



RED LIGHT CAMERAS:
City can fine tune some program aspects and
solidify plans for future

July 2015

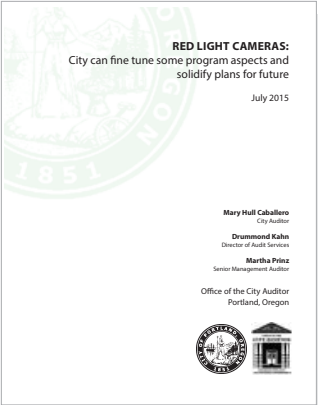
Mary Hull Caballero
City Auditor

Drummond Kahn
Director of Audit Services

Martha Prinz
Senior Management Auditor

Office of the City Auditor
Portland, Oregon





Production / Design
Robert Cowan
Public Information Coordinator



CITY OF PORTLAND

Office of City Auditor Mary Hull Caballero

Audit Services Division

Drummond Kahn, Director

1221 S.W. 4th Avenue, Room 310, Portland, Oregon 97204

phone: (503) 823-4005

web: www.portlandoregon.gov/auditor/auditservices



July 22, 2015

TO: Mayor Charlie Hales
Commissioner Nick Fish
Commissioner Amanda Fritz
Commissioner Steve Novick
Commissioner Dan Saltzman
Lawrence P. O'Dea III, Chief of Police

SUBJECT: Audit Report: Red light cameras: City can fine tune some program aspects and solidify plans for future (Report #466)

The attached report contains the results of our audit work on the City's red light camera program. A response letter from the Portland Police Bureau is included.

We appreciate the cooperation of the Police Bureau and the Bureau of Transportation during the course of the audit and the positive response we received to our recommendations. We will follow-up with the Police Bureau and its Commissioner-in-Charge in one year for a status report on the steps taken to address them.

Mary Hull Caballero
City Auditor

Audit Team: Drummond Kahn
Martha Prinz

Attachment

RED LIGHT CAMERAS:

City can fine tune some program aspects and solidify plans for future

Summary

The City of Portland uses 11 cameras at 10 intersections to enforce laws against red-light running and to improve safety. The Police Bureau operates the red light camera program and oversees a vendor who owns the cameras and issues citations once the Police Bureau approves them. The Bureau of Transportation identified the intersections for red light camera enforcement and produces safety data. The State sets the fine amount and the Circuit Court collects and processes red light camera citation payments.

We conducted this audit to determine if the City's red light camera program has met its goals, is following select best practices, and has clearly defined roles for the bureaus and vendor. We also reviewed program costs and cost recovery.

We found that crash rates at red light camera intersections were lower than before the cameras were installed, and were also lower than at most dangerous intersections without cameras. While that trend is encouraging, the safety data should be interpreted with caution. Our audit also found that some best practices are followed or partially followed; that the roles of Police and Transportation, and to a lesser extent the vendor and Court, need additional clarifying; and that the program sometimes covers its costs but not always.

The City's use of red light cameras would benefit from strategic planning for the next phase of the program, including reviews of costs and best practices; improved clarity of roles; and more attention to ensure that the vendor's processes are up-to-date and producing optimal results.

Background **Red light cameras are managed by Police but other entities are involved**

The Police Bureau uses red light cameras to identify and cite drivers who run red lights. This report focuses on red light cameras, which are one type of automated enforcement. The City uses another form of automated enforcement, photo radar vans, to enforce speed limits. In addition, the City has a proposed plan to operate fixed-speed cameras.

The Police Bureau, the Bureau of Transportation, a vendor, and the Circuit Court are responsible for red light camera program outcomes. Transportation primarily identifies dangerous intersections, and Police contracts with and oversees a vendor. The vendor owns and manages the cameras and other equipment, processes images, and issues citations as approved by the Police.

Under Oregon law, red light camera violations are assessed at \$260. Traffic violations are adjudicated by the Oregon Department of Justice's Circuit Court, which checks for prior convictions and may reduce the fine depending on the driver's record if the driver appears in court – by up to half if the driver has no prior record. The vendor mails the citations and the Court is responsible for ensuring the citations are paid.

Until a few years ago, red light camera revenue went to the City's general fund through Transportation, rather than directly to the Police Bureau. This made program responsibility and cost recovery between Police and Transportation unclear. Police had difficulty recapturing revenue once it went to the General Fund, leading to the current structure, where the Police Bureau runs the program and receives the revenue. According to Police, the decision to move the program to the Police Bureau was made at least in part to improve the program's viability, a first step in considering expanding the program. However, Transportation still plays an important role in the program. Once the vendor's costs and other program costs are covered, the remaining revenue is dedicated to safety programs.

Red light cameras may help reduce rates of dangerous collisions, but have some downsides and have lost popularity

Drivers who run red lights may cause property damage, injuries or fatalities. Almost 700 people were killed and about 133,000 were injured in the U.S. in red-light running crashes in 2012. Research shows that red light cameras may reduce injury and fatal crashes, even at nearby intersections, but may contribute to rear-end crashes as drivers try to stop to avoid receiving a citation.

In recent years, some communities nationwide have eliminated red light cameras or banned them altogether. As of 2015, 10 states prohibit their use. Among the reasons cited for opposition to red light cameras were that the cameras generated too much revenue or in some other cases were losing money, caused too many rear-end crashes, or were not supported by the community's court system. Between 2013 and 2015, the number of cities using red light cameras dropped by 15 percent.

Audit Results

Fewer crashes at Portland's red light camera intersections

The intersections with cameras were selected because they had a relatively high rate of red-light running crashes. Figure 1 shows camera locations as of 2015.

The City has consistently reported that crash rates are lower at red light camera intersections as compared to pre-camera levels at the same intersections. The most recent data from Transportation shows the average number of crashes per year at camera-enforced intersections is almost a third less than before the cameras were installed, even with more cars entering the intersections since the cameras were installed. All crash types have declined, including rear-end crashes.

Those results, while impressive, should be interpreted with caution because the overall sample size is small and because it is not possible to know to what extent the cameras caused the decline. Police Traffic Division managers also noted that the primary cause of a particular traffic collision is not always clear, adding a degree of uncertainty to the effect of the cameras, which are only targeted to red-light running and not to other driving errors.

Our audit compared crash rates at red light camera intersections to crash rates at Portland's top 60 high-crash intersections, excluding two of the 60 that had red light cameras. Crash rates are a measure of how many collisions occurred per million vehicles entering an intersection. According to Transportation, a crash rate of 1.00 or higher is of concern. The crash rate at Portland's worst intersections (not including the two with red light cameras) averaged 1.39. Transportation told us that choosing camera locations was not strictly limited to intersections with the most crashes, but rather the intersections where crashes were determined to be red-light running related. The crash rate at the City's red light camera intersections averaged 0.75 before the cameras were installed and 0.42 after the cameras were installed, a 44 percent decline.

Figure 1 Portland red light camera locations



Source: Portland Bureau of Transportation

Red light camera program follows some best practices, and partially follows others

Our audit found the program to be in line with several best practices. For example, we found:

- A safety problem attributable to red-light running was identified before the program began.
- Data and images are kept private.
- Vendor payments are structured to reflect equipment and services provided.

In some cases, we found that best practices had been partially followed, but that more work could be done. For example:

- We could not determine to what extent cameras were considered to be part of a larger safety strategy, although it was clear that work was done in that area.
- Public education is an important component of a successful red light camera program. In Portland, public perception has not been assessed since 2003. The City's website could also provide more easily-accessible information. Safety outcomes, camera locations, how locations were chosen, and how revenue is used are examples of information that could be added to the website to increase public awareness.
- Regular monitoring and evaluation of the program is recommended and is done by the Traffic Division and in required reports submitted to the Legislature. However, more in-depth evaluation is needed to ensure that the program is operating as intended.
- The Police Bureau was recently made the lead agency. Law enforcement agencies are recommended to be the lead because cameras are an enforcement function. However, Police could collaborate more with other agencies, which is also recommended.

Clarity of roles has improved since making Police the lead, but more work is needed

Police and Transportation

Having one bureau rather than two in charge of the program is an improvement, and it makes sense to have the program revenue go to the bureau responsible for paying the program's costs. However, we found challenges linked to the number and variety of entities involved in the program (Police, Transportation, the vendor, and the Circuit Court) – two of which are outside of City government.

For example, a red light camera program expansion was planned but never happened. The vendor's 2010 contract with the City required the vendor to be prepared to install a minimum of five additional cameras by the end of the second year of the contract. According to the vendor and the Police Bureau, the cameras were purchased by the vendor and were ready for installation, but Transportation did not finalize the locations and eventually the cameras were sold for use in another city. Transportation's version of events is more complex, and varies depending on the source, but one manager told us that they are "ready to go" and are waiting for Police. Other factors mentioned to us by Transportation were turnover at Police, the complexities of siting cameras, and Transportation feeling pressure to focus on street maintenance rather than safety.

More recently, Transportation released and City Council adopted a wide-ranging document that includes plans to add 10 red light cameras, as well as implement a new fixed-speed camera program on certain high-speed corridors. The fixed-speed camera program would require legislative action and both would require Police and Circuit Court involvement. This ambitious plan will require a level of coordination between Police and Transportation that we did not find evidence of while conducting this audit.

Police also told us that it is an appropriate time to consider relocating some existing cameras. According to Police, at least three cameras should be considered for relocation since they yield so few citations, and there may be other locations where cameras would be more effective in improving safety. Transportation told us that positive safety results mean the locations are working as intended.

Police and vendor

The cameras sometimes capture images of situations when no citation is issued, such as when a driver stops slightly too late or makes a right turn on a red light. A video of the incident is reviewed by both a police officer and the vendor to see if the image meets certain criteria. The vendor follows criteria for approving photos that are spelled out in business rules established with the City.

The vendor contacts the Oregon Department of Transportation's Driver and Motor Vehicle Services Division to obtain an image of the driver's license associated with the vehicle. A match must be made so that the driver can be identified. No citation is issued if the driver cannot be identified. A number of other factors may lead to the image being discarded, including the professional judgment of the reviewing officer.

As shown in Figure 2, over a five-year period, 39 percent of camera photos resulted in citations being issued, and almost three-quarters of the issued citations were paid. The vendor categorizes reasons for rejecting photos as "controllable" and "uncontrollable." Controllable events include factors such as:

- the image of the driver was not clear enough (the most cited controllable event for the years we analyzed),
- the camera or other equipment malfunctioned,
- the license plate was not clear enough.

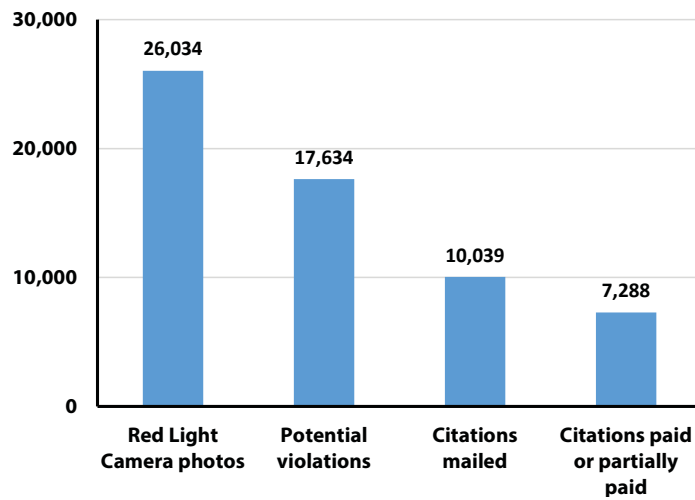
The most-often uncontrollable reason cited by the vendor for rejecting an image was a gender match failure, which means that the gender of the driver in the image does not match the gender of the car's registered owner, or that the reviewer could not determine if there was a match.

According to the Police Bureau, they have begun to work with the vendor and to study other cities' results to see if there is room for improvement in the rate of issued citations. It is difficult to compare to out-of-state agencies, because each state has different laws governing red light camera citations. Police told us that weekly meetings

with the vendor to review potential violations are helpful, but they do not always know why every rejected photo was dismissed. The vendor began transitioning from traditional cameras to digital cameras in 2011 and 2012, which may have been a factor in improved citation issuance rates.

Police provided data from Tualatin and Medford indicating that about half of their red light photos are converted into citations. Given that these other cities have a higher percentage than Portland, the Police Bureau should work with the vendor to evaluate ways to improve the rate of issued citations. Figure 2 shows, as a five-year average, the progression from total photos taken to citations paid or partially paid.

Figure 2 Citations: from photos taken to paid fines (Five-year average)



Source: Xerox State and Local Solutions, Inc.

In addition, the Police Bureau needs to work with the vendor to update the vendor's business rules, which were last revised in 2011. Police financial staff should also assess the vendor's procedures and results on a regular basis.

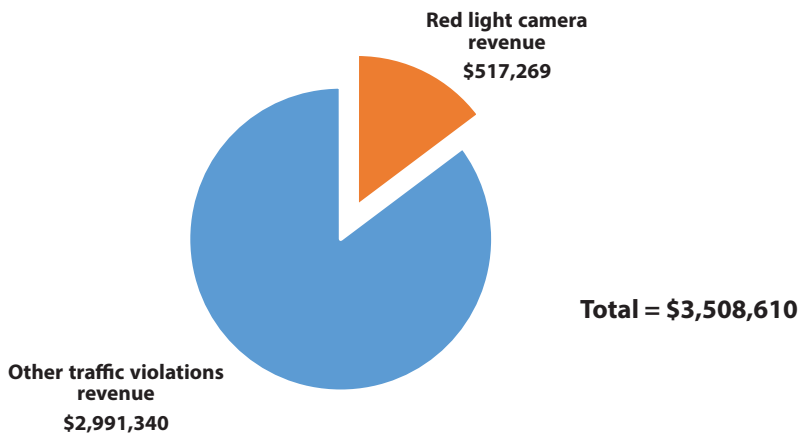
Police, Transportation, Circuit Court, and vendor

Circuit Court officials told us that they have concerns about how citations are processed and the amount of time Court staff spend on red light camera violations. According to Circuit Court staff, they dedicate significant resources to handling automated enforcement citations, including answering a large number of phone calls. If the program is expanded as proposed by Transportation, it will place more demand on the Circuit Court. The Court has also been the source of delays in processing payments, which effects the Police Bureau. During the course of our audit, Police met with Court staff to get to the root of Court delays in processing payments, which were caused by the Court switching to a new computer program. More routine meetings including Police, Transportation, the Court, and the vendor may lead to more opportunities to address problems and streamline operations.

Citation revenue from red light cameras is a small portion of all traffic enforcement revenue

As shown in Figure 3, revenue from red light camera citations makes up about 15 percent of the total revenues from all methods of traffic enforcement.

Figure 3 Red light camera revenue compared to other traffic violation revenue (Five-year average)



Source: Portland Police Bureau

City revenue affected by fine reductions, citation collection, and payments to State and vendor

Many factors, some of which are out of the City's control, affect the amount of revenue the City receives for red light camera citations. For example, in one six-month period, fines were reduced by the Court for almost 90 percent of the drivers who appeared in Court. We were not provided with data about how many drivers choose to appear in Court.

The Court collects either full or partial payment on about 75 percent of the citations the vendor issues, as shown in Figure 2. According to the Court, if a driver who has received a citation does not pay the citation in a timely manner, there are fees added to the citation amount, in accordance with Oregon law.

For every citation paid or partially paid, the State receives the first \$60 of the citation revenue, with the balance split evenly between the State and the City. The State's share of the split goes into the State Criminal Fine Account, whose revenues are distributed to many agencies, including the Circuit Court.

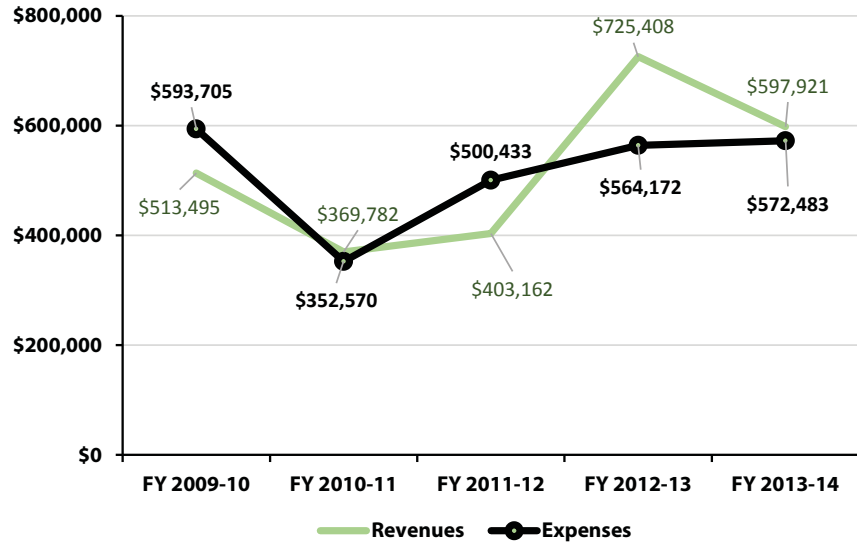
The vendor is paid two ways: a fixed per-camera lease fee, which totals \$264,000 per year, and a variable per-citation fee determined on a sliding scale based on the number of paid citations. The highest amount is \$27. As more citations are paid, the per-citation fee declines.

The red light camera program has not been self-supporting every year

We found that Portland's red light cameras have not been a source of significant revenue, and the program has lost money in some years, as shown in Figure 4. For example, in the five years we reviewed, the program lost money in two of them. The cost of officer time is included, but overhead is not. Streetcar construction caused two cameras to be out of service for periods of time during 2010, 2011, and 2012.

In Fiscal Year 2012-13, revenues exceeded expenses more than in any other year we reviewed. Total revenues that year were \$725,408 and total expenses were \$564,172, and revenue per citation was \$16.84. The biggest loss was in Fiscal Year 2011-12, when total revenues were \$403,162 and total expenses were \$500,433, and each citation cost the City \$12.55.

Figure 4 Revenues and expenses for red light cameras



Source: Portland Police Bureau

In some communities, automated enforcement programs have at times generated substantial revenue. While the goal is not to lose money, the Police Bureau does not want the City's program to raise more revenue than it costs to operate, because it does not want to undercut the Bureau's message that the program's goal is to improve safety.

Recommendations

We recommend that the Mayor direct the Police Bureau to implement the following recommendations:

1. Initiate discussions with the Bureau of Transportation on moving existing cameras and adding cameras.

Police should take the lead on discussions with Transportation about moving cameras or keeping them where they are and the feasibility of adding new cameras. Although Transportation plays a key role in siting cameras, neither bureau should move forward on changes to the program without open and regular communication. Although safety is the goal of the program, financial considerations and workload should be a key part of these discussions, and the Court and vendor should be involved if new cameras appear likely.

2. Improve adherence to best practices.

With the program in its second decade, it is appropriate to revisit aspects of the program that were not adequately addressed initially or are out-of-date. Of particular importance is ensuring that all four entities involved in citations are included in regular discussions about how the program is operating.

3. Review the vendor's procedures and performance regularly to ensure that the City receives the best possible results for the money

Police Traffic Division staff have weekly meetings with the vendor to review individual citations and other matters. However, there may be room for improvement if other topics are covered as well. The business rules the vendor operates under have not been updated since 2011 and should be reviewed on a more frequent and regular schedule. The Traffic Division should ensure that the Bureau's Fiscal Services Division and the Circuit Court are asked on a regular basis to review procedures and outcomes and help troubleshoot problems.

Objectives, scope and methodology

We conducted this audit to determine if the City's red light camera program meets its goals, is following select best practices, and has clearly defined roles for the bureaus and vendor involved in the program. As we conducted the audit, we determined that costs of the program and cost recovery were important and included these issues in our review. Our audit scope focused on the goals, administration, and outcomes of the City's red light camera program. We did not include the City's related photo radar program or proposed fixed-speed cameras, except to the extent discussion of those programs provided context relevant to the operations of the red light camera program.

To accomplish these objectives, we analyzed safety data for the City's red light camera intersections and high-crash intersections, as well as financial data related to the program. We reviewed professional literature, applicable State law, and proposed legislation, audits from other jurisdictions and news articles. We analyzed vendor contract provisions, requests for proposals and contract bids from the City's Office of Procurement. We analyzed citation data obtained from the vendor, and traffic enforcement data from the Police Bureau. We identified best practices for red light camera programs, and obtained information on the use of cameras in other cities.

We interviewed staff and managers from the Portland Police Bureau, Portland Bureau of Transportation, City Attorney's Office, City Budget Office, City Office of Government Relations, and the vendor who services the program and supplies the equipment. We also received information from the Circuit Court.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

RESPONSE TO THE AUDIT



CITY OF PORTLAND, OREGON



Bureau of Police

Charlie Hales, Mayor
Lawrence P. O'Dea III, Chief of Police
1111 S.W. 2nd Avenue • Portland, OR 97204 • Phone: 503-823-0000

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July 13, 2015

Mary Hull Caballero
City Auditor
1221 SW 4th Avenue, Room 140
Portland, OR 97204

Dear Auditor Caballero:

I appreciate the opportunity to review and respond to the recent audit regarding the Portland Police Bureau's Red Light Camera Program. The Police Bureau welcomes outside reviews of our processes to ensure we are providing the best service to our community.

The Portland Police Bureau uses 11 cameras at 10 intersections to enforce the law against running red lights with the goal of improving safety.

The decision to use technology such as this for enforcement is one that needs to be very thoughtful and very measured. It is critical that programs like this operate with the support of the public, that they are based on a legitimate need supported by specific data, and that there is never the reality or perception that a city is policing for profit. Failing in any of these areas will cost the city and the Police Bureau trust and legitimacy with the public. Education, engineering, and enforcement are all critical components in ensuring traffic safety.

I would like to thank the Auditor's Office and particularly Senior Management Auditor Martha Prinz for her thorough and professional review of the Red Light Camera Program. The Auditor's Office has highlighted areas that the City and the Police Bureau can use to fine tune the program and strategically plan for the future. This will help ensure that we always have a system based on need and supported by the public.

Sincerely,

LAWRENCE P. O'DEA III
Chief of Police

RECOMMENDATIONS

1. Initiate discussions with the Bureau of Transportation on moving existing camera and adding cameras.

Police should take the lead on discussions with Transportation about moving cameras or keeping them where they are and the feasibility of adding new cameras. Although Transportation plays a key role in siting cameras, neither bureau should move forward on changes to the program without open and regular communication. Although safety is the goal of the program, finance considerations and workload should be a key part of these discussions, and the Court and vendor should be involved if new cameras appear likely.

2. Improve adherence to best practice.

With the program in its second decade, it is appropriate to revisit aspects of the program that were not adequately addressed initially or are out-of-date. Of particular importance is ensuring that all four entities involved in citations are included in regular discussions about how the program is operating.

Recommendations 1-2

The Traffic Division will work with PBOT and the vendor to evaluate current Red Light Camera Locations. The Red Light Camera program was initiated by PBOT in 2007 and transferred to the Police Bureau Traffic Division in late 2011. Since that time there have been substantial additional program studies and best practice implementation guidelines established. These guidelines involve substantially more work than was done on the original sites selected, but is necessary to ensure that the site is appropriate for a Red Light Camera and, if so, that we are able to obtain a satisfactory level of photographs. The Traffic Division will work with PBOT to evaluate the camera locations for continued camera placement or relocation with the most current research on automated enforcement for red light cameras. Examples of that best practice work will include:

- ***Identify and confirm that there is a red light running safety problem;***
- ***Conduct an engineering analysis to identify the factors that might be causing the problem;***
- ***Identify alternative countermeasures that could solve the problem;***
- ***Select the most appropriate single or combined set of countermeasures;***
- ***Implement the countermeasures and monitor the solution to determine the extent of the continuance of the problem. (FHWA-Federal Highway Administration);***

- *Establish a timeline process for periodically evaluating the cameras as countermeasures in each location to better direct the placement of the camera or need to remove it; and*
- *Develop communication and feedback strategies with the Portland community*

Communication between Bureaus has been ongoing with regard to working together on thorough data analysis with a commitment to partner on Vision Zero goals and Red Light Camera best practice guidelines to reduce crashes and serious injuries.

3. Review the vendor's procedures and performance regularly to ensure that the City receives the best possible results for the money.

Recommendation 3

The Traffic Division does meet with the vendor regularly; however, we will establish a quarterly meeting between the Portland Police Bureau Traffic Division, our Fiscal Division, the vendor and the Multnomah County Circuit Court. This will help to ensure all business practices and procedures are up to date and expenditures and revenues are adequately and accurately tracked. It is important to include the Multnomah County Circuit Court in these meetings as practices and processes there can directly impact the program.

**Audit Services Division
Office of the City Auditor
1221 SW 4th Avenue, Room 310
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503-823-4005
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Red Light Cameras: City can fine tune some program aspects and solidify plans for future

Report #466, July 2015

Audit Team: Martha Prinz

Mary Hull Caballero, City Auditor
Drummond Kahn, Director of Audit Services

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