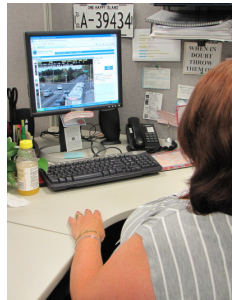




PENNSYLVANIA STATE
TRANSPORTATION ADVISORY COMMITTEE

EVALUATING THE
AUTOMATED RED LIGHT
ENFORCEMENT PROGRAM
(ARLE)

FINAL REPORT



OCTOBER 2011

The Pennsylvania State Transportation Advisory Committee

The Pennsylvania State Transportation Advisory Committee (TAC) was established in 1970 by Act 120 of the State Legislature, which also created the Pennsylvania Department of Transportation (PennDOT). The Advisory Committee has two primary duties. First, the Committee "consults with and advises the State Transportation Commission and the Secretary of Transportation on behalf of all transportation modes in the Commonwealth." In fulfilling this task, the Committee assists the Commission and the Secretary "in the determination of goals and the allocation of available resources among and between the alternate modes in the planning, development and maintenance of programs, and technologies for transportation systems." The second duty of the Advisory Committee is "to advise the several modes (about) the planning, programs, and goals of the Department and the State Transportation Commission." The Committee undertakes in-depth studies on important issues and serves as a valuable liaison between PennDOT and the general public.

The Advisory Committee consists of the following members: the Secretary of Transportation; the heads (or their designees) of the Department of Agriculture, Department of Education, Department of Community and Economic Development, Public Utility Commission, Department of Environmental Protection, and the Governor's Policy Office; two members of the State House of Representatives; two members of the State Senate; and 19 public members—seven appointed by the Governor, six by the President Pro Tempore of the Senate, and six by the Speaker of the House of Representatives.

Public members with experience and knowledge in the transportation of people and goods are appointed to represent a balanced range of backgrounds (industry, labor, academic, consulting, and research) and the various transportation modes. Appointments are made for a three-year period and members may be reappointed. The Chair of the Committee is annually designated by the Governor from among the public members.



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Executive Summary

The **Automated Red Light Enforcement Program**, or “ARLE,” is a recent program aimed at enhancing motorist and pedestrian safety through improved technology and operations. Public concern over the incidence of red light running had reached a level that made it a significant policy issue. In 2002 the Pennsylvania General Assembly amended the Pennsylvania Vehicle Code to authorize Cities of the First Class (i.e., Philadelphia) to operate an ARLE program. The legislation designated the Philadelphia Parking Authority (PPA) as the authorized organization to administer the program. No other Pennsylvania jurisdiction or agency has legal authority to implement an ARLE program. Act 67 of 2007 extended the duration of the initial ARLE program to December 31, 2011.

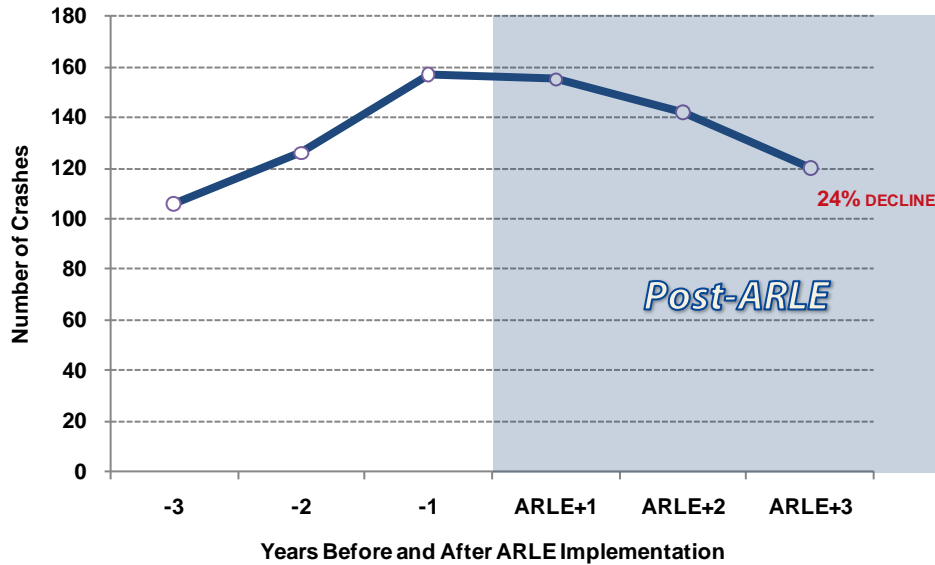
The Pennsylvania Secretary of Transportation must approve intersections for inclusion in the program. The first intersection equipped with cameras went into operation in 2005. There are currently 21 approved intersections in the City of Philadelphia—19 intersections are currently in operation with two more expected to be in operation by the end of 2011.

The legislation intended that the program be evaluated for effectiveness and potential continuation or expansion. PennDOT asked the Transportation Advisory Committee (TAC) to perform an objective, independent analysis of the program for that purpose.

Findings:

Safety – There are several indicators that demonstrate the ARLE program has improved safety related to red light running. A review of the operational intersections indicates that the program has successfully reduced red light running violations by an average of 48 percent within the first 12 months of enforcement. The total number of crashes has also declined by 24 percent for the 10 ARLE intersections where three years of crash data after ARLE’s commencement is available. Fatalities and the overall severity of crashes have also declined. These results are consistent with national statistics on automated red light enforcement. While some aspects of ARLE’s impact on safety remain inconclusive, it is clear that there are substantial overall safety benefits from the program. Continued analysis of the safety impacts, along with additional years of trend data will help to better define the program’s safety benefits.

Collective Crash History at ARLE Intersections Before and After Implementation



Source: PPA Annual Reports

Financial – The PPA has established a process including contracting with a vendor to operate the program. These arrangements come with a cost, totaling more than \$6 million in FY 2010-11. Approximately 10.5 violations per intersection per day are required to cover the program’s maintenance and operations costs. While there has been some improvement in reducing the amount of unpaid violations (as a share of total violations), totals last fiscal year were over \$2 million, contributing to a cumulative total of \$8.1 million.

The program to-date has been self-sustaining. As the number of ARLE intersections has grown, total program revenues (fines collected) have increased, totaling \$13.7 million in FY 2010-11. This has covered all program expenses and produced \$21 million in excess revenue over the life of the program. This revenue has been deposited in the Motor License Fund and made available to fund safety and mobility projects in Philadelphia and throughout the rest of the state. To date, the ARLE Funding Program has awarded \$16.8 million for safety and mobility projects throughout the state.



ARLE Financial History, FY 2005-10

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Totals
Total Program Revenue	\$1,543,516	\$2,641,283	\$7,362,737	\$8,800,080	\$11,468,537	\$13,728,479	\$45,544,632
PPA Program Expenses	\$1,309,456	\$1,962,976	\$4,340,401	\$4,884,389	\$5,971,890	\$6,082,796	\$24,551,908
Net Income	\$234,060	\$678,307	\$3,022,336	\$3,915,691	\$5,496,647	\$7,645,683	\$20,992,724
Yearly Total of Unpaid Violations	\$735,900	\$580,346	\$1,293,206	\$1,242,228	\$2,250,066	\$2,035,120	\$8,136,866
Motor License Fund Payments	\$0	\$752,367	\$2,521,943	\$4,510,394	\$5,365,691	\$7,196,647	\$20,347,042

Source: PPA Annual Reports

Note: Differences in Net Income and MLF payments are due to the PPA and Commonwealth fiscal years being out of sync.

Pennsylvania’s Legislation – Pennsylvania’s legislation is well crafted, avoiding many of the problems encountered by other states. A few examples of the strength of Pennsylvania’s legislation include:

- vendors are paid a flat fee rather than a fee based on the number of violations,
- the violation fee is defined in the legislation,
- the program cannot be used for surveillance purposes, and
- violations are associated with the vehicle rather than the driver.

Positive changes since the program’s inception include a mandated change from the use of wet film to digital photography.

A potential negative with the current law is that it neither defines any intersection selection criteria nor requires an engineering study to be performed. Having this in place would confirm that there are no existing problems with the existing traffic signals, etc., at proposed ARLE intersections. This would also improve accountability, as selection criteria would ensure consistency and transparency with the public.

Public Perception – Reaction to the program has been mixed, ranging from an embrace of technology for improving intersection safety to a rejection of perceived government intrusion into private lives. The PPA, as the administrator of the Philadelphia program, has sought to engage the community and improve public awareness of the program’s intent and its benefits.

ARLE Funding Program – A total of \$21 million in fees collected from violators has been made available for a new grant program to support a variety of safety-related enhancements to the transportation system, such as traffic signal upgrades and signing enhancements. The focus of the program is low-cost safety and mobility projects. Pennsylvania municipalities have benefitted from this new funding program. During the first round of grant awards started in 2010, more than \$8.4 million has been made available to more than 100 Pennsylvania municipalities for eligible projects. A similar amount has been returned to the City

of Philadelphia for eligible transportation projects. These projects further improve safety throughout the Commonwealth.

Recommendations:

The TAC offers the following recommendations:

Continue the ARLE Program in Philadelphia: The ARLE Program in Philadelphia should be continued. The original intent of the program to reduce red light running violations and, in turn, reduce the number of serious crashes, has been achieved. The program has contributed to a 24 percent reduction in crashes, and a 48 percent reduction in the number of violations after a year of implementation, per intersection. The collection rate on violations has improved, but there may be additional opportunities for improvement through greater penalties on violators, such as restrictions on registration renewals for unpaid violations. PennDOT should retain a responsible role in approving ARLE intersections and have auditing ability to maintain the program's effectiveness and accountability.

Expand the ARLE Program: The ARLE program should be expanded to other areas of the state. However, expansion should proceed carefully while considering factors such as eligibility, selection requirements, use of program revenue, and roles and responsibilities. Analysis has revealed that most signalized intersections across the state would not be self-supporting, as they are in Philadelphia. PennDOT should have ultimate approval for the addition of municipalities and intersections to the program, after an engineering study is conducted by the signal owner. One statewide vendor should be selected for the program, rather than individual municipal selection. PennDOT should be allowed to cover their costs to administer the program from available program revenue.

Continue the ARLE Funding Program: The ARLE Funding Program should continue with available revenue. The program is funding effective safety and mobility-related projects in Philadelphia and around the state. Improvements to processing, such as the requirement of electronic submissions, should be implemented to reduce the administrative burden on PennDOT.

1. Introduction

The Pennsylvania Vehicle Code (Title 75), Section 3116, provides the authority for the establishment of an Automated Red Light Enforcement (ARLE) program within “Cities of the First Class” (Philadelphia is the only Pennsylvania city in that size category). This legal authority was first established in 2002, and the first cameras became operational in 2005. Act 67 of 2007 extended the duration of the initial Philadelphia ARLE program until December 31, 2011. The Vehicle Code designates the Philadelphia Parking Authority (PPA) as the administrator of the initial ARLE program in Pennsylvania.

1.1 Purpose and Background

The Transportation Advisory Committee (TAC) conducted an independent and objective assessment of the ARLE program to evaluate the effectiveness of the program and whether it merits being extended beyond December 2011. The value of expanding the program to municipalities beyond Philadelphia was also evaluated.

The original intent of the ARLE legislation was to improve safety by reducing red light running at intersections with high incidences of this violation. It was also anticipated that experience from an initial program in Philadelphia could be evaluated before considering the longer-term future of the program in Philadelphia and in other areas of Pennsylvania. This report is intended to provide guidance to the Pennsylvania General Assembly as it considers this topic. It may also influence changes to the ARLE regulation.

The report is organized into the following sections:

- Introduction
- Overview of the ARLE program within Pennsylvania
- Red Light Enforcement in other states
- Current and Proposed Legislation regarding the ARLE program
- Study findings and recommendations.

Copies of the enabling legislation, the regulation, and ARLE Funding Program details are included in the appendix.

1.2 Objectives and Methodology

The TAC identified a Study Review Team comprised of individuals from the TAC, representatives from PennDOT, and delegates from the House and Senate Transportation Committees. This group reviewed draft study materials and guided the study process. A list of review team members is shown at the front of this report on the Acknowledgements page. The Review Team met twice over the course of the study process.



Objectives

The study review team identified several study objectives:

- Assess the effectiveness of the ARLE program as it is currently being administered.
- Evaluate other states' practice and national issues.
- Document what is working well (or not working well) with the ARLE program in Pennsylvania.
- Provide considerations for continuing the program beyond the December 31, 2011, deadline.
- Provide considerations for expanding the program beyond Cities of the First Class (Philadelphia).
- Review the ARLE Funding Program and make recommendations.
- Provide clear recommendations for the future of the ARLE program in Pennsylvania.

Data Collection

In developing a planning baseline for the study, the study team collected data from a variety of sources, most notably PennDOT's Bureau of Highway Safety and Traffic Engineering, and the PPA.

Information on other programs throughout the nation was collected. Other state DOTs were contacted, including Maryland, New Jersey, and Virginia.

Stakeholder Input

The study team conducted interviews with the following individuals:

- Michael Baker, PennDOT Program Center
- Stephen Buckley, Deputy Streets Commissioner, City of Philadelphia
- Daniel Farley, PennDOT Bureau of Highway Safety and Traffic Engineering
- Chris Vogler, Manager, Red Light Photo Enforcement, Philadelphia Parking Authority

2. Overview of the ARLE Program

The Pennsylvania Vehicle Code (Title 75) was amended in 2002 to add Section 3116, which provided the legal authority for establishing an automated red light enforcement program in Cities of the First Class (Philadelphia). The legislation designated the Philadelphia Parking Authority (PPA) as the administrator of the program. The intent of the program was to improve safety by reducing red light running and associated crashes at intersections with high crash rates.

The Secretary of Transportation must approve the intersections selected for ARLE implementation. The City of Philadelphia and PPA initially recommend ARLE sites. Each recommended intersection is evaluated relative to crash history, and a field view is conducted. To date, 21 intersections in the City of Philadelphia are approved,¹ and 19 intersections are monitored by cameras. Pennsylvania is one of 25 states plus the District of Columbia that permit some form of a red light enforcement program.

This section of the report summarizes the ARLE program in Pennsylvania: how it is administered, its impact on safety, its revenue yield, and how it has been received by the motoring public.

2.1 ARLE: The Pennsylvania Experience

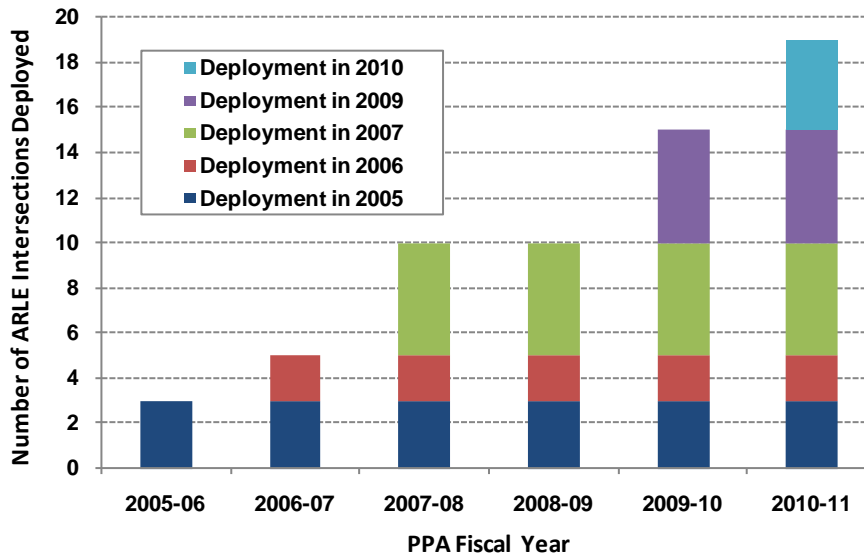
After the legislation was initially approved, the PPA went through a procurement process to select a vendor that would be responsible for installing, operating, and maintaining the red light cameras. The procurement was largely based on the parameters established in the Vehicle Code. American Traffic Solutions (ATS) was the low bidder and selected vendor. The contract included three 3-year options for renewal. PPA has exercised two of the renewals. PPA maintains language in its contract to ensure continuity from one vendor to another, should the need arise.

The following graph provides a calendar year breakdown of the number of intersections currently under automated red light enforcement. The General Assembly authorized the program in October 2002, however with the time required for start-up, it was not until 2005 when cameras began appearing on Philadelphia roadways. Over time, the program has grown with the addition of several cameras a year, as shown in Figure 1.

¹ Enforcement has not yet begun at the last two intersections (see Table 1).



Figure 1: Number of Automated Red Light Enforcement Intersections Deployed, FY 2005-10



Source: Philadelphia Parking Authority

Two additional intersections have been approved and are under construction.

2.1.1 Program Administration and Roles

As with any program, there are a number of agencies that are involved in its development, management, and implementation. There are several primary public entities involved in the ARLE program:



- **American Traffic Solutions (ATS)** – The Philadelphia Parking Authority’s contracted vendor that installs, operates, and maintains the cameras, and handles violations (up to the first two notices).
- **Philadelphia Parking Authority** – The enabling legislation names PPA as the ARLE program system administrator. It is ultimately responsible for the implementation, operation, and maintenance of devices, and forwards surplus revenues to PennDOT.
- **Philadelphia Streets Department** – Responsible for operation and maintenance of traffic signals at which ARLE systems are installed; reviews candidate intersections for ARLE enforcement.
- **Philadelphia Police Department** – Confirms each violation and electronically signs the citation.
- **PennDOT**– Reviews proposals for additional intersections to be controlled by red light cameras. The Secretary of Transportation ultimately approves each intersection in conjunction with a crash evaluation and field review by District 6-0 traffic staff and PennDOT’s Bureau of Highway Safety and Traffic Engineering. PennDOT’s Center for Program Development and Management administers the ARLE Funding Program.

Within the PPA, an ARLE unit was established and originally staffed with two people. As the program has expanded over time with additional cameras and intersections, the total number of staff members has grown as well. It presently includes seven people—a manager, deputy manager, and five clerks.²

The PPA's role in the ARLE program is limited to red light enforcement, e.g., motorists are not ticketed or fined for having an expired registration or faulty tags, etc. Registered vehicle owner information obtained as a result of the program does not become the property of the vendor (ATS) or the PPA. Legislation further mandates that the program's cameras may not be used for surveillance purposes.

2.1.2 Approved ARLE Intersections

ARLE intersections are as shown in Table 1 and spatially in Figure 3. A majority of the intersections are currently in Northeast Philadelphia, although more are being installed in Center City, northwest, and in other parts of the city. Nine of the current intersections are located along US 1 / Roosevelt Boulevard, a principal arterial highway that traverses a densely developed residential area and serves as a spine of the northeastern part of the city.³ By the end of 2011, PPA anticipates having 21 city intersections equipped with cameras. It should be noted that most of these are on state-owned roadways.

As a 12-lane, divided highway, Roosevelt Boulevard offers some of the most challenging intersection geometry in Pennsylvania from a traffic engineering perspective. Figure 2 shows the complexity of the first ARLE-monitored intersection, at Roosevelt Boulevard's intersection with Grant Avenue. A study by State Farm insurance had identified it as "the third most dangerous intersection in the country."

Figure 2: Roosevelt Boulevard and Grant Avenue



Source: Google Maps

² PPA has approximately 1,000 total employees.

³ Of the corridor's 52 signalized intersections, nine are now monitored by red light cameras



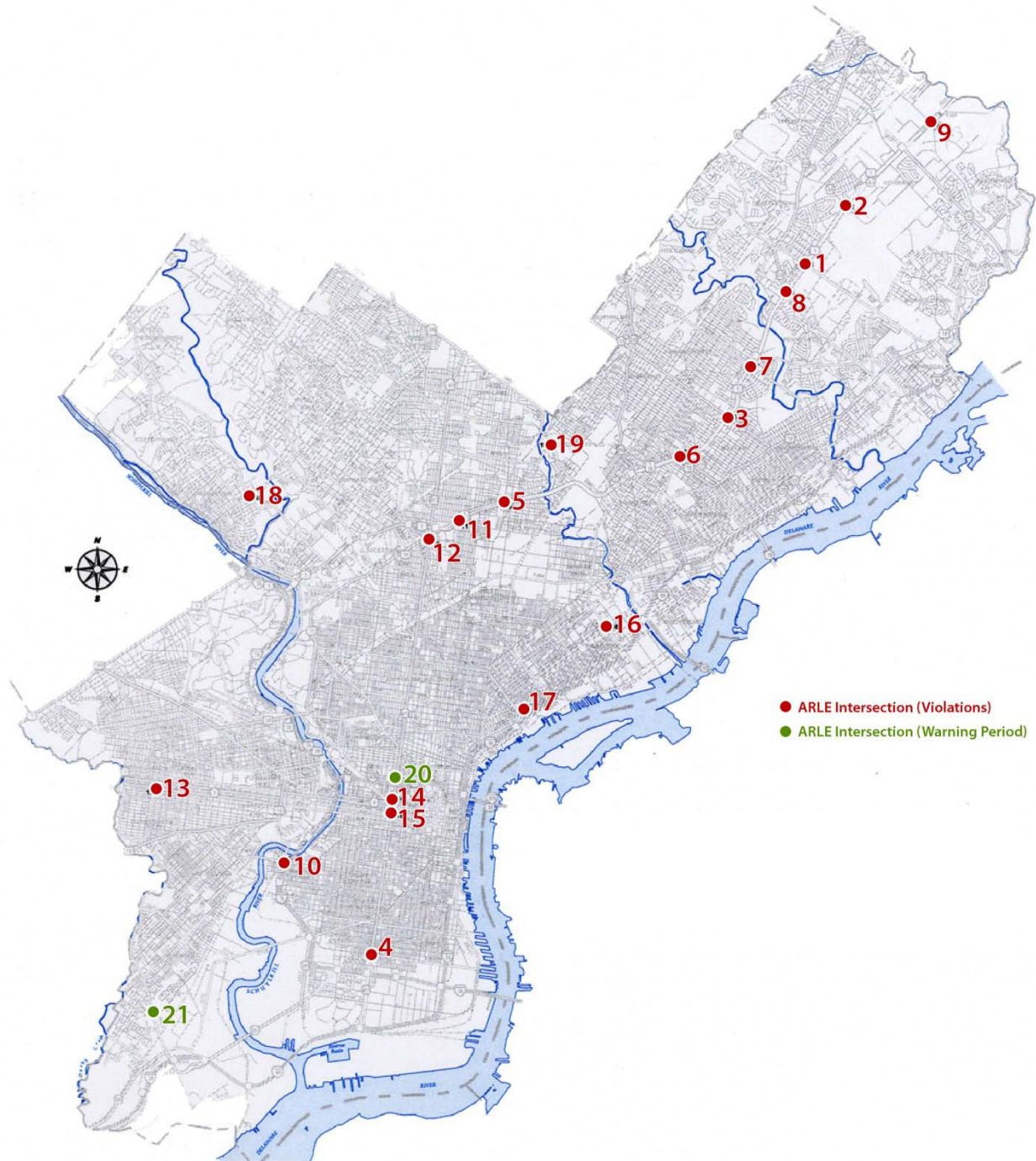
Table 1: Key Dates of ARLE Intersection Locations

Location #	Intersection Name	PennDOT Approval Date	Enforcement Date
1	Grant Ave. and Roosevelt Blvd.	12/14/04	6/23/05
2	Red Lion Rd. and Roosevelt Blvd.	12/14/04	9/15/05
3	Cottman Ave. and Roosevelt Blvd.	12/14/04	11/6/05
4	Broad St. and Oregon Ave.	8/04/06	11/21/06
5	Mascher St. and Roosevelt Blvd.	2/08/07	8/07/07
6	Levick St. and Roosevelt Blvd.	2/08/07	8/07/07
7	Rhawn St. and Roosevelt Blvd.	2/08/07	8/07/07
8	Welsh Rd. and Roosevelt Blvd.	2/08/07	8/07/07
9	Southampton Rd. and Roosevelt Blvd.	2/08/07	8/07/07
10	34 th St. and Grays Ferry Ave.	8/04/06	12/21/06
11	9 th St. and Roosevelt Blvd.	8/20/08	1/08/09
12	Broad St. and Hunting Park Ave.	8/20/08	1/08/09
13	58 th St. and Walnut St.	8/20/08	1/08/09
14	JFK Blvd. and Broad St.	9/03/09	12/08/09
15	South Penn Square and Broad St.	9/03/09	12/08/09
16	Aramingo Ave. and Castor Ave.	10/13/09	3/02/11
17	Aramingo Ave. and York St.	10/13/09	3/02/11
18	Henry Ave. and Walnut Ln.	10/13/09	11/13/10
19	Rising Sun Ave. and Adams Ave.	10/13/09	11/13/10
20	Broad St. and Vine St.	6/7/11	<i>pending</i>
21	Island Ave. and Lindbergh Blvd.	7/25/11	<i>pending</i>

Source: Philadelphia Parking Authority and PennDOT

The City is considering additional intersections to be added to the program, including the intersection of Bustleton Avenue and Byberry Road, and Grant Avenue and Academy Avenue.

Figure 3: ARLE Intersection Locations



Source: PennDOT Bureau of Highway Safety and Traffic Engineering



2.1.3 ARLE Procedures

This section outlines the procedures that are followed in adding intersections to the ARLE program, as well as the specific steps that are used in identifying violators at the camera-equipped intersections. Table 2 provides a summary of the process the City undergoes in adding intersections to the ARLE program.

Table 2: Process for Adding Intersections to the ARLE program

Step	Description	Notes
1	City Council approves a recommendation to add an intersection to the ARLE program	<ul style="list-style-type: none"> PPA will research intersections at the request of City Council. PPA has red light running crash data it uses in advising the council. The authority also weighs public opinion and crash projections in making a recommendation.
2	Intersection request is reviewed by the City’s Streets and Services Committee with PPA and vendor	<ul style="list-style-type: none"> Group will perform a site visit at the proposed intersection to discuss approaches and aspects such as sign placement and the signal hardware.
3	City formally makes a request to PennDOT to install cameras at an ARLE-controlled intersection	<ul style="list-style-type: none"> In addition to the other data it uses, PPA’s vendor will perform a Violation Incident Monitoring study. They will install temporary cameras to examine red light running trends or right turns on red in order to evaluate the intersection.
4	PennDOT performs a field evaluation	<ul style="list-style-type: none"> Representatives from BHSTE and District 6-0 will participate with PPA and the City Streets Department to view the intersection and proposed installation.
5	PennDOT authorizes the intersection	<ul style="list-style-type: none"> PennDOT will respond with a letter from the Secretary or his designee. The letter will either indicate approval, disapproval, or note if modifications are required.
6	City Council formally approves each ARLE-controlled intersection by ordinance.	<ul style="list-style-type: none"> The City approves a specific ordinance for each installation of a camera, or Council may do it by groupings of cameras. A sample ordinance is included in the report appendix in Section 5.4 on page 61.
7	PPA’s vendor installs cameras	<ul style="list-style-type: none"> Equipment is installed and a 60-day warning period commences before fines formally go into effect.
8	PPA operates and maintains ARLE intersections	<ul style="list-style-type: none"> PPA will issue a press release alerting the media of the new ARLE-enabled intersection. PPA and the vendor will also inspect each site weekly to verify that signs are still in place and that the cameras have not been damaged or removed.

Source: Philadelphia Parking Authority

According to PPA, camera operations have experienced very little downtime. The only interruptions have been caused by hardware failures or power issues. Cameras are normally down for only a few minutes, but never more than one or two days. ATS is able to perform much of the maintenance remotely.

The process for identifying and ticketing red light violators is shown in Table 3.

Table 3: Steps in Identifying and Ticketing Violators of an Automated Red Light Enforcement System

Step	Description	Notes
1	ARLE camera photographs a motorist running a red light	<ul style="list-style-type: none"> • ARLE cameras are interfaced with the traffic signal controllers and detectors that monitor traffic (the ARLE system is separate from the traffic signal operation). The cameras automatically photograph vehicles driven into an intersection after the light has turned red. Photos are triggered immediately after the light changes. (PPA is required to use still images—not video—as part of its review.) • Two images are taken—a First Rear Image and a Second Rear Image. <ul style="list-style-type: none"> ○ First rear image: The “A” shot is captured from the rear, showing: the scene of the violation including the back of the violating vehicle in front of the violation line; one or more visible red light signals; and a clear image of the license plate of the offending vehicle, all from the single, base image. ○ Second rear image: The “B” shot is also captured from the rear, showing: the scene of the violation including the back of the violating vehicle after the rear axle has crossed the stop line and the vehicle has illegally entered the intersection; one or more visible red light signals; and a clear image of the license plate of the offending vehicle, all from the single, base image. • The license plate image is then cropped. (For the court and police department, this is the most significant technology innovation in photo enforcement.) A magnified “crop” of the license plate is generated for easy viewing. The cropped license plate is a close-up view of the original violation image. This image can be taken from either the “A” or “B” image captured.
2	Vendor sends images to PPA clerks for review	<ul style="list-style-type: none"> • PPA clerks review the images for potential violations. Plate characters are entered into a database to verify whether the plate matches the vehicle in the DMV database. PPA has a secure Web-based log-in with two user IDs to the vendor’s system.



3	PPA Manager review	<ul style="list-style-type: none"> Supervisor verifies the clerk’s decision. Any activity that is logged on can be traced to a user.
4	City Police review	<ul style="list-style-type: none"> The City Police perform a final confirmation of the violation. An officer places an electronic signature on the citation, since they are the enforcement authority.
5	Vendor (ATS)	<ul style="list-style-type: none"> PPA has the vendor send the notice to the violator. Up to two notices are sent by the vendor.
6	After two rounds of non-payment, vendor sends to PPA’s collection services vendor (ACS)	<ul style="list-style-type: none"> When tickets become delinquent, the vendor sends the information to PPA’s collections services vendor, which begins enforcement of the penalty phase. In accordance with the Vehicle Code, the burden of proof rests with the vehicle owner.

Source: Philadelphia Parking Authority

2.1.4 Financial History

Since the ARLE program’s inception, it has generated a total of \$45.5 million in revenue. The program has grown incrementally with the addition of new intersections with cameras. Table 4 and Figure 4 show historical trends for the ARLE program against a variety of financial indicators. For FY 2006, PPA reported an operating profit of \$234,060. Those funds were retained to cover the cost of new equipment installation and operations at three additional approved intersections during the warning period and before violation revenue was generated. It should be noted that PPA’s fiscal year ends on March 31 of each year, and is thus out of sync with the State’s fiscal year, which ends on June 30.

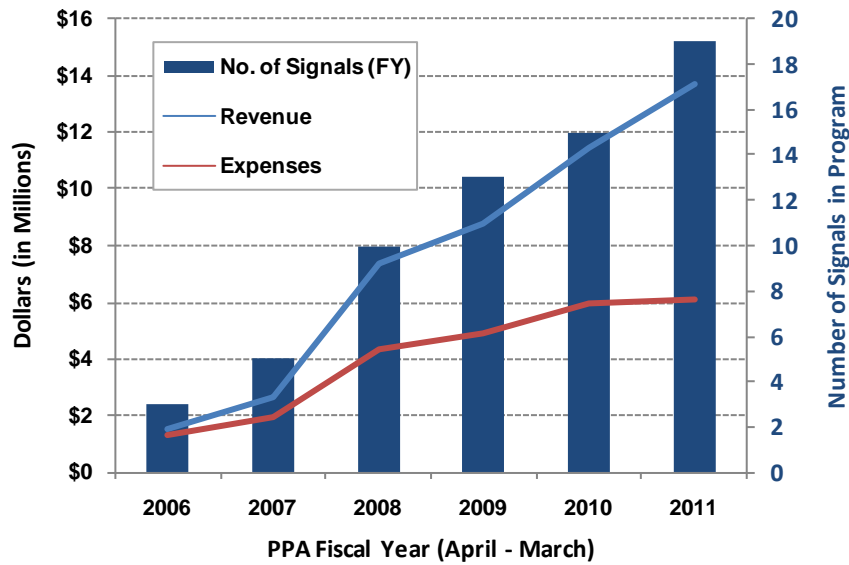
Table 4: ARLE Financial History, FY 2005-10

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Totals
Total Program Revenue	\$1,543,516	\$2,641,283	\$7,362,737	\$8,800,080	\$11,468,537	\$13,728,479	\$45,544,632
PPA Program Expenses	\$1,309,456	\$1,962,976	\$4,340,401	\$4,884,389	\$5,971,890	\$6,082,796	\$24,551,908
Net Income	\$234,060	\$678,307	\$3,022,336	\$3,915,691	\$5,496,647	\$7,645,683	\$20,992,724
Yearly Total of Unpaid Violations	\$735,900	\$580,346	\$1,293,206	\$1,242,228	\$2,250,066	\$2,035,120	\$8,136,866
Motor License Fund Payments	\$0	\$752,367	\$2,521,943	\$4,510,394	\$5,365,691	\$7,196,647	\$20,347,042

Source: PPA Annual Reports

Note: Differences in Net Income and MLF payments are due to the PPA and Commonwealth fiscal years being out of sync.

Figure 4: ARLE Program Revenue and Expenses, 2006-11



Source: PPA Annual Reports

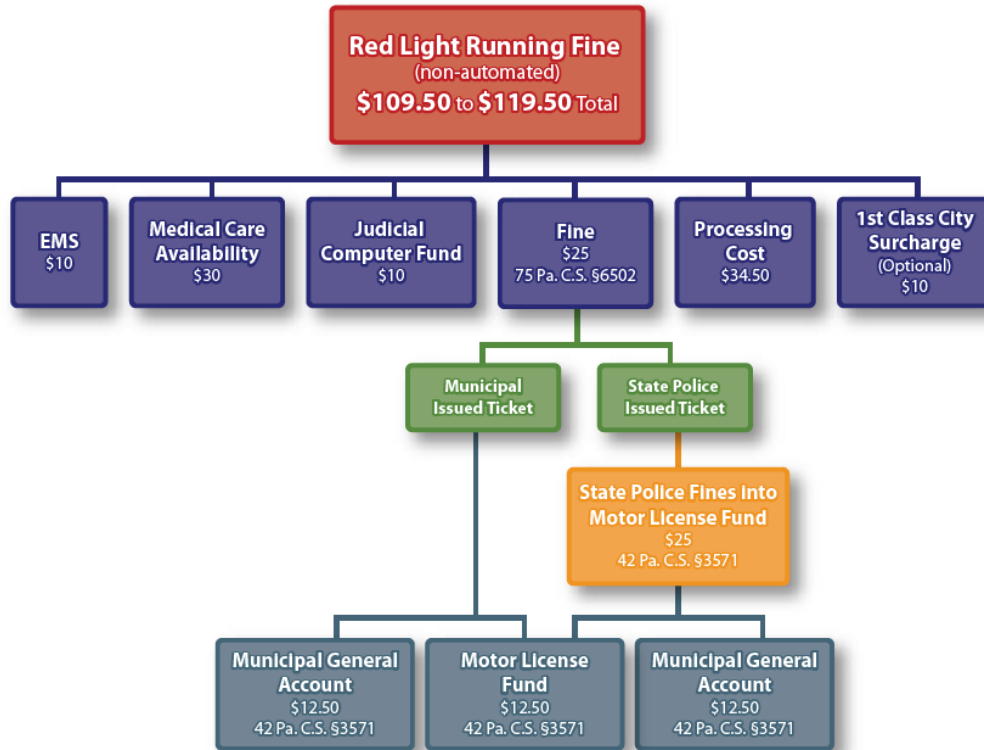
2.1.5 Administration and Collection of Fines

PA Vehicle Code (Title 75 – Section 3116) established a \$100 fine for ARLE violations. The revenues first go toward covering the maintenance and operating costs borne by PPA. Half of the revenue is used for the ARLE Funding Program in the municipality of origin (currently only the City of Philadelphia), with the remainder being used statewide for the ARLE Funding Program.

The split is based in part on how fine revenues have been allocated historically, based on the funding logic used for non-automated red light enforcement violations. PennDOT had conducted a review of the ARLE fine policy as part of the regulation development and determined that it should mirror that of the non-automated red light running violation process. *Non*-automated red light fines have also been distributed using a 50/50 split between the municipality of origin, with the balance going to the state (as shown in Figure 5). More specifically, if the fine is being administered by a municipal police officer, half of the fine is deposited into the Motor License Fund (MLF) and the other half is retained by the municipality for unrestricted use in their general account. When a *state* police officer administers the fine, the *entire fine* is deposited into the MLF, where it is separated into two different accounts. Half of the fine is deposited into the MLF and the other half into an earmarked account within the MLF. The earmarked account is then distributed to the state’s municipalities at the end of the fiscal year through the same formula as liquid fuels distribution (50 percent population and 50 percent locally-owned roadway mileage).



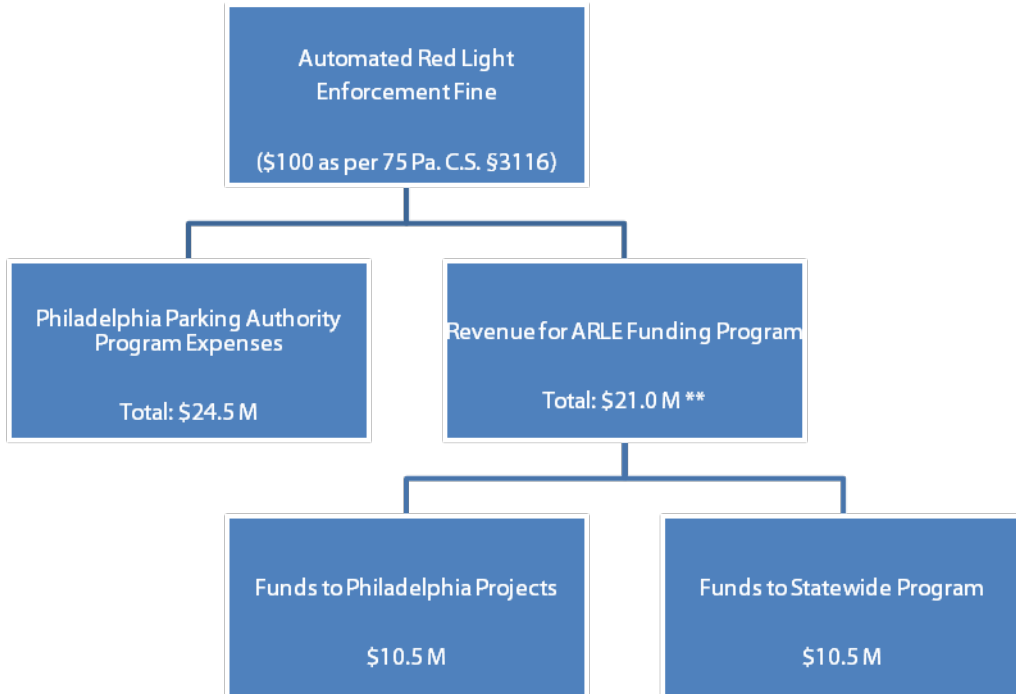
Figure 5: Non-automated Red Light Running Fine Breakdown



Source: PennDOT

Figure 6 demonstrates how fine revenue is distributed between maintenance and operations costs and the ARLE Funding Program. PPA deducts all program expenses prior to submitting the net program income to the Department for depositing into the Motor License Fund. It should be noted that PennDOT does not use any program revenue to cover administrative costs related to review of proposed ARLE intersections or the ARLE Funding Program. This fact may become more of an issue if the program continues to grow.

Figure 6: ARLE Funding Disbursement



** NOTE: \$16.8 million has been awarded to eligible projects, to date, based on the timing of the Program’s funding cycle

The penalties for an ARLE violation are different than for a standard red light violation. ARLE-induced fines are actually lower than their non-automated counterparts, as motorists who are caught by police receive three points on their driving record and must pay a fine of \$109.50.⁴ Motorists who are identified by *both* the police and red right cameras are treated as a non-automated violation. Motorists who are found in violation only through the use of red light cameras do not receive any points since it is the vehicle (and not the driver) that is identified.

PPA has contracted with Affiliated Computer Services (ACS) to provide data management services, specifically ticketing. When tickets become delinquent, ATS sends the information to ACS for processing. Delinquent fines jump from the initial \$100 to \$120, then \$145, then to a maximum amount of \$175, before being sent to Collections.⁵ ATS handles the first two rounds of enforcement, before ACS becomes involved. Violation notices include space where the vehicle owner can sign for an appeal to the Office of Administrative Review. If that decision is also appealed, the matter goes before the Philadelphia Traffic Court. This step incurs a \$35 fee, payable regardless of the outcome of the court’s decision.

Following the first year of operations, the City amended the City Traffic Code to allow additional fees to be levied, as well as immobilization and impoundment of a violator’s vehicle if red light running fines have gone unpaid after three notices. PPA prepares and mails a notice of violation addressed to the

⁴ Cities of the First Class may add a \$10 surcharge.

⁵ After a vehicle owner has received three outstanding tickets/violations, his vehicle then becomes “boot eligible.”



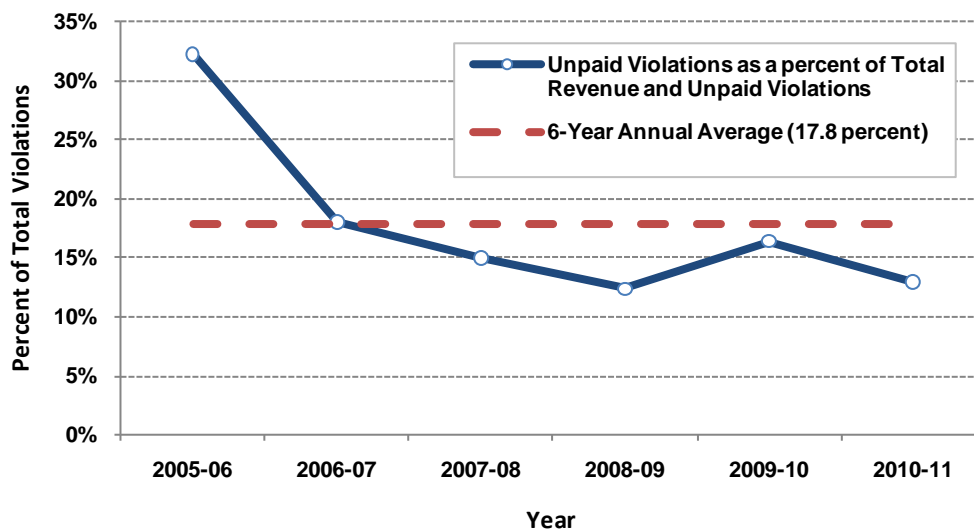
registered owner of a vehicle identified in a photograph produced by an automated red light enforcement system. The vehicle may be removed by towing to the nearest Official Towing Station, or immobilized for up to 72 hours by applying a boot and then towing it to an Official Towing Station if not reclaimed. Since these procedures were implemented, PPA has been able to increase its collection rate to over 80 percent.

The Pennsylvania legislation amended the Vehicle Code through Act 67 in December 2007. This extended the duration of the ARLE program to December 31, 2011. It also permitted the use of more modern digital image technology over the use of wet film, which has improved conviction rates. The number of violations that needed to be “thrown out” due to equipment limitations declined considerably after this upgrade, and only 4 percent of violations had to be thrown out as a result.

Common situations where violations are “thrown out” include instances where the characters on the license plate cannot be identified conclusively. PPA has encouraged funeral directors to apply stickers on the rear of vehicles in funeral processions to improve ARLE enforcement accuracy. Per the Vehicle Code, the PPA cites motorists only for red light running and not for other potential violations such as faulty or expired registrations.

At the program’s inception in 2005, unpaid violations accounted for 32 percent of the program’s total violations. The rate of unpaid violations declined dramatically after the program’s inaugural year, and has consistently remained below 20 percent of total violations for each year thereafter, as shown in Figure 7. The City’s collection efforts include boot eligibility for three or more unpaid parking and/or red light tickets, law firm collections for difficult-to-collect amounts, and ongoing delinquent tax notices.

Figure 7: Unpaid Violations as a Percent of Total Violations

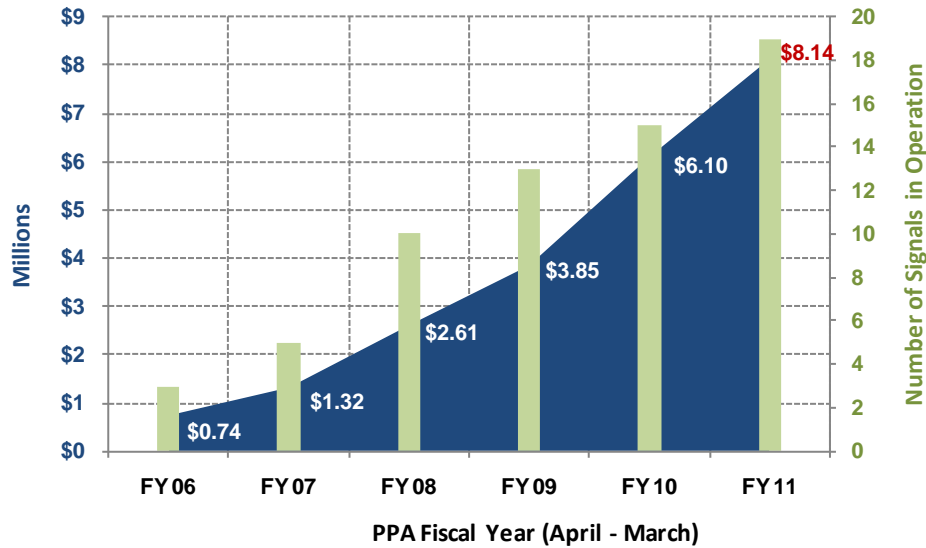


Source: Philadelphia Parking Authority Annual Reports

Figure 8 shows the cumulative unpaid violations since the program’s inception against the total number

of traffic signals in the ARLE program. As noted earlier, PPA has been able to increase its fine collection rate to over 80 percent. While the \$8.1 million in cumulative unpaid violations is significant, the collection rate compares favorably to other programs around the country.

Figure 8: Cumulative Unpaid Violations, FY 2006-11



Source: PPA Annual Reports

A review of other states shows that some outside vendors are reimbursed based on the total number of fines collected. This is not the case in Philadelphia, where vendors are paid a set amount. This prevents the ARLE program from being used primarily as a revenue generator.

Table 5 provides a summary description of the types of expenses incurred as part of administering the ARLE program. These expenses vary from year to year, as do the number of operational intersections. A significant share of program expenses is associated with the installation and maintenance of ARLE-related equipment. In FY 2010, for example, this accounted for nearly two-thirds of the cost of running the program. PPA’s annual program expenses for ARLE have averaged over more than \$5.3 million over the past four fiscal years.

Table 6 details the specific expense line items that are included in Table 5.



Table 5: Summary of ARLE Program Expenses and Revenue, FY 2008-11

	2008	2009	2010	2011	Average	Percent of Operating Costs
Number of Intersections Operational	10	13	15	19	14	
Total # of Intersection-Months Operational	110	138	168	191		
ATS Processing Fee	\$2,835,952	\$3,232,380	\$3,795,500	\$4,135,133	\$3,499,741	65.8%
Ticket Processing Fees	\$134,232	\$306,874	\$431,015	\$353,211	\$306,333	5.8%
Philadelphia Police Dept.	\$33,112	\$30,508	\$30,546	\$83,006	\$44,293	0.8%
Philadelphia Dept. of Finance	\$48,713	\$19,316	\$121,884	\$60,097	\$62,503	1.2%
Personnel Costs	\$407,034	\$362,944	\$397,475	\$476,754	\$411,052	7.7%
PPA Support	\$762,562	\$653,441	\$782,980	\$783,656	\$745,660	14.0%
Equipment Rent Expense		\$50,791	\$58,349	\$53,041	\$54,060	1.0%
Government Relations/Media Consulting		\$30,000	\$27,500	\$32,500	\$30,000	0.6%
Technical Program Review		\$33,117	\$10,327	\$9,514	\$17,653	0.3%
Credit Card Fees		\$26,619	\$37,863	\$53,267	\$39,250	0.7%
Intersection Upgrade			\$81,540		\$40,770	0.8%
Other Expenses	\$118,796	\$138,399	\$196,911	\$42,617	\$124,180	2.3%
PPA Total Operating Costs	\$4,340,401	\$4,884,389	\$5,971,890	\$6,082,796	\$5,319,869	
PPA Total Program Revenue	\$7,362,737	\$8,800,080	\$11,468,537	\$13,728,479	\$10,339,958	
Total Operating Cost of Each Intersection per Month	\$39,458	\$35,394	\$35,547	\$31,847	\$35,561	
Total Number of Violations Needed per Month to Recoup Operational Costs	395	354	355	318	355.5	
Total Number of Violations Needed Annually to Recoup Operational Costs	4,735	4,247	4,266	3,816	4,266	

Source: Philadelphia Parking Authority; PennDOT Revenue Summary Reports
Note: Reference Table 6 for explanation of expenses categories

The last two rows indicate the magnitude of violations that are needed in order for the program to recoup its operational costs. As shown, the program now requires approximately 318 monthly violations per traffic signal (or 10½ daily) in order to recoup the operation and maintenance costs at each intersection. This is an important issue in considering the potential expansion of the program to other areas of the state.

Table 6 provides more detail on the specifics of each of the line items regarding PPA’s operating expenses.

Table 6: Summary of PPA Operating Costs

Line Item	Description
ATS Processing Fee	<ul style="list-style-type: none"> Installs and maintains the cameras, manages data and provides technical support.
Ticket Processing Fees	<ul style="list-style-type: none"> Paid to ACS for collection services
Philadelphia Police Dept.	<ul style="list-style-type: none"> Reviews and approves/rejects violation photographs
Philadelphia Dept. of Finance	<ul style="list-style-type: none"> The Office of Administrative Review is the office responsible for first-level hearings on contested violations.
Personnel Costs	<ul style="list-style-type: none"> Includes current staff salaries and fringe benefits as well as approximately one year staff support prior to implementation.
PPA Support	<ul style="list-style-type: none"> The allocated expense for PPA support services such as human resources, purchasing, IT, management, security, etc.
Equipment Rent Expense	<ul style="list-style-type: none"> Allocated rent expense to PPA equipment
Government Relations/ Media Consulting	<ul style="list-style-type: none"> Public awareness
Technical Program Review	<ul style="list-style-type: none"> Includes report production costs
Credit Card Fees	<ul style="list-style-type: none"> Fees paid on collection of credit card payments
Other Expenses	<ul style="list-style-type: none"> Miscellaneous expenses such as office supplies, uniforms, auto expenses, etc.

Source: Philadelphia Parking Authority

2.1.6 Safety Benefits and Violation History

Figure 9 summarizes trends in total violations through March 2010. The summary is based on collective monthly data from 13 ARLE intersections. The data show a peak of 20,481 total violations the month the cameras were installed, followed by a slight decrease during the 60-day warning period,⁶ and then a slight increase to 20,146 the month immediately following the warning period. Within a year after ARLE

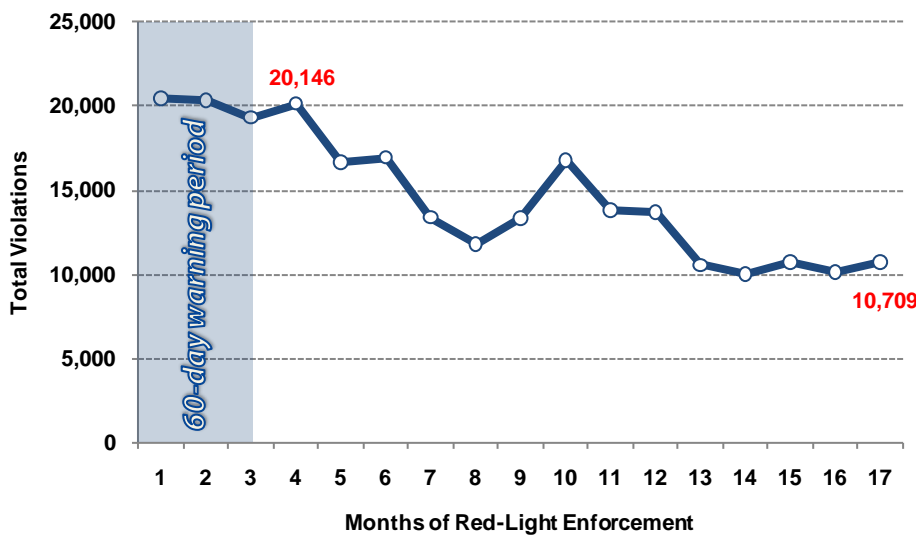
⁶ 75 Pa. C.S. §3116 (d)(1) requires a minimum 60-day warning period prior to fines being given.



implementation, the number of monthly fines was down to 13,727, and by Month 17, was down to nearly half of what it was prior to fines taking effect. Based on the data, total violations appear to reach their low point and stabilize by Month 13, as shown in Figure 9.

Several intersections exhibited a spike in total violations during Month 10. At the intersection of Roosevelt Blvd. and Levick Street, total violations nearly doubled, while at Broad Street and Oregon Avenue, they nearly tripled. It is unclear why this phenomenon occurred, although the overall trend program-wide is a declining number of total violations through the first year of enforcement. The data does not indicate any seasonal variations in violations.

Figure 9: Overall Automated Red Light Enforcement Violations

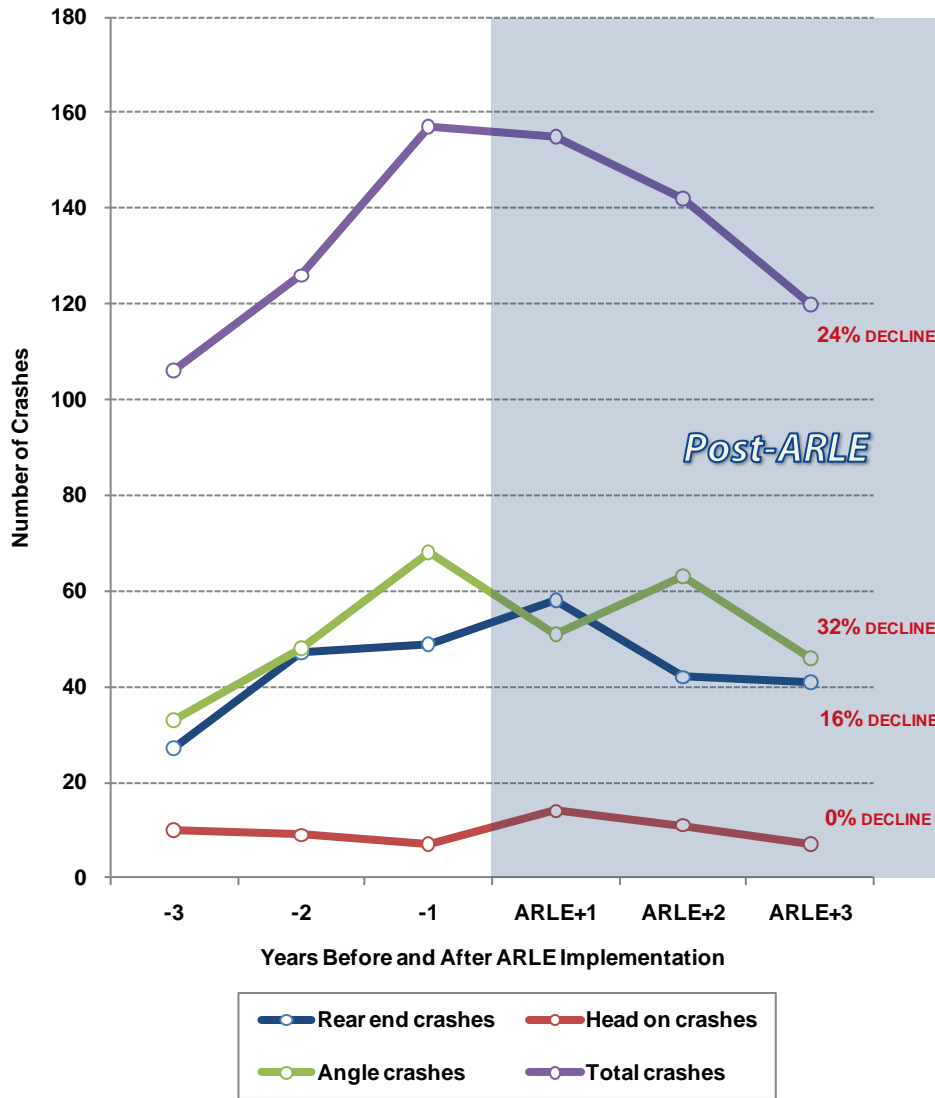


Source: Philadelphia Parking Authority

A crash analysis was performed to evaluate the potential safety benefits of Pennsylvania’s ARLE program. This included an examination of intersection crash history both before and after the implementation of ARLE to determine whether a significant reduction in crashes occurred. Only intersections with at least three years of crash data after the implementation of ARLE were used in the analysis. Although there are currently 19 active ARLE-controlled intersections, only 10 intersections had at least three years of available post-ARLE crash data. The crash analysis looked at the following crash data for each intersection: overall number of crashes, crash severity, right angle crashes, and rear end crashes.

Crash experiences for ARLE-controlled intersections varied significantly. Some intersections experienced an increase in overall, angle, and rear end crashes while the others experienced a decrease in overall and angle crashes and a slight increase in rear end crashes. Overall, total crashes declined by just over 24 percent with specific types of crashes also decreasing, as shown in Figure 10.

**Figure 10: Collective Crash History Before and After Implementation
(for 10 intersections by date of ARLE Implementation)**



Source: PennDOT

While there may be mixed results in the types of crashes experienced, crash severity has decreased at each of the intersections. Crash severity is a factor in the number of reported injuries and their respective severity levels. PennDOT groups crash severity into five categories: fatality, major, moderate, minor, and unknown. A 24 percent reduction in overall injury crashes was experienced for the study intersections, as shown in Table 7.



**Table 7: Summary of Crash Severity at 10 ARLE Intersections
Before and After Implementation**

	Fatalities	Major	Moderate	Minor	Total
Before ARLE	6	7	98	346	457
After ARLE	2	9	56	279	346
Net Change	4	-2	42	67	111
% Reduction	66.67%	-28.57%	42.86%	19.36%	24.29%

Source: PennDOT Bureau of Highway Safety and Traffic Engineering

With regard to safety, it appears that the ARLE cameras decrease both the number of crashes and crash severity, but there are significant variations by intersection. There has not been enough crash data collected to draw a definitive conclusion. Crash data should continue to be collected and analyzed at each of the ARLE intersections to verify their effectiveness.

The PPA performed a study in August 2008 (Red Light Photo Enforcement Analysis) which evaluated intersections in the City of Philadelphia near ARLE intersections. Based on the evaluation, a decrease in the total number of red light running crashes are comparable to the ARLE intersections. It was theorized that drivers maintain their positive driving behaviors after passing through red light camera intersections.

2.1.7 The ARLE Funding Program

The automated red light enforcement program requirements are indicated in 75 Pa.C.S. §3116 and promulgated in Title 67, Chapter 233. The ARLE Funding Program is funded using revenue in a restricted motor license account that has been generated from Automated Red Light Enforcement Systems. It is administered by PennDOT’s Center for Program Development and Management and the Bureau of Highway Safety and Traffic Engineering. Chapter 233 was added to Title 67, which outlines the policy PennDOT follows related to the ARLE Funding Program.

The overall intent of the ARLE program is to improve safety. However, there has been revenue generated by the program. During the rulemaking process, there were conflicting views expressed on how fine revenues should be distributed. One view is that all funds generated within the City of Philadelphia should be distributed to fund grants in the municipality of origin (Philadelphia). A competing view holds that all municipalities should be eligible to receive monies from the ARLE grant program. The legislation in fact requires that net revenues be deposited in the Motor License Fund and called on PennDOT to establish by regulation a “Transportation Enhancement Grants Program.”⁷

In formalizing the rule-making, PennDOT added §233.8(g) to 67 Pa. Code, which relates to the grant selection process and related criteria. The subsection provides that the local government in which a

⁷ This is how the program is worded in the Vehicle Code, and should not be confused with the federal Transportation Enhancement program.

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violation was prosecuted will be entitled to 50 percent of the net grant revenues generated by that local government through the ARLE program. The balance would then be available to eligible sponsors, including those governments generating the revenues. All revenues are to be used for eligible projects, whether by the host municipality or other local government sponsors.

Currently, the Philadelphia Parking Authority (as the City’s administrator) provides PennDOT with quarterly deposits of revenue generated by ARLE violations. These monies are deposited into a restricted Motor License Fund account. As noted earlier, the PPA deducts all program expenses prior to submitting the remaining revenue.

From this funding stream, “eligible sponsors” may submit an application(s) within the parameters developed in 67 Pa. Code, Chapter 233. No matching funds from the sponsor are required. As part of the program, PennDOT has identified types of projects that are eligible to be funded through the ARLE Funding Program. These project types deal primarily with improving the safety and mobility, and address such things as the upgrade, modernization, or improvements to existing traffic signals or other traffic control devices. A complete listing of all eligible project types under the ARLE Funding Program is shown in the report appendix under Section 5.3 on page 59.

Projects funded through the ARLE Funding Program are evaluated against the following criteria, as outlined in Table 8. Each criterion is referenced back to the appropriate regulation of 67 PA. C.S. §233.8. Both the 50 percent Philadelphia monies and 50 percent statewide monies must be spent on projects that improve highway safety and mobility.

Table 8: ARLE Funding Program Selection Criteria

Grant Selection Criteria Description	Grant Selection Questions
Sponsor’s past maintenance and operational history	At what level does the applicant maintain and operate their existing traffic control devices? (Higher level of maintenance scores higher.)
Project benefits	How does the project improve safety, enhance mobility, reduce congestion, and reduce greenhouse gases? (Higher score for more benefits.)
Project cost	Is the request within the scope of available funds? Is the project cost effective?
Local and regional impact	How does the project support the regional transportation system? (Higher score for smart transportation.)
Previous grant project type results	Does the applicant have a successful track record of completing projects in an efficient and effective manner?
Previously completed projects by the sponsor	Did the applicant receive prior ARLE grant funds? (Higher score for not receiving funds previously.)
Cost sharing	Are there matching funds from other sources? (Higher score for matching funds.)



Grant Selection Criteria Description	Grant Selection Questions
(Other criteria) origination of ARLE funds	Did the funds originate from the municipality that is applying for the grant? (Highest score if ARLE funds originate from the municipality.)

Source: PennDOT Center for Program Development and Management

Information on the ARLE Funding program is available on the PennDOT Web site at the following location:

<http://www.dot.state.pa.us/Internet/Bureaus/pdBHSTE.nsf/BHSTEHomepage?OpenFrameset>

Following the finalization of the regulation, PennDOT solicited projects for the initial round of the grant program. The first distribution of ARLE Funding Program monies occurred on April 26, 2011, with the announcement of \$8.4 million in grants for 120 projects by 106 applicants. In keeping with the tenets of the program, funds were awarded for traffic signals, signing projects, and others directly related to safety. Underscoring the funding demand for these types of improvements, PennDOT received more than 300 applications representing more than \$68 million in proposed projects. The applications were received from 209 municipalities and one planning partner. Table 9 provides more detail on how monies from the program were spent on improving safety at intersections across Pennsylvania.

Table 9: ARLE Funding Used for Intersections, 2010

Description	Number
Total Number of Intersections Improved	3,085
Number of Signalized Intersections Improved	511
LED Upgrades	126
Emergency Preemption ⁸	21
Controller/Equipment Upgrade	160
Retiming/New Phasing	284
Number of Stop Controlled Intersections Improved	2,571
New or Upgrade Fire/Signal Warning Signal	5
Geometric Improvements (Radii, Ped Ramps, etc.) ⁹	15
Total Signs Upgraded for Retroreflectivity	5,569

Source: PennDOT Bureau of Highway Safety and Traffic Engineering

PennDOT also analyzed how money from the ARLE Funding Program is used on safety improvements. A summary of this from the first round is shown in Table 10. It should be noted that, as with the traffic

⁸ It should be noted that safety improvements were part of a larger 2010 ARLE Funding Program request. This improvement was not an independent application request.

⁹ Ibid.

signal preemption and geometric improvement line items noted above, several of the line items shown in the table were part of a larger 2010 ARLE Funding Program request, and do not represent an independent application request. Table 9 and Table 10 should, however, give the reader an idea of how program revenue has been used and leveraged in making safety improvements across the Commonwealth.

Table 10: ARLE Funding Used for Safety Improvements, 2010

Description	Number
Total Number of Locations Receiving Safety Improvements	2,753
Total Signs Upgraded for Retroreflectivity	3,776
New or Improvements to School Zones/SRTS	32
Projects Involving Guiderail Installations ***	4
Number of Delineators Installed ***	714
Projects Installing New CLRS ***	1
Line Striping (miles) ***	11.3
Work Zone Safety Improvements ***	2

Source: PennDOT Bureau of Highway Safety and Traffic Engineering

*** NOTE: Line items were part of a larger 2010 ARLE Funding Program request. These do not represent independent application requests.

The first funding round was not implemented on the appropriate cycle due to the timing of the regulation. A second round was initiated during 2011 with only a partial year of revenue available. Applications under the second round were due from project sponsors on July 31, 2011, for the approximately \$1.5 million that is available. PennDOT expects announcements to be made sometime in autumn 2011.

For the City of Philadelphia, the City Streets Department submits proposed candidates to PennDOT. PennDOT reviews and must approve projects to be consistent with the criteria in the regulation. The City has tapped the ARLE program to help fund a variety of low-cost safety improvements, including crosswalks, signing, and rumble strips. Through the ARLE Funding Program, the City has secured approximately \$8.5 million in funding for operations and safety improvements. Table 11 provides a summary.



Table 11: City of Philadelphia Approved ARLE Projects (in thousands), 2010

Description	Amount
Low cost safety improvements	\$2,600
Intersection safety modifications	\$2,100
Traffic signal retiming program	\$1,500
Migration of signal timing plans into KITS	\$1,000
Adaptive and responsive controllers	\$780
Battery back-up for key intersections	\$260
Pedestrian countdown signals	\$230
Mobile radar signs	\$75

Source: Philadelphia Streets Department

2.1.8 Public Perceptions and Concerns

There is no formal public awareness campaign to make people aware of how the ARLE program is administered. The PPA does however try to be proactive in contacting both print and video media prior to beginning construction at a new intersection. Representatives from PPA will also meet with community groups where there is an active red light camera to raise awareness of the program. The PPA wants the motoring public to know where its cameras are, as ongoing awareness of enforcement measures is important to long-term changes in driver behavior.

PPA has been approached by the media when red light camera issues emerge in other parts of the country. A recent example is the City of Los Angeles’ recent decision to discontinue its red light enforcement program on July 30, citing chronic unpaid violations and concerns over the program’s effectiveness at improving public safety. Also, local (Philadelphia) ABC television station affiliate WPVI recently presented a report on red light cameras with input from PPA.

Despite growing awareness of the cameras and the red light enforcement program, public perception and reaction in Philadelphia has been mixed. In some areas of the country, red light cameras have been met with vociferous opposition, with some cameras being vandalized, stolen, or torn down altogether. In Philadelphia, PPA reports occasional problems with graffiti on the camera boxes and signs. PPA once had two cameras stolen by someone using a bucket truck. (The cameras were later found in a New York City pawn shop.)

The very term “automated” can reinforce a negative perception of the program as “Big Brother,” and that motorists will “automatically” receive a ticket, without any due process of human review or intervention. The internal workings of the ARLE program in fact are anything but automated, with several rounds of review being performed by managers and clerks at the Authority, with plate entry, supervisor verification, and then police department verification. A majority of the time, there are a minimum of three individuals reviewing a violation. ATS has designed the Authority’s software so that there are secure Web-based

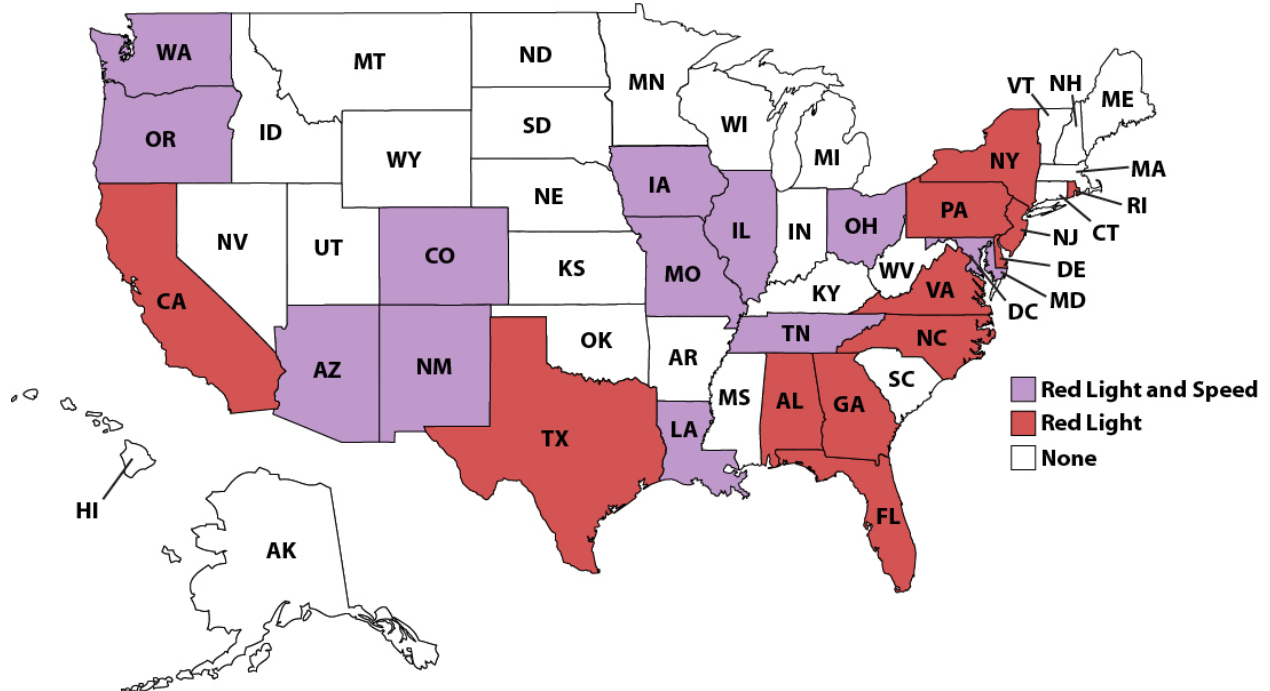
logins with two discrete sign-in IDs. Any activity that is logged on the site can be traced to a user of the system.

In 2003 prior to the first cameras being deployed, PennDOT performed an independent study regarding automated red light enforcement technologies. PennDOT used an online survey to measure public support for the automated program. The results showed that 90 percent of those surveyed agreed that ARLE would be an effective way to reduce the number of drivers who ran through red lights and that 91 percent agreed it would be an effective way to save lives. Additionally, the survey found that 85 percent would support the use of automated red light enforcement technology in their community.

2.2 Red Light Enforcement in Other States

Red light running has been identified as a serious intersection safety issue across the nation. A National Highway Traffic Safety Administration’s 2008 report, *Traffic Safety Facts*, stated that red light running crashes alone caused 762 deaths in 2008. An estimated 165,000 people are injured annually by red light runners. To curtail this alarming trend, local governments have been installing ARLE systems around the country. ARLE programs have been in use in the U.S. since 1993 when they were implemented in New York City. Pennsylvania is one of 25 states, along with the District of Columbia, that operate ARLE programs, as shown in Figure 11. This section discusses some of the other states’ ARLE programs and documents some of the successes and failures experienced.

Figure 11: Red Light Enforcement States



Source: Insurance Institute for Highway Safety (IIHS), September 2011



2.2.1 Other States’ Practices

Since the initial implementation of ARLE in New York City, local governments and states have been installing red light running cameras throughout the country. Each local government/state program has its nuances, but generally the programs are similar.

The first step in the process is for state and/or local governments to create legislation that allows the implementation of automated enforcement. Once legislation is passed, a local government agency is designated as the champion of the ARLE program. Typical champion agencies include parking authorities, police departments, and traffic engineering departments. The champion local government agency launches a competitive process to procure an ARLE vendor to install camera equipment at identified problem intersections. At this juncture, ARLE vendors may opt to perform a feasibility study to approximate the number of expected violations.

Depending on the how the legislation is written, vendors may have to capture photos of the driver as well as the vehicle and license plate (California and Arizona for example require positive identification of the vehicle driver). ARLE vendors begin operating the cameras and sending violations to the champion agency that oversees the program. The local government administrators or police department then confirm violations, vehicle information, and driver identification (if required). The local government agency or ARLE vendor is then responsible for mailing out citations and enforcing penalties for unpaid citations. Unpaid citations are typically turned over to a collection agency if the vendor is mailing citations.

A few states’ ARLE programs were investigated in more detail. Neighboring states’ programs were examined along with states that have had known problems with their program, in particular California. Table 12 summarizes some of the positives and negatives of each of the states’ programs.

Table 12: Other States’ Research – ARLE Experience

State	Positives, etc.	Negatives
California	<ul style="list-style-type: none"> • Legislation requires violation review by law enforcement person. • Local jurisdictions must submit a list of intersections to California DOT for final approval. • A 2005 Orange County report found that collisions dropped 47% in Garden Grove, 28% in Costa Mesa, 16% in Santa Ana, and 12% in San Juan Capistrano one year after ARLE implementation. 	<ul style="list-style-type: none"> • Requires positive identification of driver. • Legislation is vague and does not elaborate on how the ARLE program should operate. • Legislation does not require courts to enforce citations. • Legislation does not place parameters on the cost of the citation; legislators have continued to raise the violation fee.

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State	Positives, etc.	Negatives
Maryland	<ul style="list-style-type: none"> • Legislation requires violation review by law enforcement person. • Citations are mailed to vehicle owners regardless of driver's identity. • Failure to pay or contest citation may result in refusal or suspension of vehicle registration. • Legislation requires yellow signal timing to be reviewed. • Legislation requires review of proposed camera locations and approval by the Maryland State Highway Administration. • Howard County experienced a 55% reduction in angle collisions and an overall reduction in rear end collisions. 	<ul style="list-style-type: none"> • Legislation allows for vendor payment per violation, rather than a flat fee.
New Jersey	<ul style="list-style-type: none"> • Legislation requires violation review by law enforcement person. • Citations are mailed to vehicle owners regardless of driver's identity. • Require intersections to meet certain criteria (crash history, red light running issue, etc.) before installing cameras and must be approved by the Transportation Commissioner. 	<ul style="list-style-type: none"> • Legislation does not place parameters on the cost of the citation. • Legislation allows for vendor payment per violation, rather than a flat fee.
Virginia	<ul style="list-style-type: none"> • Legislation requires violation review by law enforcement person. • Legislation places a cap on the fine. • Citations are mailed to vehicle owners regardless of driver's identity. • Local jurisdictions must 	<ul style="list-style-type: none"> • Legislation did not address requirement of in-hand summons for unpaid violations. • Inconclusive crash history results before and after ARLE implementation.



State	Positives, etc.	Negatives
	<p>submit a list of intersections to VDOT for final approval.</p> <ul style="list-style-type: none"> No locality shall enter into agreement with an ARLE vendor where compensation is based on the number of violations or monetary penalties. Legislation requires review of proposed camera locations and approval by VDOT. 	

Source: TAC Consulting Team

The next two sections examine the positives and negatives in more detail.

2.2.1.1 Legislative Concerns/Issues

Some local governments have suspended their red light running programs in recent years, in particular Los Angeles, because of the lack of financial sustainability and poor public perception. The problem concerning revenue generation can be traced back to original legislation. Ambiguities and vagueness in the legislation have provided loopholes for violators to avoid payment, and negative attitudes have developed toward ARLE systems.

One concern with California and Arizona law is that both require positive identification of the driver through photographs taken by the red light camera. If the driver cannot be positively identified, the ticket is automatically thrown out. The programs that require a positive identification of the driver instead of ticketing the vehicle owner typically have a 20-30 percent lower conviction rate.

Another concern with California legislation is the vagueness in the law which could lead to the perception that a program is vendor-controlled. California legislation states that only a government agency in cooperation with a law enforcement agency can operate a program, but the existing law does not specify what “operate” means, leaving it open to interpretation. This weakness has made the red light camera programs vulnerable to legal challenges. The cities of San Diego, San Francisco, Beverly Hills, and West Hollywood have all been sued. A 2001 lawsuit brought against the City of San Diego alleged that the City was not “operating” its red light program. The court ruled that the City was not performing some of the essential oversight functions and therefore not complying with the law.

In California and Virginia, soft legislation does not require courts to enforce the payment of red light violations. In other words, authorities cannot force violators to pay the citation—they can simply refuse to pay. Under California law, court officials have discretion over how they pursue those who do not respond to camera-generated citations. Some courts in California have chosen not to follow up with delinquent citations. For example, the Los Angeles County Superior Court had declined to enforce the tickets partly because the person receiving the citation may not be the same person driving the car. The

court could seek payments via collection agencies, but failures to pay do not show up on personal credit reports, resulting in little to no consequence for an unpaid violation.

Virginia's red light camera statute does not address the Virginia Vehicle Code, which requires an in-person summons for a violation. The mere mailing of a ticket without personal service by a law enforcement officer does not constitute sufficient notice. Successful enforcement of the citations may require personal in-hand service if the accused fails to pay the citation or appear in court, increasing manpower and operations costs. Although the statute permits the local jurisdiction to make the initial attempt to summon an accused violator via mail, if the person fails to respond, he or she is not considered to have been satisfactorily served.

2.2.2 Program Successes

This section highlights legislation and practices that other ARLE programs have implemented to improve program results and public perception.

2.2.2.1 Program Oversight and Stakeholders

ARLE champion agencies should coordinate and establish partnerships with other project stakeholders. Each ARLE program is unique, but typical program stakeholders include:

- ARLE vendor/contractor
- City, County, or State's Attorney's Office
- City, County, or State's Public Relations Office
- Judiciary
- Public Works Department
- Selected Community Representative
- State Department of Motor Vehicles
- State and Local Police Department
- Traffic Engineering Department

By including all program stakeholders, a high level of quality control and ongoing coordination of activities can be conducted to operate the program successfully. ARLE programs are highly visible with the community and need to clearly demonstrate that program objectives and goals are being met.

2.2.2.2 Driver vs. Owner Responsibility Legislation

Although legislation can be written either way, owner liability laws are far more effective than driver responsibility laws. According to the Insurance Institute for Highway Safety (IIHS), states that have implemented driver responsibility legislation must "throw out" more than 60 percent of citations simply because police cannot clearly identify the driver. Glare, dirty windshields, sun visors, missing front plates—even deliberate concealment attempts by drivers—have hindered driver identification such that the majority of offenders escape enforcement. In addition, motorcyclists may be required to wear a helmet by law, effectively making them exempt from enforcement of programs that require driver identification.



Operating red light camera programs under the premise that the vehicle owner is responsible for a red light violation eliminates the concerns about the privacy of individuals within the vehicle and the often difficult process of identifying a person who is not the registered owner of the vehicle.

2.2.2.3 Revenue Generation/Conflict of Interest

There are a variety of ways for state and local jurisdictions to procure an ARLE system. A state or local agency may take on the full responsibility for the system operations and citation processing, or elect to outsource all or specific functions to a private contractor.

For systems where a private contractor is responsible for installation and operation of ARLE equipment, the state or local agency should establish procedures so that the champion agency has complete oversight of the day-to-day operations. Day-to-day operations include verification of equipment operability, violations, and processing of citations.

For systems where a private contractor is responsible for processing citations, compensation to private vendors based on the number of citations should be avoided, as it creates a conflict of interest with the private contractor. Some courts have ruled it inappropriate for a private contractor to be placed in any situation where its judgment in the installation and operation of the system may be influenced by revenue generation. Agencies are eliminating this conflict of interest by installing and operating their own systems or compensating the private contractor based on a flat fee per location.

2.2.3 Violation Experience and Safety Benefits

All ARLE programs examined for this study reported a moderate to significant drop in red light running violations after the cameras were installed. A Maccubbin Study (2001) reported a reduction between 20 and 87 percent for jurisdictions in the U.S. Intersections with the highest reported red light running violations typically experienced the most significant reduction in violations once the cameras were installed. Some ARLE programs have reported experiencing a “spillover” effect where adjacent intersections observed fewer red light runners.

A less enthusiastic result has been observed with regard to safety benefits. A majority of the documents and articles published regarding crash and injury reductions are inconclusive at best. There are numerous studies and documents that refute and contradict one another. For example, a July 2004 study

IIHS Red Light Running Study

A February 2011 study by IIHS concluded that red light camera enforcement programs reduce the citywide rate of fatal red light running crashes and the rate of all fatal crashes at signalized intersections.

Virginia Legislation

A private entity may enter into an agreement with a locality to be compensated for providing the traffic light signal violation monitoring system or equipment, and all related support services, to include consulting, operations, and administration. However, only a law enforcement officer employed by a locality may swear to or affirm the certificate required by subsection C. No locality shall enter into an agreement for compensation based on the number of violations or monetary penalties imposed.

conducted by Burkey and Obeng of the Urban Transit Institute of North Carolina Agricultural & Technical State University, titled, “A Detailed Investigation of Crash Risk Reduction Resulting from Red Light Cameras in Small Urban Areas,” claims that red light running cameras actually increased crashes by 42 percent. The IIHS quickly performed a review of the Burkey and Obeng study and dismissed the methodology used to conclude that red light running cameras increased the number of crashes.

Although there are arguments for either side, the majority of the studies examined (Hillier et al., 1993; Mann et al., 1994; Fox, 1996; Retting and Kyrychenko, 2002) reported a decrease in overall and angle crashes, and a slight increase in rear end crashes. Angle crashes are typically more severe than rear end crashes; therefore a net safety gain is usually realized if the reduction in angle crashes is greater than the increase in rear end crashes. These results are comparable to those experienced in Philadelphia except for the rear end collisions.

A December 2007 study conducted by the Center for Transportation Research and Education (CTRE) at Iowa State University found that red light running cameras reduced red light running crashes in two Iowa communities. Davenport and Council Bluffs experienced *overall* crash reductions of 20 and 44 percent, respectively. In Davenport, a 40 percent reduction in *red light running* crashes was experienced compared to a 90 percent reduction in Council Bluffs.

A November 2008 study performed by the Texas Transportation Institute (TTI), “Analysis on the Effectiveness of Photographic Traffic Signal Enforcement System in Texas,” reported a 30 percent average decrease in crashes at the 56 study intersections. The report also documented that the 56 test intersections with red light cameras had a 43 percent reduction in right angle crashes and a 5 percent overall increase in rear end collisions. Actually, 66 percent of intersections experienced a decrease or maintained the same frequency of rear end crashes.

A May 2010 Institute of Transportation Engineers (ITE) Journal article examined the effectiveness of red light cameras. The study evaluated the crash history results for approximately 15 local jurisdictions, with each location having varied results. ITE concluded that if cameras are installed at locations with significant red light running crashes or violations, the cameras will:

- Substantially reduce red light violation rates.
- Reduce crashes that result from red light running.
- Usually reduce right angle collisions.
- May result in an increase in rear end collisions.
- May or may not reduce the number of total crashes.
- Usually reduce crash severity by virtue of reducing the more severe angle crashes and increasing less severe rear end crashes.

In February 2011, the first study examining the effect of red light camera enforcement on fatal crashes was published by IIHS. The report, titled “Effects of Red Light Camera Enforcement on Fatal Crashes in Large U.S. Cities,” noted that the average annual rate of all fatal crashes at signalized intersections for cities with camera programs decreased by 14 percent, while cities without them increased by 2 percent (Table 13).



When comparing these cities to those without cameras, researchers found that cameras reduced the fatal red light running crash rate by 24 percent and the rate of all types of fatal crashes at signalized intersections by 17 percent.

Table 13: Average Annual per Capita Rates of Fatal Red Light Running Crashes and all Fatal Crashes at Signalized Intersections for Cities With and Without Red Light Enforcement Programs, 1992-96 and 2004-08

	14 Cities			48 Cities		
	With Camera Programs			Without Camera Programs		
	1992-96	2004-08	Percent Change	1992-96	2004-08	Percent Change
Average annual population (millions)	9.02	10.08	11.7	17.07	19.08	11.7
Number of fatal red light running crashes	323	235	-27.2	409	391	-4.4
Number of all fatal crashes at signalized intersections	739	707	-4.3	1,112	1,266	13.8
Average annual rate of fatal red light running crashes per million population	7.16	4.66	-34.9	4.79	4.10	-14.4
Average annual rate of all fatal crashes at signalized intersections per million population	16.38	14.02	-14.4	13.02	13.27	1.9

Source: IIHS, February 2011

While there is contradictory information with regard to crashes, the U.S. Department of Transportation strongly endorses ARLE programs. Their research has shown that red light violations (and ultimately, crashes) decrease at ARLE locations.

2.2.4 Revenue Generation

Revenue is obtained by distributing tickets to red light running violators through vendors or municipal authorities in charge of the program. The citations are paid by the violators or contested, in which case an individual can refute his or her case in a traffic court. According to IIHS, U.S. red light running fines range from \$25 to \$480 per violation.

Total revenue generated by a local government’s ARLE program is determined by the number of red light violators. The conviction rate of those violators ranges between 40 and 80 percent. The conviction rate of violators varied significantly by state due to variations in laws, especially whether or not they require positive identification of the driver.

2.2.5 Public Perception of ARLE

The parameters of an ARLE program and how it is operated seem to shape public perception. As expected based on material presented in earlier sections, Californians generally disapprove of the system and view it as a “money-making scheme” for cash-strapped governments. New Yorkers, on the other hand, are generally in favor of the red light running cameras and see it as a safety benefit. New Yorkers were also in favor of expanding the automated enforcement program to include speed enforcement. Local governments that alert the public of new intersection installations and the dangers of red light running typically have had a better public perception.

City of Charlotte, NC

The City of Charlotte uses a public awareness campaign as a key to program success. They promote the program through media networks (billboards, television, etc), press releases, bumper stickers, and bookmarks. A survey found that 98 percent of residents were aware of the program and 84 percent believed the program was

Most of the documents reviewed displayed positive results for red light cameras with regard to improving safety. A June 2011 IIHS Study, “Attitudes Toward Red Light Camera Enforcement in Cities with Camera Programs,” noted that 66 percent of people surveyed were in favor of ARLE, and that 42 percent strongly favored it. Nearly 9 in 10 drivers were aware of the camera enforcement programs in their cities and 59 percent of those drivers believed the cameras made the intersection safer. Also noteworthy is that most of the drivers surveyed stated that their community should do more to educate the public on red light running and right-turn-on-red violations. Table 14 provides more detail on the results of the recent IIHS study.

Table 14: Opinions about Using Red Light Cameras in 14 Large U.S. Cities with Red Light Camera Enforcement

	Percent
If favor red light cameras, reasons why:	
Increased safety/fewer crashes	61.1
Deterrent/teaches red light runners a lesson	24.0
Enforces the law/can’t always have police	21.8
More accurate than police/objective	5.8
Protects pedestrians/bicyclists, including children	5.8
If oppose red light cameras, reasons why:	
Cameras can make mistakes	26.4
Focus is on money, not safety	26.1
Less safe/drivers speed up or stop abruptly	18.7
Invasion of privacy	16.8
Flash is distracting/nerve-wracking	7.3
Cameras won’t deter/make a difference	6.0

Source: IIHS, June 2011



Some of the most common complaints from the general public regarding automated red light enforcement programs are the following:

- Invasion of privacy (some ARLE programs must identify the vehicle's driver).
- Program was implemented to generate revenue instead of improve safety.
- A perception that local governments shorten the "yellow" interval to increase red light running violations.
- Red light cameras actually increase accidents and make the intersection unsafe.
- Cameras make mistakes.

All of the complaints listed above can be addressed with well written, detailed legislation that outlines program requirements to be executed by state or local governments. The table below lists each complaint presented above and provides solutions that other states have used to curb complaints and improve public perception. A comparison of Pennsylvania's program is provided in the last column.

Some states, such as California, are in the process of reforming their initial ARLE legislation. The accompanying text box discusses some of the proposed changes to improve their program.

Proposed California Legislation

A pending bill in California requires that only a governmental agency in cooperation with a law enforcement agency may operate an automated traffic enforcement system. The bill also states that the governmental agency must perform the day-to-day functions, including, but not limited to:

- Establishing guidelines for intersection selection.
- Ensuring equipment is properly installed, calibrated, and inspected regularly.
- Properly timing and maintaining traffic signals.
- Ensuring that photographic records of traffic enforcement systems are confidential and controls are in place so that violations are only sent to confirmed violators.
- Ensuring that the contract between the governmental agency and vendor does not include a provision for payment or compensation based on the number of citations generated.

Table 15: Common ARLE Complaints

Common ARLE Complaints	Possible Solutions	Pennsylvania Approach
Invasion of privacy	<ul style="list-style-type: none"> Consider holding the vehicle responsible instead of the driver, negating the need for positive identification of the driver. Establish controls that photographic records of automated systems are kept confidential and only sent to the confirmed violator. 	<ul style="list-style-type: none"> Holds the driver responsible, does not require positive identity of the driver. Only a rear photo is taken of the violating vehicle. Legislation states that photographic records can only be used for red light running violations. All photographic records are destroyed within one year of final disposition of any recorded event.
Revenue generator, not a safety program	<ul style="list-style-type: none"> Consider a flat fee contract for vendors, eliminating the opportunity for fees per violation. Create a system of checks and balances between the champion agency, local stakeholder, and vendors to verify the program is operating as intended. Establish guidelines for intersection selection. 	<ul style="list-style-type: none"> Requires flat fee from vendor. PPA reviews violations twice before sending to the city police department to confirm violation and sign-off on citation.
Local governments tamper with the length of the yellow indication	<ul style="list-style-type: none"> Require champion agency to verify signal timings are per national standards (MUTCD). Require oversight/approval of camera intersections by the state DOT. 	<ul style="list-style-type: none"> PennDOT must approve each intersection before ARLE can be installed.
Red light cameras increase accidents	<ul style="list-style-type: none"> Provide up-to-date crash data to the public through media networks. Make sure the public is aware of red light camera intersections. Cite statistics and results from other studies when performing public outreach. 	<ul style="list-style-type: none"> PennDOT continually evaluates crash data to look for problem intersections/corridors. Bureau of Highway Safety and Traffic Engineering has performed crash analyses on ARLE intersections. PPA engages the community through press releases when new ARLE intersections come on-line.
Cameras make mistakes	<ul style="list-style-type: none"> Require equipment to be calibrated or tested on a daily or weekly basis by the champion agency/vendor. 	<ul style="list-style-type: none"> PPA inspects each site weekly to verify signs and that cameras haven't been damaged or removed.

Source: TAC Consulting Team

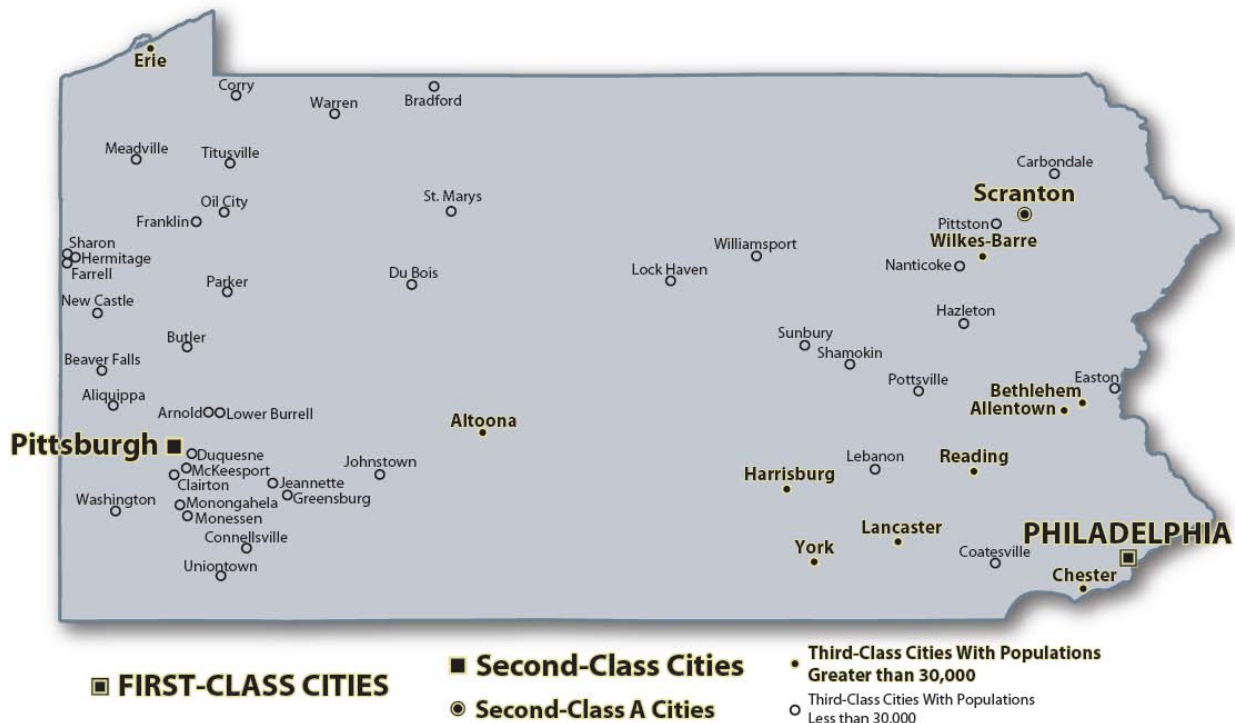


3. Current and Proposed Legislation Regarding the ARLE Program in Pennsylvania

Two bills have been introduced in the General Assembly that would potentially expand the ARLE program and allow other communities within the Commonwealth to implement automated red light enforcement systems. These include House Bill 821 and Senate Bill 595.

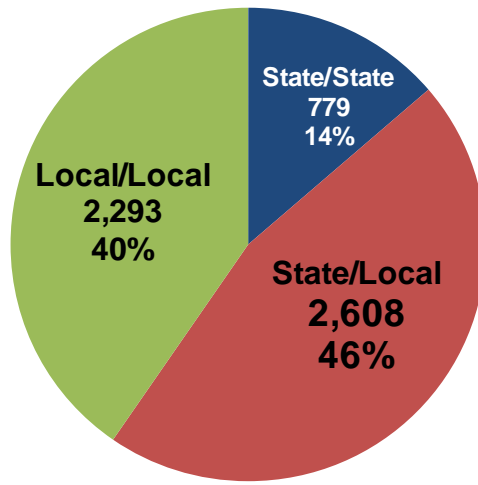
House Bill 821 proposes amending Title 75 (Vehicles) of the Pennsylvania Consolidated Statutes to, in part, provide for automated red light enforcement systems in Second Class, Second Class A, and Third Class cities. Figure 12 below shows the range of cities that could become eligible for the red light enforcement program under the provisions of the bill. These include Pittsburgh, Scranton, and 53 Third Class cities, ranging from the City of Allentown, with a population of more than 118,000, to the City of Parker in Armstrong County, which has a population of 840 and no traffic signals.

Figure 12: Proposed Automated Red Light Enforcement Cities



Expanding the ARLE program from Philadelphia to cities of the third class could involve an approximate total of 5,680 signalized intersections, or 41 percent of the state total. Figure 13 shows the distribution of the state’s traffic signals, by type of intersecting roadway among the state’s largest municipalities, from the City of Philadelphia down to Cities of the Third Class.

**Figure 13: Traffic Signal Locations by Intersecting Roadways
(Cities of the First, Second, Second-A, and Third Class)**



Source: PennDOT Bureau of Highway Safety and Traffic Engineering

Senate Bill 595 would also provide for the expansion of the ARLE program beyond Philadelphia, to include cities of the Third Class *with a population of at least 30,000*. These are delineated on Figure 12. This change would limit the program’s expansion to 12 municipalities in addition to Philadelphia, as shown in Table 16.

**Table 16: Pennsylvania Second and Third Class Cities
Greater than 30,000 Total Population, 2010**

Class	Municipality	Total Population
2	Pittsburgh	305,704
2A	Scranton	76,089
3	Allentown	118,032
3	Erie	101,786
3	Reading	88,082
3	Lancaster	59,322
3	Bethlehem	55,639
3	Harrisburg	49,528
3	Altoona	46,320
3	York	43,718
3	Wilkes-Barre	41,498
3	Chester	33,972

Source: U.S. Census Bureau



The added language in the Senate Bill would exclude the Commonwealth's smaller Third Class cities, yet would also exclude numerous large municipalities, such as State College Borough (population 42,034) and 23 large suburban townships such as Upper Darby (82,795) and Lower Merion (57,825) in Delaware and Montgomery counties, respectively.

Beyond total population of a municipality, the proposed legislation does not recognize regional patterns of driver behavior and other human factors that may affect the number of red light running violations. For example, drivers in major metropolitan areas tend to be more aggressive than those in smaller urban areas and more rural areas. The National Highway Traffic Safety Administration (NHTSA) has quantified these differences in driver behavior, as shown in Table 17.

PennDOT has performed an analysis of how an expanded program would perform, based on certain assumptions. Highlights of the analysis are shown in Table 17. This shows that, based on certain assumptions, expanding the ARLE program to Cities of the Second and Third Class would result in a Year 1 loss of more than \$10.7 million, with nearly every municipality losing money. Only in the City of Pittsburgh would the program be expected to be self-sustaining. Due to an expected reduction in violations, subsequent years would be expected to see even heavier financial losses (with the City of Pittsburgh ultimately losing money, too).

Evaluating the Automated Red Light Enforcement Program (ARLE)

Table 17: PennDOT Analysis of Potential ARLE Expansion

City	No. of Traffic Signals	Projected No. of ARLE Intersections	NHTSA Aggressive Driver Crash Rate	Initial Est. Violation Rate (Violations/Day/Location)	Total Projected Annual Revenue (Year 1)	Total Projected Annual Revenue (Year 2)	Estimated Annual Operational Costs	ARLE Funding Program Total (Year 1)
Pittsburgh	598	30	162	19.94	\$21,759,840	\$11,315,117	\$13,203,840	\$8,556,000
Scranton	123	6	16	1.97	\$442,043	\$229,862	\$2,715,840	(\$2,273,797)
➤ Subtotal, 2nd Class Cities					\$22,201,883	\$11,544,979	\$15,919,680	\$6,282,203
Allentown	180	9	58	7.14	\$2,344,985	\$1,219,392	\$3,974,400	(\$1,629,415)
Erie	200	10	15	1.85	\$673,846	\$350,400	\$4,416,000	(\$3,742,154)
Reading	130	7	55	6.77	\$1,606,000	\$835,120	\$2,870,400	(\$1,264,400)
Lancaster	111	6	45	5.54	\$1,121,954	\$583,416	\$2,450,880	(\$1,328,926)
Bethlehem	112	6	29	3.57	\$729,551	\$379,366	\$2,472,960	(\$1,743,409)
Harrisburg	87	4	25	3.08	\$488,538	\$254,040	\$1,920,960	(\$1,432,422)
Altoona	74	4	18	2.22	\$299,188	\$155,578	\$1,633,920	(\$1,334,732)
York	101	5	37	4.55	\$839,388	\$436,482	\$2,230,080	(\$1,390,692)
Wilkes-Barre	102	5	29	3.57	\$664,412	\$345,494	\$2,252,160	(\$1,587,748)
Chester	150	8	52	6.4	\$1,752,000	\$911,040	\$3,312,000	(\$1,560,000)
➤ Subtotal, 3rd Class Cities					\$10,519,862	\$5,470,328	\$27,533,760	(\$17,013,898)
Philadelphia**	2,872	19	195	24	\$16,780,800	\$8,726,016	\$8,390,400	\$8,390,400

Source: PennDOT Bureau of Highway Safety and Traffic Engineering, June 2011

** Philadelphia figures are current 2011 operational numbers

Assumptions:

- Projected # of ARLE Intersections: 5 percent of the municipality’s traffic signals
- NHTSA Aggressive Driver Crash Rate: National Highway Traffic Safety Administration (NHTSA) calculation based on a county evaluation of crashes on select corridors.
- Initial Estimated Violation Rate: Based on the known violation rate in the City of Philadelphia, a rate was established using the NHTSA Aggressive Driver Crash Rate.
- Total Projected Annual Revenue (Year 1): Initial ARLE Projected Revenue in Year 1.
- Total Projected Annual Revenue (Year 2): 48 percent reduction in violations from Year 1 based on Philadelphia Parking Authority Annual Reports.
- Estimated Annual Operational Costs: \$441,600 per intersection, based on an average of the Philadelphia Parking Authority’s annual operating cost.



Data from PPA show that violations decline by 48 percent after the first month of enforcement. The table below demonstrates the effectiveness of the ARLE program at reducing the number of total violations, yet also provides useful revenue information that is relevant to considerations of program expansion.

Table 18: ARLE Program Statistics

Month	No. of Violations	Revenue Generated	Percent Change in Violations/Revenue from 1 st Violation Month
1	19,329	\$1,932,900	
2	20,146	\$2,014,600	4.23%
3	16,628	\$1,662,800	(13.97%)
4	16,942	\$1,694,200	(12.35%)
5	13,403	\$1,340,300	(30.66%)
6	11,834	\$1,183,400	(38.78%)
7	13,313	\$1,331,300	(31.12%)
8	16,774	\$1,677,400	(13.22%)
9	13,856	\$1,385,600	(28.31%)
10	13,727	\$1,372,700	(28.98%)
11	10,577	\$1,057,700	(45.28%)
12	10,017	\$1,001,700	(48.18%)
13	10,723	\$1,072,300	(44.52%)
14	10,129	\$1,012,900	(47.60%)
15	10,709	\$1,070,900	(44.60%)

Source: Philadelphia Parking Authority

Note: Data is based on 13 operating ARLE intersections which have been operational at least 15 months.

These statistics do not make a definitive case that ARLE should not be expanded beyond Philadelphia or perhaps Pittsburgh. There may in fact be particular intersections where red light running is an issue, and safety could be improved through ARLE. However, it does point out that expansion would not necessarily be realistic at any given signalized intersection or on a broad geographical basis.

4. Findings and Recommendations

Pennsylvania's ARLE program has been reviewed across several key areas. The following summarizes the major findings:

4.1 Findings

- **Safety** – There are several indicators that demonstrate the ARLE program has improved safety related to red light running. A review of the operational intersections indicates that the program has successfully reduced red light running violations by an average of 48 percent within the first 12 months of enforcement. The total number of crashes has also declined by 24 percent for the 10 ARLE intersections where three years of crash data after ARLE's commencement is available. Fatalities and the overall severity of crashes have also declined. These results are consistent with national statistics on automated red light enforcement. While some aspects of ARLE's impact on safety remain inconclusive, it is clear that there are substantial overall safety benefits from the program. Continued analysis of the safety impacts, along with additional years of trend data will help to better define the program's safety benefits.
- **Financial** – The PPA has established a process including contracting with a vendor to operate the program. These arrangements come with a cost, totaling more than \$6 million in FY 2010-11. Approximately 10.5 violations per intersection per day are required to cover the program's maintenance and operations costs. While there has been some improvement in reducing the amount of unpaid violations (as a share of total violations), totals last fiscal year were over \$2 million, contributing to a cumulative total of \$8.1 million.

The program to-date has been self-sustaining. As the number of ARLE intersections has grown, total program revenues (fines collected) have increased, totaling \$13.7 million in FY 2010-11. This has covered all program expenses and produced \$21 million in excess revenue over the life of the program. This revenue has been deposited in the Motor License Fund and made available to fund safety and mobility projects in Philadelphia and throughout the rest of the state. To date, the ARLE Funding Program has awarded \$16.8 million for safety and mobility projects throughout the state.

- **Institutional** – The original legislation was specific in naming the PPA as the administrative entity. PPA has thus established the necessary institutional arrangements to be able to successfully administer the program, including staffing, coordination with police, and the selection of the vendor. However, potential expansion of such a program must take into account a municipality's institutional framework to properly administer the day-to-day operations.
- **Pennsylvania's Legislation** – Pennsylvania's legislation is well crafted, avoiding many of the problems encountered by other states. A few examples of the strength of Pennsylvania's legislation include:



- vendors are paid a flat fee rather than a fee based on the number of violations,
- the violation fee is defined in the legislation,
- the program cannot be used for surveillance purposes, and
- violations are associated with the vehicle rather than the driver.

Positive changes since the program's inception include a mandated change from the use of wet film to digital photography.

A potential negative with the current law is that it neither defines any intersection selection criteria nor requires an engineering study to be performed. Having this in place would confirm that there are no existing problems with the existing traffic signals, etc., at proposed ARLE intersections. This would also improve accountability, as selection criteria would ensure consistency and transparency with the public.

- **Public Perception** – Perception of the program has been mixed, ranging from an embrace of technology to improve intersection safety, to a rejection of perceived government intrusion into private lives. The PPA, as the administrator of the program, has sought to engage the community and improve general awareness of the program and its benefits.
- **ARLE Funding Program** – A total of \$21 million in fees collected from violators has been made available for a new grant program to support a variety of safety-related enhancements to the transportation system, such as traffic signal upgrades and signing enhancements. The focus of the program is low-cost safety and mobility projects. Pennsylvania municipalities have benefitted from this new funding program. During the first round of grant awards started in 2010, more than \$8.4 million has been made available to more than 100 Pennsylvania municipalities for eligible projects. A similar amount has been returned to the City of Philadelphia for eligible transportation projects. These projects further improve safety throughout the Commonwealth.

4.2 Recommendations

This report addresses three questions for the ARLE program, moving forward:

Continue the ARLE Program in Philadelphia

The TAC believes that, based on this research, the current ARLE program as it has been administered in Philadelphia has been successful, and the program should continue beyond the December 2011 deadline. The original intent of the program to reduce red light running violations and, in turn, the number of serious crashes, has been accomplished.

The City of Philadelphia is unique among Pennsylvania municipalities, not only for its size, but also for the complexity of its roadway networks and aggressive driver behavior—a common characteristic of large urban areas. The National Highway Traffic Safety Administration has quantified aggressive driving through its Aggressive Driver Crash Rate. Other than Pittsburgh, no other Pennsylvania city comes close to the level of aggressive driving behavior that exists in Philadelphia. The ARLE program has made a

difference in improving traffic safety in a city with the greatest degree of aggressive driving behavior in the state.

Financially, the program has been self-sustaining, and has contributed \$21 million in funding for safety and mobility improvements across the Commonwealth. To date, a total of \$16.8 million has actually been provided to Philadelphia and other communities for eligible projects. The collection rate on violation fees has improved, but there may be additional opportunities to enhance the rate through greater penalties on violators, such as restrictions on registration renewals for unpaid violations.

If the ARLE program continues beyond 2011, it will be important for PennDOT to continue its responsible role in reviewing and approving ARLE intersections for addition to the network. For program accountability, ARLE program information should be subject to auditing by PennDOT in the future.

Expand the ARLE Program

The success of the current program indicates that expansion could reduce red light running in other areas of the state. However, a number of factors need to be considered in any potential expansion. These include eligibility, submission requirements, treatment of program revenue, and roles and responsibilities.

The proposed bills in the House and the Senate, while setting different parameters, propose expanding the program based on the municipality type, regardless of the complexity of the intersections, the history of red light running, or the level of aggressive driver behavior. There does not appear to be a basis for the approach of using total population or municipal type as a proxy for the size and sophistication of the municipal roadway network. There are conceivably other communities that would not meet the total population criteria but could benefit from program expansion.

Analysis has also revealed that implementing ARLE programs in areas outside of Philadelphia would likely not produce sufficient revenue to sustain a program at the municipal level. Data from PPA show that at least 10.5 violations are needed each day at each ARLE intersection in order for the program to remain viable. According to PennDOT calculations, only the City of Pittsburgh would have the traffic environment necessary to make ARLE a sustainable program. Still, there may be particular intersections in other communities that have a red light running problem, and ARLE could provide an important tool for safety improvement. The priority for placement of new cameras should be predicated on demonstrating safety needs at a particular intersection.

For these reasons, expansion of the ARLE program beyond Philadelphia should be based on a solid engineering review with the overall intent being to improve safety. PennDOT must have final approval authority for any proposed additions to the ARLE intersection network. But PennDOT should not be expected to perform the analysis, but rather this should be the responsibility of the owner of the traffic signal.



An engineering study for PennDOT review should be a requirement of the intersection selection process. For example, a municipality requesting a signalized intersection to be included in the ARLE program should be required to submit a request to PennDOT which includes an engineering study of the signalized intersection. The engineering study should at a minimum include:

- An analysis of the 5-year crash history indicating red light running violations, causal problems and/or other documented information that shows the red light violation problem.
- A review of the existing intersection configuration, the approaches, and the traffic signals to ensure that existing deficiencies are not contributing to the red light running problem.
- An assessment of the potential violations to determine if the recommended ARLE location would generate enough revenue to be self-sustaining.

Safety aspects and red light running prevalence should be the most relevant considerations, while maintaining a program that is self-sufficient overall. Therefore, ARLE generated revenue from one area of the state could be considered to support other critical intersections in another portion of the state that would not be individually self-sustaining. This would reduce funds available for statewide improvements, but it would be consistent with the program intent of improving safety.

PennDOT would also need to assess the ability of a municipality to undertake ARLE program administration. Based on the Philadelphia experience, a significant administrative structure needs to be put in place to install and maintain equipment, review and validate violations, and send citations to violators. A vendor can assume some of these responsibilities, but oversight is still required. One would also question the potential for multiple municipalities to go through procurement processes to select a vendor. One way to address this problem would be to require a statewide vendor selection for the remainder of the state.

Finally, PennDOT should be allowed to use program revenue to support their expenses related to program administration, selection review, and construction inspection.

Continue the ARLE Funding Program

Review of the ARLE Funding Program shows clear benefits. There is limited experience with the current ARLE Funding Program, but early indications are that it is providing the ability to complete important safety improvements in communities throughout the state. While the previous recommendations may reduce overall revenue by supporting intersections that are not self-sustaining, any remaining funding should continue to finance the program.

The ARLE Funding Program has introduced new demands to PennDOT staff. The deluge of project applications (more than 300 in the first and second rounds) represents a major new administrative responsibility with significant turnaround time to evaluate and review the many applications. To ease this

burden, the Department has created a web portal¹⁰ to help address questions and automate the program to the greatest degree possible. TAC suggests that requiring electronic submissions would help avoid labor-intensive activities such as scanning data. PennDOT's successful PCTI Program¹¹ has been cited as a model in this regard for the ARLE Funding Program to emulate.

PennDOT should also continue to refine the metrics associated with its project selection criteria. The Department has made improvements to these between the first and second funding rounds, but ongoing refinements should be made to ensure that only the most qualified projects are approved and funded.

¹⁰

http://www.dot.state.pa.us/Portal%20Information/Traffic%20Signal%20Portal/index_files/Automated_Red_Light_Enforcement.htm

¹¹ Pennsylvania Communities Transportation Initiative (see www.smart-transportation.com)



5. Appendices

5.1 Legislation: 75 Pa. C.S. Section 3116

A copy of the original legislation allowing the pilot installation of the automated red light enforcement program in cities of the first class is shown below.

§ 3116. Automated red light enforcement systems in first class cities.

(a) General rule.--

(1) A city of the first class, upon passage of an ordinance, is authorized to enforce section 3112(a)(3) (relating to traffic-control signals) by recording violations using an automated red light enforcement system approved by the department.

(2) This section shall only be applicable at intersections in the city of the first class agreed upon by the system administrator and the Secretary of Transportation who shall consider using the automated red light enforcement system at the following intersections:

(i) U.S. Route 1 (Roosevelt Boulevard) at Grant Avenue, at Red Lion Road and at Cottman Street.

(ii) Kensington Avenue at Clearfield Street.

(iii) Richmond Street at Allegheny Avenue and at Castor Avenue.

(iv) Aramingo Avenue at York Street.

(v) Thompson Street at Lehigh Avenue.

(vi) Broad Street at Washington Avenue.

(b) **Owner liability.**--For each violation pursuant to this section, the owner of the vehicle shall be liable for the penalty imposed unless the owner is convicted of the same violation under another section of this title or has a defense under subsection (f).

(c) **Certificate as evidence.**--A certificate, or a facsimile of a certificate, based upon inspection of recorded images produced by an automated red light enforcement system and sworn to or affirmed by a police officer employed by the city of the first class shall be prima facie evidence of the facts contained in it. The city must include written documentation that the automated red light enforcement system was operating correctly at the time of the alleged violation. A recorded image evidencing a violation of section 3112(a)(3) shall be admissible in any judicial or administrative proceeding to adjudicate the liability for the violation.

(d) **Penalty.**--

(1) The penalty for a violation under subsection (a) shall be a fine of \$100 unless a lesser amount is set by ordinance.

(2) A fine is not authorized for a violation of this section if any of the following apply:

(i) The intersection is being manually controlled.

(ii) The signal is in the mode described in section 3114 (relating to flashing signals).

(3) A fine is not authorized during:

(i) The first 120 days of operation of the automated system at the initial intersection.

(ii) The first 60 days for each additional intersection selected for the automated system.

(3.1) A warning may be sent to the violator under paragraph (3).

(4) A penalty imposed under this section shall not be deemed a criminal conviction and shall not be made part of the operating record under section 1535 (relating to schedule of convictions and points) of the individual upon whom the penalty is imposed, nor may the imposition of the penalty be subject to merit rating for insurance purposes.

(5) No surcharge points may be imposed in the provision of motor vehicle insurance coverage. Fines collected under this section shall not be subject to 42 Pa.C.S. § 3571 (relating to Commonwealth portion of fines, etc.) or 3573 (relating to municipal corporation portion of fines, etc.).

(e) Limitations.--

(1) No automated red light enforcement system shall be utilized in such a manner as to take a frontal view recorded image of the vehicle as evidence of having committed a violation.

(2) Notwithstanding any other provision of law, camera equipment deployed as part of an automated red light enforcement system as provided in this section must be incapable of automated or user-controlled remote intersection surveillance by means of recorded video images. Recorded images collected as part of the automated red light enforcement system must only record traffic violations and may not be used for any other surveillance purposes. The restrictions set forth in this paragraph shall not be deemed to preclude a court of competent jurisdiction from issuing an order directing that the information be provided to law enforcement officials if the information is reasonably described and is requested solely in connection with a criminal law enforcement action.

(3) Notwithstanding any other provision of law, information prepared under this section and information relating to violations under this section which is kept by the city of the first class, its authorized agents or its employees, including recorded images, written records, reports or facsimiles, names, addresses and the number of violations under this section, shall be for the exclusive use of the city, its authorized agents, its employees and law enforcement officials for the purpose of discharging their duties under this section and under any ordinances and resolutions of the city. The information shall not be deemed a public record under the act of June 21, 1957 (P.L.390, No.212), referred to as the Right-to-Know Law. The information shall not be discoverable by court order or otherwise, nor shall it be offered in evidence in any action or proceeding which is not directly related to a violation of this section or any ordinance or resolution of the city. The restrictions set forth in this paragraph shall not be deemed to preclude a court of competent jurisdiction from issuing an order directing that the information be provided to law enforcement officials



if the information is reasonably described and is requested solely in connection with a criminal law enforcement action.

(4) Recorded images obtained through the use of automated red light enforcement systems deployed as a means of promoting traffic safety in a city of the first class shall be destroyed within one year of final disposition of any recorded event. The city shall file notice with the Department of State that the records have been destroyed in accordance with this section.

(5) Notwithstanding any other provision of law, registered vehicle owner information obtained as a result of the operation of an automated red light enforcement system under this section shall not be the property of the manufacturer or vendor of the automated red light enforcement system and may not be used for any purpose other than prescribed in this section.

(f) Defenses.--

(1) It shall be a defense to a violation under this section that the person named in the notice of the violation was not operating the vehicle at the time of the violation. The owner may be required to submit evidence that the owner was not the driver at the time of the alleged violation. The city of the first class may not require the owner of the vehicle to disclose the identity of the operator of the vehicle at the time of the violation.

(2) If an owner receives a notice of violation pursuant to this section of a time period during which the vehicle was reported to a police department of any state or municipality as having been stolen, it shall be a defense to a violation pursuant to this section that the vehicle has been reported to a police department as stolen prior to the time the violation occurred and had not been recovered prior to that time.

(3) It shall be a defense to a violation under this section that the person receiving the notice of violation was not the owner of the vehicle at the time of the offense.

(g) Department approval.--No automated red light enforcement system may be used without the approval of the department, which shall have the authority to promulgate regulations for the certification and use of such systems.

(h) Duty of city.--If a city of the first class elects to implement this section, the following provisions shall apply:

(1) The city may not use an automated red light enforcement system unless there is posted an appropriate sign in a conspicuous place before the area in which the automated red light enforcement device is to be used notifying the public that an automated red light enforcement device is in use immediately ahead.

(2) The city shall designate or appoint the Philadelphia Parking Authority as the system administrator to supervise and coordinate the administration of notices of violation issued under this section.

(3) The system administrator shall prepare a notice of violation to the registered owner of a vehicle identified in a recorded image produced by an automated red light enforcement system as evidence of a violation of section 3112(a)(3). The issuance of the notice of violation must be done by a police officer employed by the police department with primary jurisdiction over the area where the violation occurred. The notice of violation shall have attached to it a copy of the recorded image showing the vehicle; the

registration number and state of issuance of the vehicle registration; the date, time and place of the alleged violation; that the violation charged is under section 3112(a)(3); and instructions for return of the notice of violation. The text of the notice must be as follows:

This notice shall be returned personally, by mail or by an agent duly authorized in writing, within 30 days of issuance. A hearing may be obtained upon the written request of the registered owner.

(i) System administrator.--

(1) The system administrator may hire and designate personnel as necessary or contract for services to implement this section.

(2) The system administrator shall process fines issued pursuant to this section.

(3) The system administrator shall submit an annual report to the chairman and the minority chairman of the Transportation Committee of the Senate and the chairman and minority chairman of the Transportation Committee of the House of Representatives. The report shall include for the prior year:

(i) The number of violations and fines issued.

(ii) A compilation of fines paid and outstanding.

(iii) The amount of money paid to a vendor or manufacturer under this section.

(j) Notice to owner.--In the case of a violation involving a motor vehicle registered under the laws of this Commonwealth, the notice of violation must be mailed within 30 days after the commission of the violation or within 30 days after the discovery of the identity of the registered owner, whichever is later, and not thereafter to the address of the registered owner as listed in the records of the department. In the case of motor vehicles registered in jurisdictions other than this Commonwealth, the notice of violation must be mailed within 30 days after the discovery of the identity of the registered owner, and not thereafter to the address of the registered owner as listed in the records of the official in the jurisdiction having charge of the registration of the vehicle. A notice of violation under this section must be provided to an owner within 90 days of the commission of the offense.

(k) Mailing of notice and records.--Notice of violation must be sent by first class mail. A manual or automatic record of mailing prepared by the system administrator in the ordinary course of business shall be prima facie evidence of mailing and shall be admissible in any judicial or administrative proceeding as to the facts contained in it.

(l) Payment of fine.--

(1) An owner to whom a notice of violation has been issued may admit responsibility for the violation and pay the fine provided in the notice.

(2) Payment must be made personally, through an authorized agent or by mailing both payment and the notice of violation to the system administrator. Payment by mail must be made only by money order, credit card or check made payable to the system administrator. The system administrator shall remit the fine, less the system administrator's operation and maintenance costs necessitated by this section, to the department for deposit into the Motor License Fund. Fines deposited in the fund under this paragraph



shall be used by the department to develop, by regulation, a Transportation Enhancements Grant Program.

(3) Payment of the established fine and applicable penalties shall operate as a final disposition of the case.

(m) Hearing.--

(1) An owner to whom a notice of violation has been issued may, within 30 days of the mailing of the notice, request a hearing to contest the liability alleged in the notice. A hearing request must be made by appearing before the system administrator during regular office hours either personally or by an authorized agent or by mailing a request in writing.

(2) Upon receipt of a hearing request, the system administrator shall in a timely manner schedule the matter before a hearing officer. The hearing officer shall be designated by the city of the first class. Written notice of the date, time and place of hearing must be sent by first class mail to the owner.

(3) The hearing shall be informal; the rules of evidence shall not apply; and the decision of the hearing officer shall be final, subject to the right of the owner to appeal the decision to the traffic court.

(4) If the owner requests in writing that the decision of the hearing officer be appealed to the traffic court, the system administrator shall file the notice of violation and supporting documents with the traffic court, which shall hear and decide the matter de novo.

(n) Compensation to manufacturer or vendor.--If a city of the first class has established an automated red light enforcement system deployed as a means of promoting traffic safety and the enforcement of the traffic laws of this Commonwealth or the city, the compensation paid to the manufacturer or vendor of the automated red light enforcement system may not be based upon the number of traffic citations issued or a portion or percentage of the fine generated by the citations. The compensation paid to the manufacturer or vendor of the equipment shall be based upon the value of the equipment and the services provided or rendered in support of the automated red light enforcement system.

(o) Duration of yellow light change interval.--The duration of the yellow light change interval at intersections where automated red light enforcement systems are in use shall conform to the yellow light change interval duration specified on the traffic signal permit issued by the department or the first class city.

(p) Revenue limitation.--A city of the first class may not collect an amount equal to or greater than 5% of its annual budget from the collection of revenue from the issuance and payment of violations under this section.

(q) Expiration.--This section shall expire December 31, 2011.

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(Oct. 4, 2002, P.L.845, No.123, eff. 60 days; Dec. 9, 2002, P.L.1278, No.152, eff. 60 days; Feb. 9, 2004, P.L.65, No.8; July 14, 2005, P.L.285, No.50, eff. 60 days; Dec. 18, 2007, P.L.436, No.67, eff. imd.)

2004 Amendment. Section 4 of Act 9 of 2004 provided that the amendments to subsecs. (l)(2) and (q) by Act 8 shall take effect immediately.

References in Text. The act of June 21, 1957 (P.L.390, No.212), referred to as the Right-to-Know Law, referred to in subsec. (e)(3), was repealed by the act of Feb. 14, 2008 (P.L.6, No.3), known as the Right-to-Know Law.

Cross References. Section 3116 is referred to in section 1332 of this title.

5.2 Regulation: Title 67 Pa. Code, Chapter 233

A copy of the regulation regarding the use of violation revenues from the red light enforcement program is shown below.

Authority

The provisions of this Chapter 233 issued under 75 Pa.C.S. § 3116, unless otherwise noted.

Source

The provisions of this Chapter 233 adopted October 29, 2010, effective October 30, 2010, 40 Pa.B. 6267, unless otherwise noted.

§ 233.1. Purpose.

This chapter sets forth requirements and criteria relating to transportation enhancement grants from automated red light enforcement system revenues.

§ 233.2. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

Automated red light enforcement system—A vehicle sensor installed to work in conjunction with a traffic-control signal which automatically produces one or more recorded images of a vehicle at the time the vehicle is used or operated in a manner which is a violation under 75 Pa.C.S. § 3112(a)(3) (relating to traffic-control signals).

Department—The Department of Transportation of the Commonwealth.

Director—The Director of the Center for Program Development and Management of the Department.

Grant—An offer of funding assistance from the Department to a sponsor for a project governed by this chapter.

Highway—

(i) The entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

(ii) The term includes a roadway open to the use of the public for vehicular travel on grounds of a college or university or public or private school or public or historic park.



Local government—County, municipal, and other local boards or bodies having authority to enact laws relating to traffic.

Official traffic-control devices—Signs, signals, markings and devices not inconsistent with 75 Pa.C.S. (relating to Vehicle Code) placed or erected by authority of a public body or official having jurisdiction, for the purpose of regulating, warning, or guiding traffic.

Recorded image—An image recorded by an automated red light enforcement system on a photograph, a digital image, or any other image-capture technology.

Sponsor—A local government, metropolitan planning organization, rural planning organization, county planning organization, or Commonwealth agency applying for, or receiving, a transportation enhancement grant under this chapter.

Traffic—Pedestrians, ridden or herded animals, vehicles, streetcars, and other conveyances, whether singly or together, using any highway for purposes of travel.

Traffic-control signal—A device, whether manually, electrically, or mechanically operated, by which traffic is alternately directed to stop and permitted to proceed.

Vehicle—

- (i) Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, except devices used exclusively upon rails or tracks.
- (ii) The term does not include a self-propelled wheelchair or an electrical mobility device operated by and designed for the exclusive use of a person with a mobility-related disability.

§ 233.3. Eligibility requirements and criteria.

- (a) The minimum requirement for eligibility to apply for a transportation enhancement grant under this chapter is that the project must involve improvement to highway safety and mobility within this Commonwealth.
- (b) It is the intent of this grant program to fund worthwhile projects that can be completed at a relatively low cost.
- (c) All projects may be considered for a transportation enhancement grant from automated red light enforcement system revenues, with the exception of transportation impact studies and highway improvements that are the responsibility of the applicant for a Department Highway Occupancy Permit.

§ 233.4. Limits of funding.

Grants under this chapter may cover the entire cost of an eligible project, so matching funds are not required. Grants may also be used for a portion of a larger project if other funding sources are secured.

§ 233.5. Application procedure.

(a) A sponsor shall submit a written request in the form of an application to the Director: Attention—Transportation Enhancement Grants from Automated Red Light Enforcement System Revenues, Bureau of Program Development and Management, 400 North Street; 6th Floor, Harrisburg, PA 17120, or e-mail to: ARLE[lowbar]Grants@state.pa.us.

(b) The application shall be prepared in accordance with instructions provided by the Department. The application must contain sufficient information to enable the Department to complete its evaluation of the proposed project.

(c) An application must set forth, as a minimum, the following information:

(1) *Project description.* Provide a general description of the project and the objectives that are desired to be achieved.

(2) *Project location.* Provide a location map. Clearly identify the beginning and ending points of the project, the associated counties, municipalities, routes, segments, and offsets. Provide a general description of the location of the project and the surrounding area. Indicate roadway type/classification and length of the project in miles. Provide information on annual average daily traffic (AADT), current roadway geometry (number of lanes), speed limits, adjoining land uses, and number/location of signalized intersections.

(3) *Official traffic-control device description.* For projects involving official traffic-control devices, briefly describe the existing official traffic-control devices.

(4) *Project justification.* Outline why this project is being nominated for this grant program and the benefits that would be obtained.

(5) *Potential improvements and cost.* Provide a description of the potential improvements, and their associated estimated costs. Estimated costs should be as detailed and accurate as possible, and include all aspects of the project (design, construction, and the like).

(6) *Schedule.* Provide information that indicates the time frame necessary to complete the project. Indicate whether the project can be completed during 1 year or if it would be a multiyear project.

(7) *Other programmed projects.* Describe any other improvement projects that are in the vicinity of the proposed project and have been programmed on the Regional Transportation Improvement Program (include location, time frame, cost, and the like).

(8) *Anticipated development.* Describe any known major developments that are anticipated within the next 10 years in the vicinity of the proposed project.

(9) *Professional engineer.* Identify the professional engineer or consulting engineering firm that will provide engineering services for the project.

(10) *Contact person.* Provide the name, address, telephone number and e-mail address of a contact person for the sponsor.



(11) *Other information.* The sponsor shall provide other information related to the project that the sponsor believes may justify the project or that is requested by the Department.

(d) The sponsor shall complete the application and submit it before the deadline under § 233.6 (relating to deadline for applications).

§ 233.6. Deadline for applications.

(a) Applications for transportation enhancement grants under this chapter will be considered on an annual basis. From the completed applications on file for a given year, projects will be selected for grants. Applications on file, but incomplete, may be excluded from consideration for grants in that year.

(b) During the initial year of the grant program, sponsors may submit a completed application within the time period established by the Department by notice in the *Pennsylvania Bulletin*. In years following the initial year of the grant program, sponsors may submit a completed application for a transportation enhancement grant under this chapter beginning on June 1 of each year until the close of business on June 30 of that year.

(c) If the deadline for applications occurs on a weekend or legal holiday when Commonwealth offices are closed, the deadline will be the close of the next business day.

(d) The Department may consider applications for transportation enhancement grants under this chapter which may be technically incomplete on the application deadline, but which are made complete within 3 weeks of the close of the application period.

Cross References

This section cited in § 233.5 (relating to application procedure).

§ 233.7. Public records.

An application for a transportation enhancement grant under this chapter will be considered a public record at the time of filing, and will be made available for inspection.

§ 233.8. Grant selection process and criteria.

(a) *Consideration.* Following the closing date for receipt of applications, properly completed applications filed within the application period will be considered for grants to be awarded during the current calendar year.

(b) *Additional information.* If it is determined that an application is incomplete and that additional information is necessary, the sponsor shall provide that additional information to allow further consideration of the application.

(c) *Review by Director.* The Director will review and evaluate applications with respect to applicable criteria for project funding, available funds, and current priorities for traffic safety and mobility.

(d) *Criteria used in review.* In considering an application, the Director will give weight and consideration to the following criteria:

- (1) The sponsor's past maintenance and operational history for traffic-control signals, official traffic-control devices, or other items of work that are project components.
 - (2) The anticipated benefits of the project considering traffic safety benefits, mobility benefits and delay reduction, energy savings and greenhouse gas reductions.
 - (3) The estimated cost of the project.
 - (4) The local and regional impact of the project.
 - (5) The results of similar types of projects that have already been completed.
 - (6) The results of previous projects completed by the sponsor.
 - (7) Cost sharing by sponsor or other entities.
 - (8) Other Department traffic safety and mobility priorities.
- (e) *Discretion in evaluation.* In consideration of the various criteria applicable to the review of an application, the Department may take into account unique or special factors that may arise in the administration of the grant program.
- (f) *Debriefing.* At the request of a sponsor, the Department will conduct a debriefing with a sponsor whose application has been denied.
- (g) *Distribution of grant funding.* Distribution of grant funding will be as follows:
- (1) Fifty percent of the grant revenues generated through an automated red light enforcement program will be used exclusively for funding of transportation enhancement grants in the local government entity in which the violation was prosecuted.
 - (2) The remaining 50% of the grant revenues generated through the automated red light enforcement program will be available for funding of transportation enhancement grants to eligible sponsors throughout this Commonwealth.

§ 233.9. Offer and acceptance of a grant.

- (a) *Issuance of grant offers.* The Department will, in writing, notify each sponsor who has submitted an application whether or not they will receive a grant offer.
- (b) *Grant agreement.* A grant offer issued to a sponsor will describe any specific grant conditions and include such conditions as terms in the accompanying grant agreement.
- (c) *Grant conditions.* The Department may or may not fully fund the entire cost of the project. The grant agreement will specify the total amount to be funded under the grant offer, the scope of the project, the items of work to be included, and an anticipated project completion date. The Department may also require sponsors to conduct before and after studies to determine project effectiveness.
- (d) *Acceptance.* A sponsor who has received a grant offer shall, within 30 days indicate, by registered mail, acceptance of the offer.



(1) Acceptance of an offer is not binding on a sponsor until the execution of the grant agreement between the Department and the sponsor.

(2) Failure of a sponsor to indicate acceptance of the terms of an offer within the 30-day response period will be considered as a rejection of the offer and withdrawal of the application.

(e) *Discretion of Department.* Unless otherwise restricted by statute, the Department has absolute discretion in the selection of projects and in the determination of funding levels, priorities, critical project selection criteria, project phasing, project design and specifications and performance criteria.

(f) *Amendments to projects.* In the consideration of an application, the Department may determine that a proposed project should be amended to accommodate available funding, application traffic design criteria, anticipated use, or to better accommodate potential user needs. The Department may offer a transportation enhancement grant under this chapter for a project whose cost, specifications, terms, or scope have been modified by the Department.

(g) *Consultation does not insure offer.* In the event that the Department confers with a sponsor to amend a proposed project, the sponsor should understand that consultation and amendment does not insure that an offer will be made.

§ 233.10. Standards, methods, techniques, designs, and special conditions.

(a) The Department reserves the right to specify or make determinations as to the standards, methods, techniques, designs and dimensional criteria acceptable in projects funded by transportation enhancement grants under this chapter.

(b) The design and construction of an approved project are subject to the review and approval of the Department, including costs, materials, plans, specifications, and design and operational details.

(c) Failure to meet special conditions, performance criteria or specifications may result in the withdrawal of the transportation enhancement grant, disqualification from future consideration for a transportation enhancement grant under this chapter, or declaration of a sponsor to be in default of the terms of the grant agreement.

§ 233.11. Audit and recordkeeping.

(a) *General.*

(1) A sponsor receiving a transportation enhancement grant under this chapter shall keep records as the Department may prescribe, including records which fully disclose the amount and the disposition by the sponsor of the grant proceeds, the total cost of the plan or program in connection with which the transportation enhancement grant is given or used, and the amount and nature of that portion of the cost of the plan or program supplied by other sources, as well as records that will facilitate an effective audit.

(2) The Department will have access, for the purpose of audit and examination, to books, documents, papers, and records of the sponsor that are pertinent to a transportation enhancement grant issued under this chapter. This includes progress audits during the project.

- (3) A sponsor is required to establish and maintain an adequate accounting record for an individual project, which will allow the Department to verify the costs incurred for the project.
- (4) A sponsor shall maintain effective control over and accountability for all funds, property and other assets. Sponsors shall adequately safeguard assets and assure that they are used solely for authorized purposes.
- (5) A sponsor shall establish procedures to minimize the time elapsing between the transfer of funds from the Department and the disbursement by the sponsor whenever funds are advanced by the Department. If this elapsed time exceeds the time frame delineated in the terms of the grant agreement, the Department may require the return of interest earned on payments made.
- (6) The sponsor shall include, in any contract related to the grant, a clause which allows the Department access to the sponsor's contractor's records for purposes of accounting and audit.

(b) *Retention of records.*

- (1) A sponsor shall retain, for 3 years after the date of the submission of the final Department payment, documentary evidence such as invoices, cost estimates and negotiation documents relating to any item of project cost. These documents include, but are not limited to, vendor's invoices, applicable purchase orders, receiving reports, inventory records, method of pricing, returns, catalog cuts, plans, inspection reports, final inspection report showing acceptance of the project, and a record of disposition or correction of unsatisfactory work.
- (2) A sponsor shall retain for 3 years after the date of the submission of the final Department payment, evidence of payments for items of project costs including, but not limited to, vouchers, cancelled checks or warrants, and receipts for cash payments.
- (3) If audit findings have not been resolved, records shall be retained until the findings have been resolved.

§ 233.12. Inspection.

- (a) The Department or an agency of the Commonwealth, or both, or person designated or authorized by the Department has the absolute right to inspect, without notice, the project sites, proposed project sites, records, and construction materials relating to a project funded by a transportation enhancement grant from automated red light enforcement system revenues.
- (b) An inspection ordered by the Department or conducted under its authority may include, but not necessarily be limited to, the reproduction and examination of records, the taking of samples applicable to evaluation or project quality control, or the assessment of any factor relevant to a project, application, or contracts and terms related to the process for transportation enhancement grants from automated red light enforcement system revenues.
- (c) A sponsor's denial of access to records, failure to produce records or obstruction with an inspection may result in withdrawal of the transportation enhancement grant and disqualification from future consideration for a transportation enhancement grant under this chapter.



§ 233.13. Payment procedures.

Unless otherwise specified by the Department, the following general procedures are to be used for funds from a transportation enhancement grant under this chapter:

- (1) Prior to disbursement of funds, the Department reserves the right to conduct inspections or testing, or to review and audit records or accounts to validate, to the satisfaction of the Department, that disbursement of funds is warranted.
- (2) A sponsor, having received payment or partial payment or reimbursement under a transportation enhancement grant under this chapter, shall make payments, within 30 calendar days from receipt of funds, to vendors and contractors for services and materials properly invoiced under the project.
- (3) A sponsor shall forward requests for payment to the Department on the forms provided or in a manner specified by the Department. A request must include submission of actual cost documentation, consisting of approved contract estimates of work-in-place, approved invoices or other evidence of incurred costs, satisfactory to the Department. The final 10% of the total payment will not be paid by the sponsor until final inspection and approval of the project by the Department.
- (4) Payment requests shall be limited to monthly submissions.

§ 233.14. Liability; forfeiture of funds; repayment.

If a sponsor fails to comply with the terms of a transportation enhancement grant issued under this chapter, the sponsor shall immediately reimburse the Department the amount for which a demand is made by the Department.

Cross References

This section cited in § 233.16 (relating to appeal).

§ 233.15. Waiver.

- (a) *Waiver of requirements.* The Department may waive requirements to submit specific maps, reports, plans, information, or data normally required for a grant application. The waivers may be granted only after written request to the Director and formal written response to the sponsor by the Director prior to submission of the completed application to the Bureau.
- (b) *Special projects procedures.* The Department may develop modified procedures for grant applications pertaining to Department-specified projects funded by transportation enhancement grants under this chapter.

§ 233.16. Appeal.

A person aggrieved by a decision of the Department under § 233.14 (relating to liability; forfeiture of funds; repayment) may take an appeal under 2 Pa.C.S. § § 501—508 and 701—704 (relating to the Administrative Agency Law) and 1 Pa. Code Part II (relating to General Rules of Administrative Practice and Procedure).

5.3 Eligible ARLE Funding Program Projects

There are a wide variety of eligible project types that are eligible under the Transportation Enhancement Grant Program (from ARLE), including the following:

1. Improvements to traffic control signals already equipped with automated red light enforcement systems or proposed to be equipped with automated red light enforcement systems.
2. Removal of unwarranted traffic control signals.
3. Retiming of existing traffic control signals.
4. Upgrading, modernization, or improvements to traffic control signals.
5. The interconnection and coordination of traffic control signals to improve mobility.
6. The installation of a traffic control signal system or the expansion of an existing system to improve mobility.
7. Revisions to traffic signal operational modes to improve safety and mobility. Examples include conversion to actuated, traffic responsive, or traffic adaptive modes of operation.
8. Improvements to traffic control signals or other official traffic control devices to reduce energy consumption. Examples include the conversion of traffic control signal or pedestrian signal indications to Department-approved, light emitting diode (LED) modules or the installation of Department-approved, solar-assisted official traffic control devices.
9. The installation of new or improved detection systems for traffic control signals.
10. Upgrading, modernization, or safety improvements to traffic control signals having railroad pre-emption.
11. Roadway capacity upgrades such as auxiliary turning lanes.
12. Roadway or intersection signing and pavement re-striping projects which will either increase capacity or improve safety.
13. Local Technical Assistance Program (LTAP) Local Safe Roads Communities Program and implementation of recommendations.
14. LTAP Walkable Communities Program and implementation of recommendations.
15. School zone designation through striping, signing, or signal improvements.
16. Pedestrian safety improvements at signalized intersections such as countdown timers, easily accessible and quick response pushbuttons, crosswalk striping, and pedestrian signing.
17. Pedestrian mobility improvements, particularly projects with a combination of eligible features.
18. Centerline rumble strips.
19. New guiderail or replacement of damaged/substandard guiderail.
20. Transition guiderail for exposed bridge parapet ends.



21. Removal of roadside fixed objects and/or clearing of vegetation for sight distance improvements.
22. Improvements to correct drop off issues along local roadways.
23. Minor drainage improvements to improve safety.
24. New regulatory or warning signs that meet minimum retroreflectivity requirements.
25. Radii improvements at intersections.
26. Roadway delineators, either along the outside edge of the roadway, or to prevent turning movements at driveways or intersections.
27. Other projects, which, in the discretion of the Department, should be considered.

5.4 Sample Ordinance



City of Philadelphia

City Council
Chief Clerk's Office
402 City Hall
Philadelphia, PA 19107

BILL NO. 080802

Introduced October 23, 2008

Councilmembers DiCicco and Kenney

**Referred to the
Committee on Streets and Services**

AN ORDINANCE

Amending Chapter 12-3000 of The Philadelphia Code, entitled "Use Of An Automated Red Light Enforcement System To Prevent Red Light Violations," by authorizing the installation of red light enforcement systems at the intersection of South Penn Square at Broad Street, and by reducing to sixty days the phase-in period during which only warnings are issued, all under certain terms and conditions.

THE COUNCIL OF THE CITY OF PHILADELPHIA HEREBY ORDAINS:

SECTION 1. Chapter 12-3000 of The Philadelphia Code is hereby amended to read as follows:

CHAPTER 12-3000. USE OF AN AUTOMATED RED LIGHT ENFORCEMENT SYSTEM TO PREVENT RED LIGHT VIOLATIONS.

* * *

§12-3005. Intersections At Which This Chapter Applies.

(1) Automated red light enforcement systems that are approved by the Pennsylvania Department of Transportation may be used to enforce this Chapter only at the following intersections, and as this list may be amended from time to time by ordinance, subject to the designation of such intersections by agreement of the System Administrator and the Pennsylvania Secretary of Transportation:

* * *

(q) *John F. Kennedy Boulevard at Broad Street.*



City of Philadelphia

BILL NO. 080802 continued

(r) *South Penn Square at Broad Street.*

* * *

§12-3012. Limitations.

* * *

(2) Notwithstanding any other provision of law, camera equipment deployed pursuant to this Chapter must be incapable of automated or user-controlled remote intersection surveillance by means of recorded video images. Photographs collected as part of the automated red light enforcement system [must be 35-millimeter film only,] must only record traffic violations and may not be used for any other surveillance purposes. *For purposes of this Chapter the term "photograph" shall include a digital image or other image-capturing technology.* The restrictions set forth in this paragraph shall not be deemed to preclude a court of competent jurisdiction from issuing an order directing that the information be provided to law enforcement officials if the information is reasonably described and is requested solely in connection with a criminal law enforcement action.

* * *

Section 2. This Ordinance shall be effective immediately.

Explanation:

[Brackets] indicate matter deleted.

Italics indicate new matter added.