

Oregon Department of Transportation  
and  
Oregon Traffic Control Devices Committee

# **Red Light Running (RLR) Camera Guidelines**

**2010**



**OREGON DEPARTMENT of TRANSPORTATION  
TRANSPORTATION OPERATIONS DIVISION  
TECHNICAL SERVICES  
TRAFFIC MANAGEMENT SECTION  
<http://www.odot.state.or.us/traffic>**

Oregon Department of Transportation

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Approved by the State Traffic Engineer, in consultation with the Oregon Traffic Control Devices Committee for use on State Highways and adopted by the Oregon Traffic Control Devices Committee as a guide to assist Oregon cities in the deployment of Red Light Running (RLR) Cameras.

Original signed by

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State Traffic Engineer  
April 15, 2010

## Oregon Department of Transportation

### Major Revisions included in this version:

1. Removed the requirement that the Oregon Department of Transportation provide an executive summary of evaluations of the systems to the Oregon Legislature.
2. Added a requirement that each city that operates cameras present an evaluation of the use and administration of the cameras to the Oregon Legislature.



## Red Light Running (RLR) Camera Guidelines

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## **Red Light Running (RLR) Camera Guidelines**

### **Introduction**

This document has been prepared by the Oregon Department of Transportation (ODOT) and the Oregon Traffic Control Devices Committee (OTCDC) to assist local jurisdictions in the deployment of Red Light Running (RLR) Cameras. In response to what appeared to be a growing disrespect for traffic laws in general and disobeying red traffic signal indications in particular, the Oregon Legislature enacted a law in 1999 to help Oregon communities effectively enforce and reduce red light running. The law was revised and expanded several times since, the last time in 2007.

### **Supporting Legislation**

These guidelines are based on Oregon Revised Statutes (ORS) 810.434 through 810.436. The Oregon legislature last revised ORS 810.434 and 810.436 in 2007. Major revisions affecting these guidelines include:

1. Removing the requirement that Oregon Department of Transportation provide an executive summary of evaluations of the systems.
2. Adding a requirement that each city that operates cameras present an evaluation of the use and administration of the cameras.
3. Removing limitations on the numbers of cameras that may be installed in cities.

### **RLR Camera System Justification**

In 2007 almost 900 people were killed and an estimated 153,000 were injured in crashes that involved red light running in the US. About half of the deaths in red light running crashes are pedestrians and occupants in other vehicles who are hit by the red light runners. Studies have reported that red light cameras reduce angle and turning crashes, but can increase rear-end crashes. Because the types of crashes prevented by red light cameras tend to be more severe than rear-end crashes, research has shown there is also a reduction in the severity of crashes.

The Highway Safety Manual (published by AASHTO) quantifies the expected crash reductions of different measures. These measures are only included if there is known statistical stability and reliability. The Highway Safety Manual<sup>1</sup> lists the expected crash effects for installation of red-light cameras as a 26 percent crash reduction in right-angle and left-turn crashes and an 18 percent increase in rear-end crashes.

RLR Cameras are not a panacea for intersection safety problems and should be installed only after other means have failed to solve the problems. RLR Cameras have the potential to reduce the number and severity of crashes, but because of the concern for increasing rear-end crashes, RLR Cameras should be installed only where a crash problem within the last 5 years can be documented. When used, they should be a part of a process that considers education, enforcement and engineering, which are essential to any traffic safety program. Enhanced traffic safety is the principal aim of RLR Camera enforcement programs.

<sup>1</sup>Council, F.; Persaud, B.; Eccles, K.; Lyon, C.; and Griffith, M. 2005. Safety evaluation of red-light cameras: executive summary. Report no. FHWA HRT-05-049. Washington, DC: Federal Highway Administration.

The following are means of improving intersection safety prior to RLR Cameras the jurisdiction should consider:

- (1) Proper sight distance;
- (2) Speed zones are consistent with engineering practice;
- (3) The number, size and location of vehicle heads are consistent with the MUTCD and ODOT's "Traffic Signal Policy and Guidelines";
- (4) Proper yellow change and red clearance intervals are consistent with ITE's "Traffic Control Devices Handbook", ITE's "Manual of Traffic Signal Design", ODOT's "Traffic Signal Policy and Guidelines" or other jurisdiction's adopted policy;
- (5) Corridor progression timing does not contribute to red light running; and
- (6) The traffic signal timing is consistent with traffic volume, speed and specific intersection design elements.

### **RLR Camera System Implementation**

RLR Cameras monitor both the flow of traffic at the stop location and the condition (or color) of the traffic signal indication on the approach. Special detectors, commonly loops cut into the pavement, check for the passage of vehicles into the intersection and if the traffic signal phase condition is red, cause pole mounted cameras to record pictures of the vehicle position, license plate and driver. Upon verification by a police officer, the vehicle owner is issued a citation through the mail. RLR Camera systems should differentiate between vehicles running a red light and those vehicles stopping slightly beyond the stop bar or those vehicles, after stopping, making a legal turn against a red indication.

Typically RLR Camera Systems are installed under contract, by a commercial firm that specializes in such systems. These contracts cover the furnishing, installation and operation of the RLR Cameras. The firm may also prepare the evidence for verification by local law enforcement and mail the citation. As compensation, the firm usually collects a predetermined fee for this service when the citation fine is received.

Costs that the local jurisdiction must cover include internal expenses for engineering plan review, site evaluation and field engineering during the installation phase of the RLR Camera System. Local jurisdictions also can purchase, install and operate RLR Camera Systems or can enter into agreements with other jurisdictions to provide all or a portion of this service.

**If the candidate location is at a state highway intersection or on a state highway approach, application to and approval of the Oregon Department of Transportation is required.**

### **Public Information Campaign and Sign Requirements**

Oregon Law requires that cities provide a public information campaign to inform local drivers about the use of RLR Cameras before citations are actually issued. Educating the public is a critical step in reducing red light running. In order to effectively change poor driving habits, drivers must be made aware that RLR Cameras are in use. It is recommended that cities hold well-publicized kickoff events and issue periodic press releases about the effectiveness of RLR Camera enforcement within their jurisdictions.



Oregon law also requires that signs be posted, so far as practicable, on all major routes entering the jurisdiction indicating that compliance with traffic control devices is enforced through cameras. The law further requires that signs indicating that a camera may be in operation be posted near each intersection where a camera is installed.

### **Operational Considerations**

- RLR Cameras should not affect the display or the operation of the traffic signal.
- Power for RLR Camera equipment may be provided from the traffic signal cabinet and should be on its own clearly identified circuit breaker.
- Contact closures, as may be required for red and yellow indications on RLR Camera approaches, should be electrically isolated from traffic signal equipment.
- Detection loops for RLR camera equipment should not be wired through the traffic signal cabinet, associated electrical conduit, or junction boxes and shall not interfere with the operation of detector loops used for traffic signal operation. At state highway intersections, segregated wiring is required.
- Traffic signal timing changes should not be made to increase the possibility of vehicles running red lights. If a review of traffic signal timing prior to RLR Camera installation identifies inappropriate yellow change and red clearance interval values that require adjustment, these adjustments shall be made prior to operation of the RLR Camera system.
- Traffic signal timing changes may be made in response to substantial changes in approach speed, design changes, etc.
- Signal plans showing the location of all proposed and existing equipment should be prepared.
- Signs at each City Limit, informing the public that compliance with traffic control devices is enforced through the use of cameras, shall be provided if not already in place. A RLR Camera sign on each covered approach shall be installed and should be shown on or as an attachment to the signal plans. Refer to the *Manual on Uniform Traffic Control Devices* and the Oregon Adopted Supplements for guidance on signs that should be posted.

### **Site Considerations**

RLR Cameras may not be appropriate at locations where:

- Recent geometric or traffic signal design changes have been made. Supporting crash records may not be applicable in the new configuration.
- Traffic signals have been installed within the previous year. Crash history may be too short to support RLR Camera use.
- Geometric or traffic signal design changes are scheduled and an engineering evaluation indicates such changes may substantially alter the need for RLR Camera enforcement.
- Road or utility work is anticipated during the first year of RLR operation.
- Traffic pattern changes resulting from development, construction detours or similar events are anticipated during the first year of RLR operation.
- An electrical interconnect with “railroad active warning devices” is provided on the approach.
- Design, operation or maintenance is inconsistent with state or local standards and practices.

## **Safety and Operations Report**

A Safety and Operations Report is required for all RLR Camera Systems to be installed at intersections on state highways and is strongly recommended for all other locations since it can provide the basis for the process and outcome evaluation required in ORS 810.434(3)(b). It may be desirable to secure the services of a Professional Engineer to conduct the necessary study.

In addition to a general project narrative, the Safety and Operations Report should address to the extent practical the following:

Crash History - An engineering study of the crash experience at the intersection should be conducted.

- Target crashes for reduction at a RLR installation are angle crashes where the driver of one of the vehicles disregarded the traffic control device. Oregon crash records include codes for driver error that describe these crashes (codes are "DISREGARDED TRAFFIC SIGNAL" or "DISREGARDED STOP SIGN OR SIGNAL").
- Target crashes coded to driver attention may also be included in the study.
- The study should identify the relative crash problem of the intersection based on nearby intersections of similar volume, geometry, and traffic control.

Safety Concerns - Documentation detailing other safety concerns may be included in the report.

Concerns may be supported by any of the following (or other relevant data):

- Traffic citation data
- Complaints
- Enforcement observations
- Speeds, traffic volumes and grades
- Traffic signal spacing
- Proximity to freeway or expressway ramp terminals

Design, Operations, and Maintenance Issues –Copies of signal plans showing the location of all proposed and existing equipment should be included. A description of how the RLR Camera System will be operated and maintained should be provided. Any design, operations, or maintenance issues that could affect the potential effectiveness of a RLR Camera System should be identified.

Public Information Campaign – The public information requirements as outlined in ORS 810.434 (3)(a) should be addressed.

Budget – A budget for system implementation and operation should be developed.

PE Certification – The jurisdiction proposing to install a RLR Camera System should secure the services of a Professional Engineer (PE) to attest that the traffic signal is operated and maintained in accordance with the MUTCD and appropriate state and local guidelines. If the signal is on a state highway and is operated and maintained by ODOT this certification is not necessary.

### **Biennial Report Requirement**

Oregon Law requires that once each biennium all cities using RLR Camera Systems must conduct a process and outcome evaluation that includes:

- The effect of the use of cameras on traffic safety
- The degree of public acceptance of the use of cameras
- The process of administration of the use of cameras

Regardless of the jurisdiction in the position of road authority, the jurisdiction overseeing the operation of a RLR Camera System shall prepare the Biennial Report and submit the report by March 1st of the year of each regular session to the Legislative Assembly.

The Biennial Report should include the following information:

- Name, address, and phone number of person who will be the main RLR contact for this jurisdiction.
- Date of implementation.
- Number of intersections at which RLR Cameras are installed.
- RLR contractor name.
- Crash data specific to RLR locations for the 3-year period prior to RLR Camera installation and post RLR camera installation data to identify average crash rate and annual change.
- Public information surveys (if available) regarding jurisdiction's use of RLR Cameras.
- Copies of media releases sent as a part of the public RLR awareness program.
- Description of areas of concern or difficulty in administering the RLR Camera enforcement program.
- Available information on the local courts ability to handle the increase in citations.
- "Success stories" to share with the legislature about local RLR program such as major reductions in serious injuries and fatalities in the local jurisdiction due to RLR Camera systems.

Each city that operates a camera system is responsible for presenting a report to the Legislative Assembly by March 1<sup>st</sup> of the year of each regular session.

### **Procedure for State Highways**

State Traffic Engineer approval is required for RLR Camera installation and operation at all State-owned intersections regardless of operation or maintenance responsibilities. The following procedure should be followed:

- The Applicant:
    - Submits letter to ODOT District requesting authorization to install and operate a RLR Camera at a specific State-owned intersection. The letter shall identify a responsible party to whom an ODOT permit will be issued and the point of contact responsible for the construction, operation, and public information requirements. The letter shall be accompanied by:
1. The Safety and Operations Report.
  2. A statement of consistency with the Operational Considerations.

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3. Applicant shall ensure that signs at each City Limit, informing the public that compliance with traffic control devices is enforced through the use of cameras, are provided if not already in place. A RLR Camera sign on each covered approach shall be provided and shown on or as an attachment to the signal plans.
- The District Office:
    - Establishes an account number through ODOT Financial Services identifying responsible party and budget in an Order to Render Service.
    - Issues Miscellaneous Permit to applicant stating conditions of approval. Conditions include the need for State Traffic Engineer approval.
  - The Applicant:
    - Signs the permit, acknowledging the conditions of approval.
    - Pays a monetary deposit for the following services:
      1. Plan review by the Traffic Management Section estimated at \$200 per RLR Camera approach.
      2. Traffic signal cabinet and intersection modifications required to protect ODOT equipment and provide proper communication to RLR equipment estimated at \$1000 per intersection.
      3. Sign installation estimated at \$200 per sign.
      4. Relocation or repair of existing traffic control devices resulting from the installation of RLR equipment.
  - The District Office:
    - Upon receipt of signed permit and deposit, forwards plans and supporting documents to the Region Traffic Manager.
  - Region Traffic:
    - Reviews RLR design and supporting documents and works with applicant to ensure the RLR Camera Enforcement Installation Checklist (see page 11) is complete.
    - If supportive of the proposal, forwards all documents to the Traffic Management Section with a recommendation to approve.

State Traffic Engineer approval will be based on review of supporting documents and completion of final, ODOT approved plans.

## RLR Camera Enforcement Installation Checklist Non-State Highway

Location Information

File Code: \_\_\_\_\_

Acct. No.: \_\_\_\_\_

Street Name: \_\_\_\_\_

Intersecting Street: \_\_\_\_\_

RLR Camera Approaches: \_\_\_\_\_

Traffic safety need based on crash history, crash potential and/or observed violation data has been documented.

A public information contact has been identified.

Contact Name: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

Location and approaches have been clearly identified.

Traffic signal indications on the approach are clearly visible from an adequate distance based on field observation. Current MUTCD signal visibility standards are met.

Yellow change and red clearance intervals are displayed for at least the recommended time.

No significant improvement (project) is scheduled or planned that would substantially alter the need for a RLR Camera.

Signs indicating that compliance with traffic control devices is enforced through cameras are posted (or will be provided by this project) on all major routes entering the jurisdiction.

Signs indicating that a camera may be in operation will be posted on all approaches where a camera is to be installed.

No known reason why a RLR Camera should not be installed.

Checklist completed by: \_\_\_\_\_ Date: \_\_\_\_\_

## RLR Camera Enforcement Installation Checklist State Highway

Location Information

File Code: \_\_\_\_\_

TSSU Location ID: \_\_\_\_\_ Region: \_\_\_\_\_ District: \_\_\_\_\_ Acct. No.: \_\_\_\_\_

Street Name: \_\_\_\_\_

Intersecting Street: \_\_\_\_\_

RLR Camera Approaches: \_\_\_\_\_

Applicant (City/County): \_\_\_\_\_

Local jurisdiction has documented traffic safety need based on crash history, crash potential and/or observed violation data.

A local jurisdiction point-of-contact has been identified.

Contact Name: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

Location and approaches have been clearly identified.

Traffic signal indications on the approach are clearly visible from an adequate distance based on field observation. Current MUTCD signal visibility standards are met.

Yellow change and red clearance intervals are displayed for at least the recommended time.

Existing traffic signal coordination with adjacent traffic signals is in place and properly timed.

No significant improvement (project) is scheduled or planned that would substantially alter the need for a RLR Camera.

Signs indicating that compliance with traffic control devices is enforced through cameras are posted (or will be provided by this project) on all major routes entering the jurisdiction.

Signs indicating that a camera may be in operation will be posted on all approaches where a camera is to be installed.

No known reason why a RLR Camera should not be installed.

Checklist completed by: \_\_\_\_\_ Date: \_\_\_\_\_