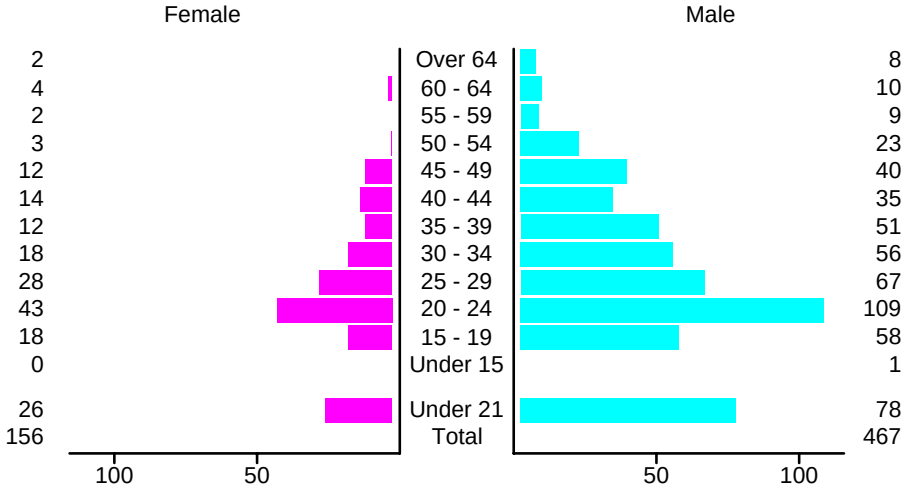
People in Alcohol-Involved Crashes in Albuquerque, 2005 by Age and Sex

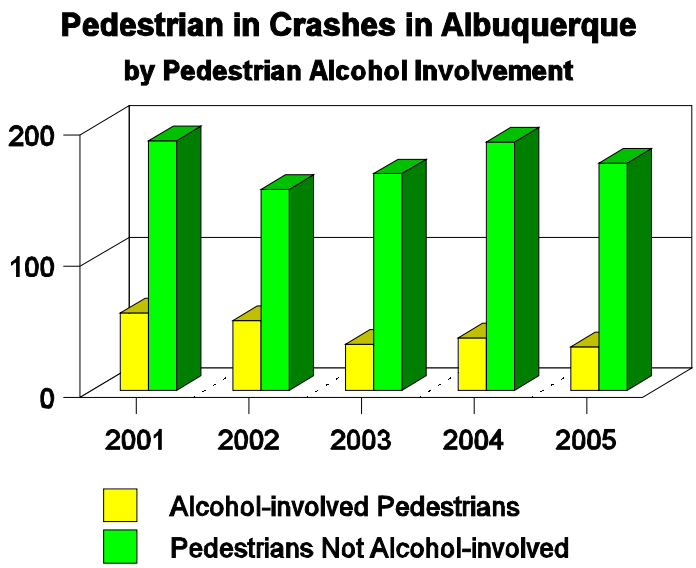


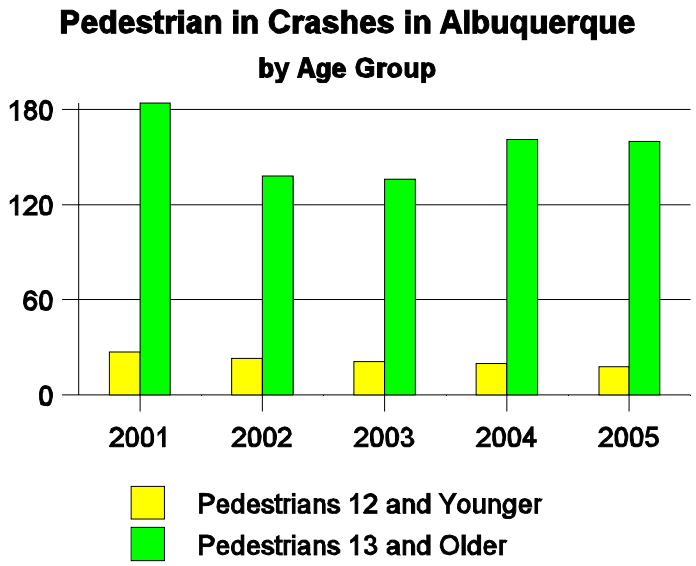
Drivers in Crashes by Age and Sex in Albuquerque, 2005



Alcohol-Involved Drivers in Crashes in Albuquerque, 2005 by Age and Sex







'Teenagers' and Young Adults in Crashes in Albuquerque by Vehicle Type, 2005

Vehicle	'Teenage' Drivers			Young Adult Drivers		
	Total	Fatal	Injury	Total	Fatal	Injury
Passenger car	2,992	6	1,097	3,209	5	1,156
Pickup	546	0	170	793	2	278
Semi	1	0	1	37	0	7
Bus	0	0	0	8	0	1
Motorcycle	33	0	31	73	1	60
Pedalcyclist	15	0	13	15	0	12
Pedestrian	10	0	10	10	2	7
Van/4 WD	550	3	185	612	4	210
Other	5	0	0	13	0	2
Unknown	116	0	42	127	0	42
Total	4,268	9	1,549	4,897	14	1,775

'Teenagers' and Young Adults Killed and Injured in Crashes by Year in Albuquerque, 1996-2005

Year	'Teenagers'				Young Adults			
	All Crashes		Alcohol Crashes		All Crashes		Alcohol Crashes	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
2005	4	1,203	2	59	6	1,194	4	94
2004	9	1,361	7	96	8	1,337	4	132
2003	6	1,355	5	123	6	1,354	1	134
2002	4	1,369	3	102	7	1,296	3	127
2001	6	1,555	3	135	4	1,441	2	139
2000	5	1,508	1	105	10	1,247	6	110
1999	11	1,405	6	113	7	1,166	4	129
1998	0	1,558	0	142	6	1,251	4	141
1997	6	1,574	4	162	3	1,307	1	146
1996	8	1,837	3	174	7	1,540	4	236

SCHEDULE A

STATEMENT OF WORK

As a result of amendments to the City of Albuquerque's STOP Ordinance, in addition to the services required by the original Agreement, RTS shall provide, upon receipt of reasonable notice provided sufficiently in advance of the desired implementation date as to allow RTS time to obtain, deploy and staff the equipment:

a) **Mobile Speed Enforcement Systems** to be deployed anywhere within the City Limits of Albuquerque under the scope of the City's "STOP Ordinance." The number of Speed Enforcement Systems to be determined by the City.

b) **Fixed Speed and Red Light Enforcement Systems** (Dual Systems), the number of Dual Systems and locations to be determined by the City.

c) **Mid Block Fixed Speed** and **Fixed School Zone Speed Enforcement Systems**, the number and locations to be determined by the City.

SCHEDULE B

COMPENSATION AND PRICING

PROGRAM PRICING:

Red Light Only System (Per Approach)

1) Setup/Maintenance/Support Services Monthly Fee $2,350.00
2) Processing Service Fee (printing of notices, database services, mailing, and access to Internet-based video for APD and citizens): $18.00 per paid citation.

Fixed Speed Only System (Per Approach)

1) Setup/Maintenance/Support Services Monthly Fee $4,350.00
2) Processing Service Fee (printing of notices, database services, mailing, and access to Internet-based video for APD and citizens) 18% of paid citation up to a maximum of $45.00 per paid citation

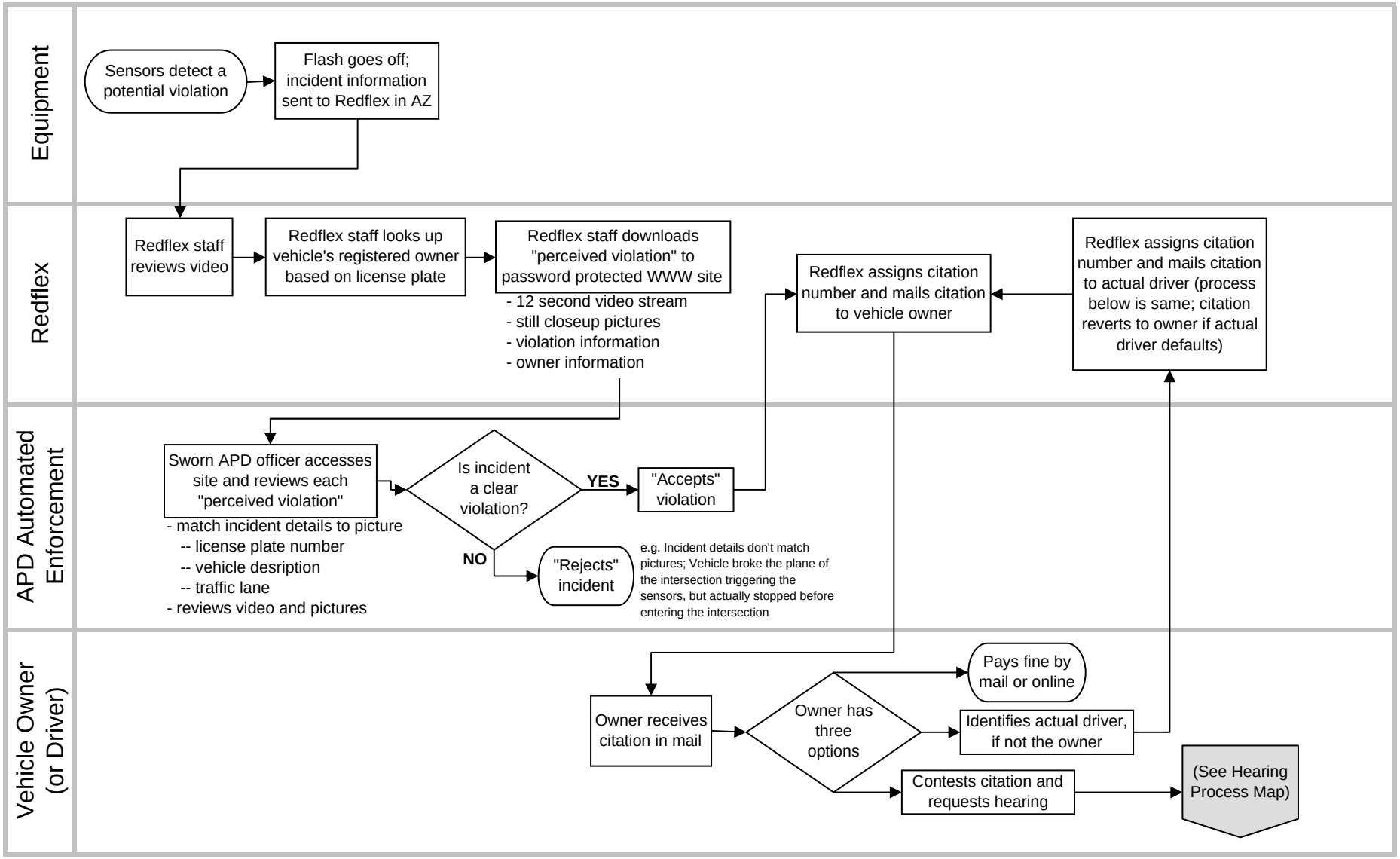
Fixed Speed and Red Light Combined System (Per Approach)

1) Setup/Maintenance/Support Services Monthly Fee $4,350.00
2) Processing Service Fee (printing of notices, database services, mailing, and access to Internet-based video for APD and citizens) $18.00 per Red Light Citation, 18% of paid Speed Citation up to a maximum of $45.00 per paid Speed Citation.

Mobile Speed Enforcement Systems (per unit)

1) Setup/Maintenance/Support Services Monthly Fee $5,500.00
2) Processing Service Fee: 18% of paid citation up to a maximum of $45.00 per citation

AUTOMATED ENFORCEMENT CITATION PROCESS



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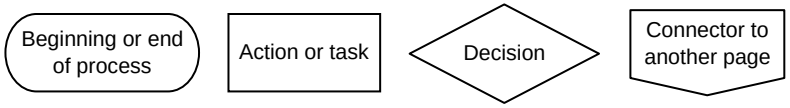


EXHIBIT 5.1

Summary of Decisions Concerning Camera Enforcement
October 2006

Camera or automated enforcement is a method of using technology to photograph violations of traffic law. Cameras are aimed at vehicle tags and, in some states, drivers and tags. Video is rarely used in camera enforcement programs, so overwhelmingly, red light and photoradar camera enforcement does not use surveillance cameras that indiscriminately record everything in view. No photograph is taken in the absence of a violation. Red light cameras are triggered by sensors embedded in the road when a driver enters the intersection against the light. Speed cameras are triggered when a driver's speed, measured by radar, exceeds a specified speed, usually well above the speed limit. Jurisdictions choose the speed that activates the camera. Similarly, they choose how long after the light turns red that the camera is activated. This enables officials to ensure that only unambiguous violations are photographed. Citations are mailed to the registered owners of the vehicles when a review of the photographs demonstrates that an offense has occurred. Typically, the offense is civil and a fine is the only consequence. Drivers are given a hearing to contest the citations.

The following table summarizes decisions dealing with a variety of issues relevant to camera enforcement. Because many camera enforcement laws treat violations as the equivalent of parking tickets, decisions on parking tickets are included.

Decriminalization. Can a local jurisdiction enact an ordinance creating a civil offense with the same elements as an offense that is criminal under state law?

In 1987, the Illinois legislature authorized municipalities to decriminalize parking violations and substitute a civil penalty system which handled parking citations administratively. Chicago did so in 1990. Under the Chicago ordinance, the ticket was prima facie evidence of a violation. The ticket could be contested at an administrative hearing held by lawyers hired by the city, with appeal to the county circuit court. The maximum fine was $100.

The ordinance was challenged as a violation of due process under two theories. First, the plaintiffs claimed that because parking violations have traditionally been treated as criminal offenses, they may not be reclassified as civil and the procedural safeguards afforded criminal defendants may not be reduced.

The court noted that "nothing in the due process clause forbids the reclassification of criminal offenses as civil violations. … A criminal fine of $100 is much less severe than many incontestably civil penalties, so if the state decides to convert it to a civil penalty there is no reason to impose the safeguards of criminal procedure. It is extraordinarily common, moreover, for a statute to carry both civil and criminal penalties. …And even if … some weird ratchet decreed that once a criminal penalty, always a criminal penalty, nothing in the constitution prevents a state from

relaxing the conventional safeguards of the criminal process in tandem with a lightening of the penalties." *Van Harken v. City of Chicago*, 103 F.3d 1346 (7th Cir. 1997).

In a red light camera case, the court cited *Van Harken*, finding that the North Carolina state camera enforcement statute and the High Point ordinance created a civil offense. Consequently, the court upheld the ordinance against a challenge under due process. *Shavitz v. City of High Point*, 270 F.Supp 2d 702 (Middle Dist. N.C. 2003). Shavitz' challenges included the presumption that the registered owner of the vehicle drove the vehicle when the offense occurred; that the hearing violated the confrontation clause; that the appeal form was inadequate; that the hearing officers were not sufficiently impartial; that the contractors were engaged in the unauthorized practice of law; that the appeal bond was excessive and violated rights of indigents; and that the presumption and $50 fine constituted an unlawful taking.

Procedural adequacy. Is an administrative hearing in which photographs are offered as proof of the offense sufficient to comply with the requirements of due process?

The second claim by the plaintiffs in *Van Harken* was that the procedures for adjudicating parking tickets under the Chicago ordinance were inadequate even for civil proceedings. Specifically, they argued that the procedure should have required the officer who issued the ticket to be present at the hearing; that the hearing officer should not have been permitted to cross examine the drivers; and that the hearing officers were not sufficiently independent because they worked at the pleasure of the City's Director of Revenue. The court dismissed these allegations, citing *Mathews v. Eldridge*, 424 U.S. 319, 335 (1976), for the proposition that a cost-benefit analysis is required to determine the process that is due in a given case. The court noted the high cost of requiring the citing officer to be present compared to the cost of an adverse decision in the few cases in which an officer's presence would affect the outcome of the hearing. The court noted that there is no absolute right of confrontation in civil cases and that the hearing officer's subpoena power provided a safeguard in cases in which an officer's presence appeared necessary. *Van Harken v. City of Chicago*, 103 F.3d 1346 (7th Cir. 1997).

On the issue of the independence of the hearing officers, the court noted that they were hourly employees who only worked when there were cases to be heard and that their compensation did not depend on the outcomes of the hearings they handled.

The *Van Harken* state constitutional claims were decided by the Illinois Court of Appeals. Even though the Illinois due process provisions provide broader protection than that afforded by the U.S. Constitution, in *Van Harken II*, the court nonetheless upheld the Chicago ordinance under claims

that it violated the separation of powers and due process provisions of the Illinois Constitution. *Van Harken v. City of Chicago*, 713 N.E.2d 754 (Ill. 1999).

Separation of powers, delegation. Does the use of administrative hearing officers in contested cases violate the separation of powers doctrine or constitute an improper delegation? Does the use of contractors constitute an improper delegation where the law requires that the government "operate" the camera enforcement system?

The claim that camera enforcement violated the separation of powers doctrine was raised in *Van Harken II*, cited above. The court said that both legislative and judicial power resides in administrative agencies. It noted that the overlap does not violate the separation of powers doctrine provided that administrative actions are subject to judicial review. *Van Harken v. City of Chicago*, 713 N.E.2d 754 (Ill. 1999).

California courts addressed a delegation issue. Former Cal. Veh. Code § 21455.5 required the government to operate the camera enforcement program. Because the contract provided that the city retained the right to oversee and control the functioning of the system and to evaluate the contractor's performance, for the purpose of § 21455.5, the court said that the city operated the system. *Leonte v. ACS State and Local Solutions*, 19 Cal. Rptr. 3d 879; 2004 Cal. App. LEXIS 1791.

Equal protection. Is the equal protection clause violated when persons prosecuted under traditional enforcement have trial rights while those cited via camera enforcement do not?

The *Shavitz* court held that absent the involvement of a fundamental right or a suspect classification, the proper standard for evaluating an equal protection claim is the rational basis test. Finding that there is a rational basis [promoting public safety] for the creation of the two classes of violators, the court upheld the red light camera ordinance. *Shavitz v. City of High Point*, 270 F. Supp. 2d 702 (Middle Dist. N.C. 2003).

A review of the briefs in *State v. King*, 111 P.3d 1146 (Or. 2005), indicates that King claimed that distinguishing between resident drivers and non-resident drivers violated equal protection. The court dismissed this claim without discussion.

Presumption. Is it permissible to authorize the use of a citation to prove a violation?

Under the following circumstances, a citation may be used to prove a violation occurred: the citation must (1) contain the information mandated by the law or ordinance; (2) the issuer of the citation must certify the accuracy of the information by signing the citation; (3) the recipient of the citation must be afforded a chance to provide rebuttal evidence at a hearing; and (4) the hearing officer must have subpoena powers. *Van Harken v. City of Chicago, 906 F.Supp. 1182, 1195-1196 (Ill. 1995); City of Chicago v. Hertz Commercial Leasing Corp.*, 375 N.E.2d 1285 (Ill. 1978).

Presumption. Does it violate due process to

The Oregon photoradar law gives the state the benefit of a presumption that the registered owner is

create a rebuttable presumption that the vehicle in violation of a traffic law was driven by its owner?

the violator if the state proves that a civil citation was properly issued and delivered to the registered owner of the vehicle. The presumption was upheld in *State v. Dahl.* The Supreme Court of Oregon held that the state may rely on a statutory presumption to prove a traffic violation. 87 P.3d 650 (Or. 2004). Two issues regarding the presumption were raised. The first was whether the rule allowing a presumption to shift the burden of proof to a defendant in a civil offense applies to a speeding offense. The court upheld the presumption, noting that a traffic violation is civil. It relied on state law that defines a crime as "an offense for which a sentence of imprisonment is authorized" or "a felony or a misdemeanor." ORS 161.515. Because the state showed that the citation was properly issued and delivered to the registered owner, the court concluded that it was permissible to shift the burden to the defendant to present an alternative that is more probable than the presumption. "The Due Process Clause poses no impediment to shifting the burden of persuasion to the defendant on one element of a traffic violation." *Dahl*, 87 P.3d 650, 655 (Or. 2004).

The defendant's second argument was that because people sometime drive vehicles they do not own, the connection between ownership and the violation was too weak to survive due process scrutiny. Again, the court relied on the civil nature of the violation to uphold the presumption, quoting from a 1976 U.S. Supreme Court decision, "to avoid a due process violation in a civil case, 'it is only essential that there shall be some rational connection between the fact proved and the ultimate fact presumed, and the inference of one fact from the proof of another shall not be so unreasonable as to be a purely arbitrary mandate.'" *Dahl* quoting *Usery v. Turner Elkhorn Mining Co*., 428 U.S. 1, (1976), quoting *Mobile, J. & K. C. R. R. v. Turnipseed*, 219 U.S. 35 (1910). The court concluded, "[t]he legislature's determination that the registered owner was driving his or her car is not "so unreasonable as to be a purely arbitrary mandate. Rather, it was rational for the legislature to assume that registered owners commonly driver their own cars. … [T]he legislature reasonably could select proof of ownership as the point at which the burden shifts to the registered owner to prove that he or she was not driving." *Dahl*, 87 P.3d 650, 655 (Or. 2004).

State v. Clay, 29 P.3d 1101 (Or. 2001), is a case in which even though the state failed to prove the person cited was the registered owner, it tried to invoke the presumption on other grounds. The state unsuccessfully argued that the photoradar law imposed a duty on the officer to issue the citation to the registered owner and that therefore the state was the beneficiary of a presumption that the duty was performed. The Supreme Court of Oregon held that the state could not avail itself of the presumption that the defendant was driving when the photoradar image was taken

without proving the predicate fact that the defendant was the registered owner.

A District of Columbia trial judge relied in part on tort doctrine to uphold the presumption that the driver was the registered owner. The court combined an individual challenge and a taxi company's challenge to the District of Columbia photoradar and red light camera laws in *Agomo v Williams*, No. 02-000 6520, 2003 D.C. Super. LEXIS 31 (Super. Ct. D.C. June 12, 2003). Citing *Mathews v. Eldridge*, 424 U.S. 319 (1976) and *Mobile, J. & K. C. R. R. v. Turnipseed*, 219 U.S. 35 (1910), the judge upheld the presumption. The opinion noted that in civil cases, the owner of a vehicle is liable for the negligence of any person driving the vehicle with the owner's consent and that vehicle owners are routinely held liable for parking infractions and abandoned vehicles.

In a memorandum opinion, the Ninth Circuit Court of Appeals upheld the Portland photoradar program against unspecified due process challenges, holding that "Portland's photoradar procedures comport with Oregon law, which guarantees a hearing, provides a statutory defense when traffic control devices are improperly installed, gives notice to violators that a police officer can testify, and allows for discovery of evidence. The court cited *Lasar v. Ford Motor Co*., 399 F.3d 1101, 1110 (9th Cir. 2005) for the proposition that civil sanctions require only adequate notice and an opportunity to be heard. *Holst v.City of Portland*, No. 04-35496 2005 U.S. App. LEXIS 22652 (9th Cir. 2005).

A review of the briefs in *State v. King*, 111 P.3d 1146 (Or. 2005), indicates that King challenged the presumption that the registered owner was the driver. The court dismissed this claim without discussion.

Conflict of laws and preemption. Is a state camera enforcement law invalid because it differs from traditional speed law?

The defendant in Dahl claimed that the state law establishing procedures for adjudicating traffic citations superseded the state photoradar provision. The court found no conflict. It analyzed the photoradar provision as creating an exception to the earlier provision and cited the rule of statutory interpretation that when there is an apparent conflict between two laws, the more specific law controls. *State v. Dahl*, 87 P.3d 650, 655 (Or. 2004).

The Minnesota Court of Appeals held that a Minneapolis red light camera ordinance was preempted by state law. The state law that preempted the ordinance was the traditional prohibition against entering an intersection against a red light. Minnesota has no state camera enforcement law. *State v. Kuhlman*, No. A06-568, 2006 Minn. App. LEXIS 138 (Minn. 2006), (Minn. Ct. App.,

Sept. 22, 2006). The Minnesota Highway Traffic Regulation Act expressly preempts local traffic ordinances that are in conflict with state traffic law. The court found that a conflict existed because both the substance and procedural requirements of state and local law must be uniform. Substantively, the ordinance's creation of owner liability "would prevent uniform traffic regulation and would therefore conflict with … [state law]. … Minneapolis's regulation would hinder intrastate travel by creating the risk of unexpected liability. … Minnesota law does not permit individual cities to unilaterally regulate traffic in a way that would create a checkerboard of liability across the state." However, the court was very clear that its holding was narrow, that "[i]t is, however, important to emphasize that our decision does not determine the general validity or invalidity of photo-enforcement of traffic violations. We are presented solely with the question of … [preemption]." *State v. Kuhlman*, No. A06-568, 2006 Minn. App. LEXIS 138 (Minn. 2006), (Minn. Ct. App., Sept. 22, 2006).

Dedication of revenue from fines was the subject of litigation between the Guilford County Board of Education and the City of High Point, NC. *Shavitz v. City of High Point*, 270 F. Supp. 2d 702 (Middle Dist. N.C. 2003); *rev'd* in part, 204 U.S. App. LEXIS 1104 (4th Cir. 2004); *remanded to* 630 S.E.2d 4 (N.C. 2006). The NC Constitution provides that after deductions up to 10 percent for collection costs, fine revenue is to be turned over to the county Board of Education to support public schools. The High Point ordinance provided that after deduction for cost, the fine revenue was payable to the City of High Point. The federal appellate court remanded the case to the state to decide this state constitutional issue. The North Carolina Court of Appeals held that the proceeds fell under the constitutional provision allocating fines to the counties to defray the cost of public schooling. *Shavitz v. City of High Point*, 630 S.E.2d 4 (N.C. 2006).

Privacy. Is there a right of privacy sufficient to preclude the use of camera enforcement for traffic offenses?

A District of Columbia trial judge made reference to unspecified privacy concerns and said, "[privacy] concerns are outweighed by the legitimate concerns for safety or our public streets." *Agomo v Williams*, No. 02-000 6520, 2003 D.C. Super. LEXIS 31 (Super. Ct. D.C. June 12, 2003). Taking a photograph of a vehicle license plate does not violate any privacy right. *Arizona v. Hicks*, 480 U.S. 321 (1987) (police can record serial numbers in plain view); *New York v. Class*, 475 U.S. 106 (1986) (police can move papers covering a vehicle identification number).

Purpose of camera enforcement. Opponents of camera enforcement have made the claim that the purpose of camera

"The plaintiffs argue, without legal support, that the District of Columbia is using the camera system to achieve a financial windfall for the Government. Nothing could be further from the truth. In the District of Columbia the traffic regulations forbid driving through a yellow or red

enforcement is to make money, not to advance safety.

traffic signal. The cameras will not operate, unless there is a malfunction, to photograph vehicles that do not run yellow or red lights. The fact that there are a high number of persons photographed running the traffic signal or operating at excessive speeds is an example of the magnitude of the problem facing city officials …." *Agomo v Williams*, No. 02-000 6520, 2003 D.C. Super. LEXIS 31 (Super. Ct. D.C. June 12, 2003).

Notice. Is mail service addressed to the vehicle's registered owner sufficient?

A District of Columbia court addressed this issue in *Agomo v. Williams* which involved a vehicle registered in Texas. Over a period between September 2001 and March 2002, Agomo's vehicle was photographed while speeding 16 times. Although Agomo received actual notice and appeared at hearings to contest several of the citations, the citations were mailed to an address in Texas where the vehicle was registered. The court stated, "[t]he notices were sent to the address of the registered owner. It is the obligation of the plaintiff, as registered owner, to check for mail sent to him in Texas. Because the notice requires a response within a thirty-day period, it is not unreasonable to expect an owner to check for mail within this time period." *Agomo v Williams*, No. 02-000 6520, 2003 D.C. Super. LEXIS 31 (Super. Ct. D.C. June 12, 2003).

A challenge to mail service was brought in Oregon. The court used the *Mathews v. Eldridge* analysis and determined that the balance was struck in favor of the state, that "[s]ervice of citations issued by first class mail rather than by more expensive means furthers the legislature's interest in providing for a cost-efficient method of achieving the aims of the legislation." It also found that a more costly means of providing notice would not be more likely to reach the driver if he or she is not the registered owner of the vehicle. *State v. King*, 111 P.3d 1146 (Or. 2005).

Civil rights and Racketeer Influenced and Corrupt Organization Act Claims. Public officials have been sued under federal civil rights law and RICO for their role in camera enforcement programs.

The U.S. Court of Appeals for the Ninth Circuit upheld a judgment in favor of defendants in a case alleging violations of 42 U.S.C. § 1983 and RICO stemming from photoradar citations. *McNeill v. Town of Paradise Valley, Arizona*, 44 Fed. Appx. 871 9th Cir. 2002); *cert. denied* 540 U.S. 874 (2003).

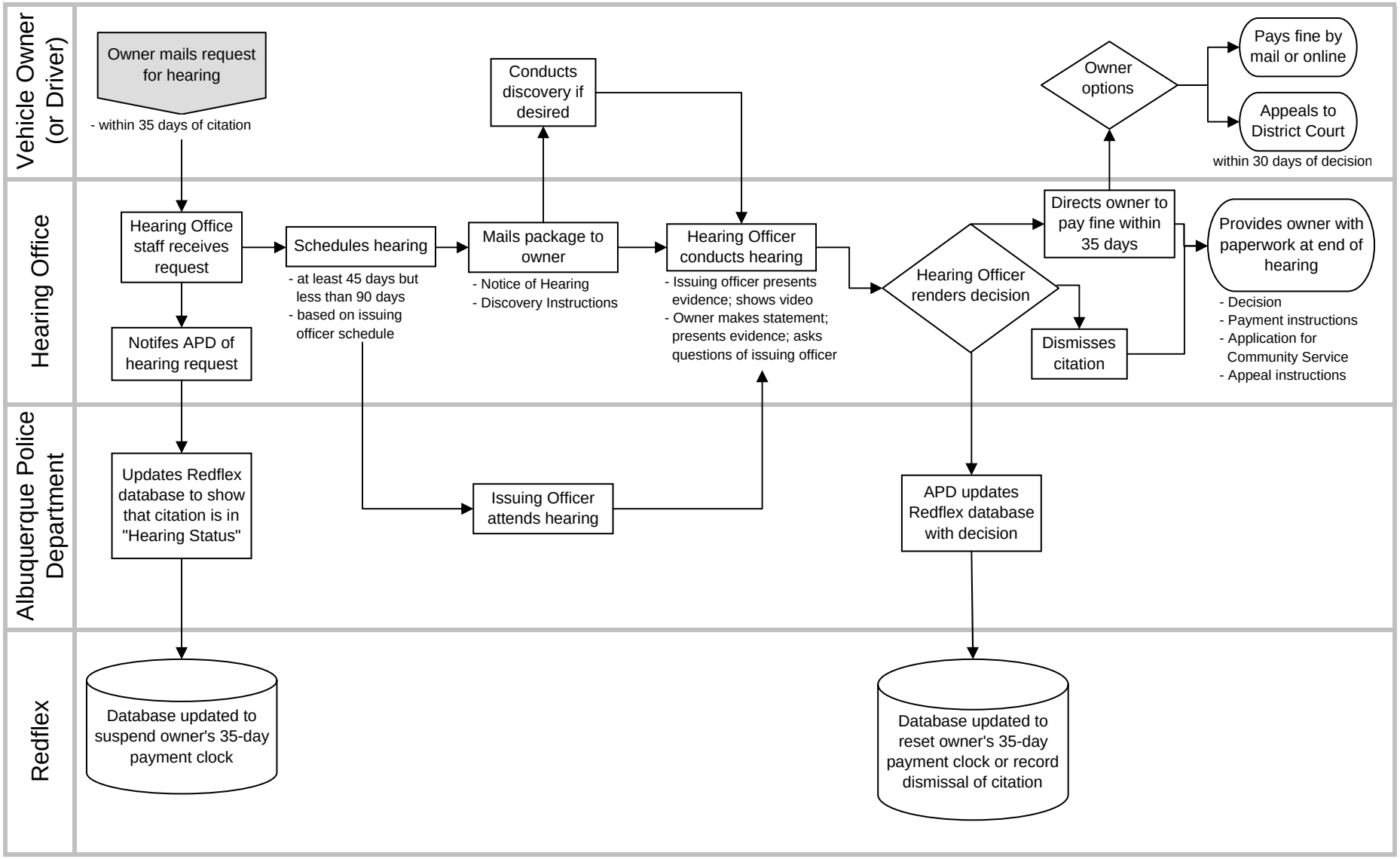
Miscellaneous issues.

Fourth Amendment Seizure. In a 2002 case, an Arizona camera enforcement program was challenged as involving an unconstitutional seizure. The appellate court found that no seizure is involved in sending a citation issued under a camera enforcement program. *McNeill v. Town of Paradise Valley, Arizona*, 44 Fed. Appx. 871 (9th Cir. 2002); *cert. denied* 540 U.S. 874 (2003)

Contractor credibility. An Alaska trial judge questioned the credibility of the contractors who provided photoradar equipment to the municipality because they had a financial interest in proving the equipment to be reliable. On appeal, the municipality lost because appellate courts are required to defer to trial judges on issues of credibility. *Municipality of Anchorage v. Baxley*, 946 P.2d 894 (Alaska 1997).

Admission of extraneous evidence. May courts or hearing officers consider issues not provided for in camera enforcement laws and ordinances? The Oregon photoradar law provides that seven elements will be considered in trials of photoradar cases. One of the elements is a notice provision requiring a sign within 150 feet of the photoradar unit. In a case in which the sign was on the opposite side of the street, the trial court declined to dismiss the citation. The Oregon Court of Appeals affirmed, noting that the plain language of the act provided that the notice had to be close to the photoradar unit but did not specify on which side of the street the sign had to be. The court held that the trial court acted correctly when it declined to read further requirements into the law. *State v. Kolisch*, 185 Ore. App. 418; 60 P.3d 576 (Or. 2002). Similarly, in *City of Wilmington v. Minella*, the court held that it was error to acquit a driver based on her examination of witnesses on matters that were statutorily irrelevant. 879 A.2d 656 Del. 2005.

AUTOMATED ENFORCEMENT HEARING PROCESS



Legend: Beginning or end of process | Action or task | Redflex database | Decision

EXHIBIT 8.1

OFFICE OF ADMINISTRATIVE HEARINGS
Safe Traffic Operations Program "S.T.O.P."
2007 YTD Summary

Month	Hearings Requested	Total Hearings Heard	To Pay (*Found Responsible/City Successful*)	PAID (Recpt - REDFlex *Direct pay*)	Failure to Appear	30-Day Advisement	90-Day Dismiss	Dismiss by APDOfficer	*Dismiss (exception)	Dismiss by Hearing Officer	Continu-ance	Reset (*Return mail*)
Jan-07	1,134	249	67	16	30	1	556	75	57	1	0	0
Note: ***Jan 2007 reports 90 day is greater than hearings heard due to the back log of citations that fell in to a 90 day dismissal.***												
Feb-07	1,440	719	113	33	113	9	162	260	28	0	1	0
Mar-07	1,668	2,289	541	179	404	66	495	145	344	2	110	3
Apr-07	1,180	1,829	844	129	358	15	54	32	242	8	145	2
May-07	1,041	1,964	987	144	324	16	115	33	133	44	165	3
Jun-07	1,144	1,498	745	118	269	21	53	68	22	30	160	12
Jul-07	1,107	1,041	495	91	187	49	19	35	28	15	129	2
Aug-07	1,482	777	393	43	163	56	0	39	1	35	46	1
Sep-07	1,066	1,033	487	82	197	59	8	92	3	51	87	5
Oct-07	1,065	1,739	810	117	345	96	7	151	10	68	123	11
Nov-07	1,007	861	396	45	146	49	5	87	23	40	68	2
TOTALS	**13,334**	**13,999**	**5,878**	**997**	**2,536**	**437**	**1,474**	**1,017**	**891**	**294**	**1,034**	**41**

***NB - Dismiss (w/ exceptions) refers to those exceptions such as bad video, bad weather, SB Coors & Quail, etc. at the discretion of the Hearing Officer/APD Officer.**

EXHIBIT 8.2

Institute of Transportation Engineers

Canons of Ethics for Members

Preamble

The ITE Member, to uphold and advance the honor and dignity of the profession and in keeping with high standards of ethical conduct, will:

- Use professional knowledge and skill for the advancement of human welfare;
- Be honest and impartial in dealing with employer, clients, and the public;
- Strive to increase the competence and prestige of the profession.

Relations with the Public

Sec. 1. The member will have due regard for the safety, health and welfare of the public in the performance of professional duties.

Sec. 2. The member will endeavor to extend public knowledge and appreciation of the profession and its achievements, and will oppose any untrue, unsupported, or exaggerated statements regarding the profession.

Sec. 3. The member will not practice, market or promote in a false, misleading, or deceptive manner. (1992)

Sec. 4. The member will express an opinion on a professional subject only when it is founded on adequate knowledge and honest conviction.

Sec. 5. The member will preface any ex parte statements, criticisms, or arguments issued by clearly indicating on whose behalf they are made.

Relations with Employers and Clients

Sec. 6. The member will act in professional matters for each client or employer as a faithful agent or trustee.

Sec. 7. The member will endeavor to avoid a conflict of interest with employer or client, but when unavoidable conflict arises, will fully disclose the circumstances to all parties involved.

Sec. 8. The member will act fairly and justly toward vendors and contractors and will not request, propose or accept any gratuities or commissions, directly or indirectly, that might compromise the member's professional judgment or induce an action to secure or retain work for any vendor or contractor or the member.

Sec. 9. The employer or client will be informed by the member of financial interest in any vendor or contractor, in any business, or in any invention, machine or apparatus, which is involved in a project or work of the employer or client. Such interest will not be allowed to affect decisions regarding professional services which the member may be called upon to perform.

Sec. 10. The member will indicate to employer or client the adverse consequences to be expected by overruling professional judgment.

Sec. 11. The member will guard against conditions that are dangerous or threatening to life, limb, or property on work for which the member is responsible, or, if not responsible, will promptly call such conditions to the attention of those who are responsible.

Sec. 12. The member will undertake only those professional assignments for which the member is qualified. The employer or client will be advised to engage specialists and the member will cooperate with them whenever the employer's or client's interests are served best by such an arrangement.

Sec. 13. The member will not disclose information concerning the business affairs or technical processes of any present or former employer or client without their consent.

Sec. 14. The member will not accept compensations from more than one party for the same service, or for other services pertaining to the same work, without the consent of all interested parties.

Sec. 15. The member will not offer to or pay either directly or indirectly any commission, political contribution, or fee, or other consideration in order to secure or retain work, exclusive of securing salaried positions through employment agencies.

Relations with Other Professionals

Sec. 16. The member will endeavor to provide opportunity for the professional development and advancement of professionals in the member's employ or under the member's supervision.

Sec. 17. The member will not injure maliciously the professional reputation, prospects, or practice of another professional. However, proof that another professional has been unethical, illegal, or unfair in professional practice, should be given to the proper authority.

Sec. 18. The member will not engage in competitive practices contrary to the law. (1992)

Sec. 19. The member will, in the solicitation, submittal or evaluation of a proposal for professional services, give due regard to all aspects, including: technical capability, prior experience, creativity and suitability of the proposed work plan.

Sec. 20. The member will cooperate in advancing the profession by interchanging information and experience with other professionals and students, and by contributing to public communication media, and to the effects of professional and scientific societies and schools.

Sec. 21. The member will not associate with or allow the use of his or her name by an enterprise of questionable character, nor become professionally associated with professionals who do not conform to ethical practices, or with persons not legally qualified to render the professional services for which the association is intended.

Sec. 22. The member will not exert undue influence or offer, solicit, or accept compensation for the purpose of affecting negotiations for professional engagement.

January, 2003

EXHIBIT 9.1

INFORMATION ON REDFLEX SPEED SENSORS

1. There are four separate speed sensors in each lane that is monitored for speed.

2. The first two sensors are piezos, separated by a six foot span.

3. Speed is first calculated by the computer from the first piezo to the second piezo as the front axle crosses them. This is Speed A.

4. The speed is then calculated again as the back axle crosses the first and second piezos. This is Speed B. A difference of plus or minus 3 miles per hour (MPH) is allowed for deceleration or acceleration. A citation will not be issued if the difference is more than 3 MPH.

5. In addition to the above, there are two magnetic loops that independently measure the speed of the vehicle and the length between the axles. The independent verification of speed by the loops must be within 1 MPH of the piezo measurement or the citation will not be issued.

6. Since the two types of speed detectors work totally independently of each other, they work as an internal system check. No citations will be issued if either sensor type is malfunctioning or if the sensors are exceeding the 1 MPH comparison to each other.

7. The piezos are shielded to block signals from bleeding into other lanes.

8. The magnetic loops are spaced 18 inches apart (a highway standard) to ensure lane verification.

EXHIBIT 11.1

Redlight and Speeding Incidents for all Intersections
Including Rejects by Type
October 1, 2006 to September 30, 2007

Customer Management Report (Albuquerque) Redlight Incidents 01-Oct-2006 to 30-Sep-2007		TOTAL
Total Violations		52,739
Less Uncontrollable Factors		
Obstruction	Citation Issued manually	2
	Plate Obstruction	2,470
	Signal Obstruction	22
	Vehicle Obstruction	496
Police Rejects		
	Duplicate nomination	1
	Emergency Vehicle (PD)	2,086
	Funeral Procession/Police	38
	Incorrect Plate on Vehicle	16
	Incorrect/Incomplete DMV	1,214
	Invalid Offense	89
	Multiple vehicles in frame	20
	Plate Obstruction (PD)	2
	Plate Unidentifiable	34
	Police Discretion	300
	Safe Turn On Red	1,022
	Weather Conditions	36
	Yielding to an Emergency	6
	Extended Vehicle	923
Policy/Weather		
	Sun Glare	93
	Weather/Nature	108
	Yellow with Red Light	50
	Can Not Identify State	62
Registration Issues		
	Out of Country Plate	59
	Paper Plates	2,199
	Wrong or No DMV	89
Total Uncontrollable Factors		11,437
Sub Total Violations		41,302
Less in Progress		-
Available For Prosecution		41,302
Less Rejects		
Camera Malfunction	Databar Unreadable/Incorrect	96
		-
	Digital Distortion	80
	Face Camera Flash	3
	Face Camera Focus Blurry	2
	Face Not in Frame	3
	Image Missing	492
	Misc Camera Issue	561
	Plate Burn Out	125
	Plate Not in Frame	444
	Rear Plate Camera Blurry	366
	Rear Plate Flash Inappropriate	84
	Rear Plate No Flash	118
	Scene Image Flash Inappropriate	214
	Scene Image No Flash	256
	Incorrect Speed	4
Police Rejects		-
	Insufficient Strobe Lighting	12
	No Images	3
	No Video	19
	Plate Unclear	24
	Red-light not visible in	820
	Sun Glare	94
	Unclear Scene Image	512
	Vehicle On or Passed Stop Line	755
Total Rejects		5,087
Notices Printed		36,215
%printed of Total Violations		**68.7%**
%printed of available for prosecution		**87.7%**

Customer Management Report (Albuquerque) Fixed Speed 01-Oct-2006 to 30-Sep-2007		TOTAL
Total Violations		94,515
Less Uncontrollable Factors		
Obstruction	Driver Obstruction/Duckers	2
	Plate Obstruction	5,352
	Motor Cycle Helmet	1
	Vehicle Obstruction	1,054
Police Rejects		
	Emergency Vehicle (PD)	697
	Funeral Procession/Police	1
	Incorrect Plate on Vehicle	40
	Incorrect/Incomplete DMV	1,871
	Invalid Offense	26
	Multiple vehicles in frame	14
	Plate Obstruction (PD)	2
	Plate Unidentifiable	48
	Police Discretion	296
	Safe Turn On Red	2
	Extended Vehicle	63
Policy/Weather		
	Sun Glare	498
	Two Vehicles in Beam	75
	Weather/Nature	382
	Can Not Identify State	130
Registration Issues		
	Gender Match	1
	Out of Country Plate	87
	Paper Plates	5,649
	Wrong or No DMV	197
Total Uncontrollable Factors		16,488
Sub Total Violations		78,027
Less in Progress		-
Available For Prosecution		78,027
Less Rejects		
Camera Malfunction	Databar Unreadable/Incorrect	85
	Digital Distortion	8
	Face Camera Flash	4
	Face Camera Focus Blurry	7
	Face Camera No Flash	2
	Image Missing	641
	Misc Camera Issue	949
	Plate Burn Out	201
	Plate Not in Frame	347
	Plate Radar False Trigger	12
	Rear Plate Camera Blurry	2687
	Rear Plate Flash Inappropriate	179
	Rear Plate No Flash	171
	Scene Image Blurry	10
	Scene Image Flash Inappropriate	119
	Scene Image No Flash	199
	Vehicle Not in Frame	47
	Incorrect Speed	5
Police Rejects		
	No Images	2
	No Video	41
	Plate Unclear	58
	Red-light not visible in	4
	Sun Glare	10
	Unclear Scene Image	1251
	Vehicle On or Passed Stop Line	2
Total Rejects		7041
Notices Printed		70,986
%printed of Total Violations		75.1%
%printed of available for prosecution		82.6%

Total Redlight and Fixed Speed		
Total Violations		147,254
Less Uncontrollable Factors		-
Obstruction	Driver Obstruction/Duckers	4
	Plate Obstruction	7,822
	Motor Cycle Helmet	1
	Signal Obstruction	22
	Vehicle Obstruction	1,550
Police Rejects		-
		1
	Emergency Vehicle (PD)	2,783
	Funeral Procession/Police	39
	Incorrect Plate on Vehicle	56
	Incorrect/Incomplete DMV	3,085
	Invalid Offense	115
	Multiple vehicles in frame	34
	Plate Obstruction (PD)	4
	Plate Unidentifiable	82
	Police Discretion	596
	Safe Turn On Red	1,024
	Weather Conditions	36
	Yielding to an Emergency	6
	Extended Vehicle	986
Policy/Weather		-
	Sun Glare	591
	Two Vehicles in Beam	183
	Weather/Nature	432
	Can Not Identify State	192
Registration Issues		-
	Gender Match	1
	Out of Country Plate	146
	Paper Plates	7,848
	Wrong or No DMV	286
		-
Total Uncontrollable Factors		27,925
Sub Total Violations		119,329
Less in Progress		-
Available For Prosecution		119,329
Less Rejects		
Camera Malfunction	Databar Unreadable/Incorrect	181
		-
	Digital Distortion	88
	Face Camera Flash	7
	Face Camera Focus Blurry	9
	Face Camera No Flash	5
	Image Missing	1,133
	Misc Camera Issue	1,510
	Plate Burn Out	326
	Plate Not in Frame	791
	Plate Radar False Trigger	12
	Rear Plate Camera Blurry	3,053
	Rear Plate Flash Inappropriate	263
	Rear Plate No Flash	289
	Scene Image Blurry	10
	Scene Image Flash Inappropriate	333
	Scene Image No Flash	455
	Vehicle Not in Frame	47
	Incorrect Speed	9
Police Rejects		-
	Insufficient Strobe Lighting	12
	No Images	5
	No Video	60
	Plate Unclear	82
	Red-light not visible in	824
	Sun Glare	104
	Unclear Scene Image	1,763
	Vehicle On or Passed Stop Line	757
Total Rejects		12,128
		107,201
	%printed of Total Violations	72.8%
	%printed of available for prosecution	81.0%

EXHIBIT 11.2

CITY of ALBUQUERQUE
SEVENTEENTH COUNCIL

COUNCIL BILL NO. F/S R-07-344 ENACTMENT NO. 07-2008

SPONSORED BY: Sally Mayer, Brad Winter

RESOLUTION

RESERVING NET REVENUES FROM THE CITY'S SAFE TRAFFIC OPERATIONS PROGRAM IN THE 2008 FISCAL YEAR GENERAL FUND BUDGET FOR THE PURPOSE OF FUNDING PUBLIC SAFETY RELATED NON-RECURRING EXPENDITURES.

WHEREAS, the City's Safe Traffic Operations Program was initiated for public safety purposes and with the intent to reduce accidents and dangerous driving; and

WHEREAS, the Safe Traffic Operations Program was never intended to be a revenue generating program for the City of Albuquerque; and

WHEREAS, the City has, over the past two fiscal years, received approximately $5.1 million in excess revenue from the Program; and

WHEREAS, the $5.1 million in excess revenue has been incorporated into the City's general fund stream of revenue and appropriated for general government purposes; and

WHEREAS, it is the intent of the City Council that the excess revenue from the Safe Traffic Operations Program, both from prior fiscal years and from current and future fiscal years, shall be spent only for the purpose of promoting public safety in the City of Albuquerque; and

WHEREAS, a Photo Enforcement Fund has been established to capture photo enforcement revenues, expenditures and reversions; and

WHEREAS, funds are to be appropriated from this fund by the City Council for public safety purposes.

BE IT RESOLVED BY THE COUNCIL, THE GOVERNING BODY OF THE CITY OF ALBUQUERQUE:

[+Bracketed/Underscored Material+] - New
[-Bracketed/Strikethrough Material-] - Deletion

Section 1. RESERVE OF SAFE TRAFFIC OPERATIONS NET REVENUE FROM PREVIOUS FISCAL YEARS. Upon completion of the City's FY/07 audit, final FY/07 photo enforcement reversions up to $5.1 million will be transferred from the General Fund to the Photo Enforcement Fund effective July 1, 2007 and reserved for the purpose of providing funding for non-recurring public safety expenditures.

Section 2. The following appropriations are hereby adjusted to the following program strategies and funds for operating City government for fiscal year 2008 and all appropriations, expenditures and revenues for fiscal year 2008 associated with photo enforcement will be transferred in a transfer program in the Police Department from the General Fund to the Photo Enforcement Fund effective July 1, 2007:

GOAL 2 - PUBLIC SAFETY - Citizens are safe, feel safe and secure, and have trust and shared responsibility for maintaining a safe environment.

GENERAL FUND – 110	
Police Department	
Neighborhood Policing	**(4,702,000)**
PHOTO ENFORCEMENT FUND – 288	
Police Department	
Photo Enforcement Operations	**4,702,000**
Transfer to General Fund	**839,000**

[+Bracketed/Underscored Material+] - New
[-Bracketed/Strikethrough Material-] - Deletion

Red-Light Camera & Officer Citation Fines, with Court Fees

Citation Type	Officer - State Statute	Officer - State Statute Court Fee Portion	Officer - City Ordinance	Officer - City Ordinance Court Fee Portion	Camera 1st Offense	Camera Citation - Court Fee Portion	Camera 2nd Offense	Camera 3rd Offense
Red-Light	$69.00	$59.00	n/a	$59.00	$100.00	$0.00	$200.00	$300.00
Speed 1-10 mph over	$74.00	$59.00	$159.00	$59.00	$100.00	$0.00		
Speed 11-15 mph over	$89.00	$59.00	$209.00	$59.00	$150.00	$0.00		
Speed 16-20 mph over	$124.00	$59.00	$259.00	$59.00	$200.00	$0.00		
Speed 21-25 mph over	$159.00	$59.00	$309.00	$59.00	$250.00	$0.00		
Speed 26-30 mph over	$184.00	$59.00	$359.00	$59.00	$300.00	$0.00		
Speed 31-35 mph over	$209.00	$59.00	$409.00	$59.00	$350.00	$0.00		
Speed 36+ mph over	$259.00	$59.00	Mandatory Court	$59.00	$400.00	$0.00		

EXHIBIT 14.1

Net Revenue Estimates for Automated Enforcement Program

	Number of Violations			Revenues				
	Redlight	Speeding	Speed Van	Redlight	Speed	Speed Van	Total	Actual Revenue
FISCAL YEAR 2007	37,826	52,758	14,041	2,912,602	5,170,284	1,376,018	9,458,904	9,050,411
FIRST HALF 2008	17,368	39,448	9,461	1,337,336	3,865,904	927,178	6,130,418	5,824,267
SECOND HALF EST	14,772	36,528	9,461	1,137,444	3,579,744	927,178	5,644,366	
FISCAL YEAR 2008	32,140	75,976	18,922	2,474,780	7,445,648	1,854,356	11,774,784	

		Full year based on last quarter 2007	
	FY08	W/ current fees	With reduced Fees
REDFLEX 2008			
Fixed	2,064,000	2,064,000	2,064,000
Variable	3,093,317	3,042,989	3,042,989
Total	5,157,317	5,106,989	5,106,989
Other Expenses			
APD Staff	301,091	301,091	301,091
Administrative Hearing	737,217	737,217	737,217
Total Administrative	1,038,308	1,038,308	1,038,308
Total Expenses	6,195,625	6,145,297	6,145,297
Total Revenue	11,774,784	11,592,672	10,010,067
Net Revenues	5,579,159	5,447,375	3,864,770

Assumptions

Speeding Revenues and expenses were based on weighted average of speed of violations for 2007.

MPH above limit	Fine	Speeding violations
0 to 10	100	26,216
11 to 15	150	47,869
16 to 20	200	6,471
21 to 25	250	1,051
26 to 30	300	247
31 to 35	350	68
36 and above	400	51
Total Violations		81,973

Weighted average per speeding violation is $140

Redlight Averaged $110 per violation due to 10% of violations were repeat

The reduced fines proposed in Council bill F/S O 07-74

Redlight violations would be $69

Speeding with $74 base has weighted average of $140

No assumption made about the reductions in revenue due to the community service. Nor to the additional expenses associated with a community service program

Redflex fees are estimated as

Redlight		$18	average from contract
Speeding		$26.50	weighted average from their contract with sliding scale
Fixed fees per intersection			
Redlight	$	2,350	per month
Redlight and Speed	$	4,350	per month

Exhibit 14.2