**Measure Name:** Photo enforcement

**Definition:** Use of automated technology to capture photographic evidence of grade crossing violations to be used to enforce traffic laws.

**Tags:**

*Type of Incident*:

- ☐ Non-Motorized Users Only
- ☒ Motor Vehicles Only
- ☐ Both

*Intervention Strategy*:

- ☐ Data: application and planning
- ☒ Education: outreach and messaging
- ☒ Enforcement: policy development and rulemaking
- ☒ Engineering: technological and physical deterrents

*Type of Problem*:

- ☐ Non-Motorized Users Violating Warning Devices
- ☒ Motor Vehicles Violating Warning Devices
- ☐ Vehicle ROW Incursion
- ☐ Vehicle Congestion
- ☐ Blocked Crossing
- ☐ Vehicle Hang-up

*Measure Category:*

- ☐ Risk Assessment
- ☐ Policy and Enforcement
- ☒ Collaboration, Training, and Education
- ☐ Public Communication
- ☐ Physical Barriers
- ☐ Detection and Lighting
- ☒ Infrastructure Modification
- ☐ Post-Incident Management
- ☐ Warning Devices

## Description

Photo enforcement is the use of automated technology to capture photographic evidence of traffic law violations at grade crossings; this evidence can be used to send warnings or penalties to drivers. This measure is intended to improve grade crossing safety by deterring grade crossing warning violations [1]. If a traffic law violation is detected, a fine or warning is typically mailed to the registered owner of the violating vehicle.

When a traffic law violation occurs at the location of a photo enforcement system, the system should collect information such as: images of the vehicle, the driver, the registration plate, and data such as the time, date, and location of the violation [2]. In the state of Illinois, if these criteria are met, then the local law enforcement agency can issue a citation, but requirements vary between states [2][3].

Photo enforcement can yield significant reductions in the number of vehicles that violate grade crossing active warning devices. This has been demonstrated in studies published by the Federal Railroad Administration. One study analyzed the effectiveness of installed photo enforcement devices at a grade crossing in Orlando, FL accompanied by warning notices and educational materials sent to registered owners of vehicles that were recorded violating the grade crossing warning devices. The average rate of violations decreased by 15.4% when measured eight months after the implementation of the photo enforcement education program, and by 17.2% when measured twenty months after implementation [1] [4]. This demonstrates that the use of photo enforcement increases compliance in both the short-term and long-term. A 2001 study, which investigated the effect of photo enforcement (via fines) at grade crossings in Illinois, saw reductions in violations between 47 percent and 87 percent [2].

Additional search terms: *education, enforcement, violation, citation*

## Advantages

- Significantly deters violation of traffic laws at highway-rail grade crossings. [1][3][4]
- Operates without human intervention needed.
- High reliability once implemented. [3]
- Revenue from fines can recover the installation cost over time. [3]

## Drawbacks

- Expensive to install and maintain; average installation cost from a 2001 study was over $314,000 per crossing. [2]
- Volume of citations significantly increases workload for local police department or processing agency; processing citations and appearing in court is time-intensive. [3]

## Notable Practices

- Due to the high installation cost, photo enforcement systems are typically limited to high-risk locations. Other countermeasures can be effective but at a much lower initial cost; median barriers average $12,000 to $14,000 per crossing. [3]
- Photo enforcement often includes a "warning period" during which drivers who violate traffic laws at grade crossings will only receive a warning instead of a fine. The L.A. Metro initiated a 10-month warning period for photo enforcement systems installed at light rail grade crossings before issuing citation after this period. [5]

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## References

[1] Federal Railroad Administration. (2019). Long-Term Effect of Photo Enforcement-Based Education on Vehicle Driver Behavior at a Highway-Rail Grade Crossing

> Abstract: The Volpe Center evaluated the long-term effectiveness of the use of photo enforcement for driver education at the East Princeton Street grade crossing in Orlando, FL (Crossing ID 622173H). The goal of the photo enforcement-based driver education program is to reduce the number of vehicles that commit grade crossing warning device violations, thus reducing the possibility of getting struck by an oncoming train. A before-and-after design was used to evaluate the effectiveness of the photo enforcement program on drivers' compliance of the grade crossing warning devices. Grade crossing warning device violations were collected for 14 continuous days before the implementation of the photo enforcement program from April 14, 2016 to April 27, 2016. The signage and photo enforcement system were installed on August 8, 2016, and the city of Orlando started issuing violation notices on August 11, 2016. Twenty months after the implementation of the photo enforcement system, grade crossing warning device violations were then again collected for 14 continuous days from April 12, 2018 to April 25, 2018. The average hourly rate of violations per activation decreased from 6.0296 before to 4.9916, resulting in a 17.2 percent reduction, after the photo enforcement program was implemented.

[2] Illinois Commerce Commission. (2002). Photo Enforcement at Highway-Rail Grade Crossings: 2001 Status Report to The General Assembly.

> Document Excerpt: In 1996, the General Assembly required the Commerce Commission to conduct an evaluation of the effectiveness of automated photo enforcement of traffic laws at three highway-railroad grade crossings in DuPage County.

[3] Carroll, A., Warren, J, (2001). Photo Enforcement at Highway–Rail Grade Crossings in the United States

> Abstract: Nearly 50% of U.S. highway–rail crossing accidents occur at public crossings equipped with automated warning devices, of which 78% are passive and 22% have active warning systems. This is a disproportionate amount of accidents occurring at active sites. The use of photo enforcement at public highway–rail grade crossings became a focal point for study. This technology observes and records driver and pedestrian behavior, as driver behavior is at the root of the crossing safety problem. Judicial concerns and public perception and support levels are also issues of concern. Photo enforcement is an option to assist law enforcement to increase safety at public crossings. While some privacy issues remain, this system can be a reliable, cost-effective way to discourage unsafe driver behavior. Today, 75 countries use traffic cameras. Internationally, photo enforcement has been in use for more than 20 years. Experience has shown that visible, high-profile law-enforcement programs like photo enforcement reduce the

number of highway–rail crossing violations. Photo enforcement at six highway–rail crossings across the United States showed positive results in reducing violations. The results of investigations at the six sites indicated a reduction of violations in the range of 34% to 92%. Implementing the technology to detect a violator is one aspect of reducing violations; persuading police and civil officials to adapt enforcement programs is another.

[4] Federal Railroad Administration. (2019). Effect of Photo Enforcement-Based Education on Vehicle Driver Behavior at a Highway-Rail Grade Crossing.

Abstract: The Volpe Center was tasked by FRA's Office of Research, Development and Technology with evaluating the effectiveness of the use of photo enforcement for driver education at the East Princeton Street grade crossing in Orlando, FL (Crossing ID 622173H). The goal of the photo enforcement-based driver education program is to reduce the number of vehicles that commit grade crossing warning devices violations, thus reducing the possibility of getting struck by an oncoming train. A before-and-after design was used to evaluate the effectiveness of the photo enforcement program on drivers' compliance of the grade crossing warning devices. Grade crossing warning device violations were collected for 14 continuous days before the implementation of the photo enforcement program from April 14, 2016 to April 27, 2016. The signage and photo enforcement system were installed on August 8, 2016, and the city of Orlando started issuing violation notices on August 11, 2016. Eight months after the implementation of the photo enforcement system, grade crossing warning device violations were then again collected for 14 continuous days from April 13, 2017 to April 26, 2017. The average hourly rate of violations per activation decreased from 6.0296 before to 5.1004, resulting in a 15.4 percent reduction, after the photo enforcement program was implemented.

[5] L.A. Metro. (2022). Photo enforcement program along K Line begins issuing citations on Monday, Aug. 1.

Description: The photo enforcement program on the K Line of the L.A. Metro began with a 10 month warning period before transitioning to citation issuances.

## Additional Resources

Rail Safety and Standards Board. (2018). Assessment of the effectiveness of existing red light enforcement equipment at level crossings.

Excerpt: The following report presents research carried out by Atkins on behalf of RSSB into the effectiveness of red light enforcement equipment (RLEE) at level crossings in Britain.

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## Related Measures

- Enforcement
- Grade crossing safety education in communities
- Public messaging to enhance grade crossing safety
- Safety patrols to deter grade crossing violations

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## Images


*Figure 1. Photo enforcement system at a grade crossing in Orlando, FL*
*Image Credit: Volpe Center*


*Figure 2. Example of a photo enforcement signage at a grade crossing in Orlando, FL*
*Image Credit: Volpe Center*