State Transportation Commission

Pennsylvania Automated Red-Light Enforcement
2017 PROGRAM EVALUATION

pennsylvania
DEPARTMENT OF TRANSPORTATION

June 2017

About the Transportation Advisory Committee

The Pennsylvania 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 TAC 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 18 public members—six appointed by the Governor, six appointed by the President Pro Tempore of the Senate, and six appointed by the Speaker of the House of Representatives.

This study of the Automated Red-Light Enforcement (ARLE) program in Pennsylvania examines ARLE's effectiveness in improving safety. It also identifies opportunities for expanding the program's benefits to additional municipalities.

FINDINGS in Brief

ARLE is effective.

- Crash data indicate that ARLE is enhancing safety by reducing crashes and injuries.
- Violations at most ARLE-equipped intersections decline and then after about two years stabilize at approximately half the pre-ARLE level.
- Pennsylvania's ARLE legislation is balanced and effective.
- The program is being administered adequately.
- Philadelphia's ARLE program produces net revenue that funds statewide safety improvements.

However, ARLE is underutilized.

- Only two municipalities have implemented ARLE: the City of Philadelphia and Abington Township.
- 15 other municipalities meet population and police accreditation prerequisites.
- 14 additional municipalities meet population thresholds, but lack police accreditation.
- Public and stakeholder misconceptions appear to be the most significant obstacle to program expansion.

ARLE can and should expand.

- ARLE has the potential to save even more lives.
- From a strictly monetary perspective, the ARLE benefits of injury avoidance outweigh costs.
- The legislative and program framework exist to support broader implementation.

A strategic approach—along with greater PennDOT oversight authority—will help Pennsylvania to efficiently maximize ARLE's safety benefits.

- The study recommendations systematically address ARLE issues and opportunities.

Recommendations Summary

A. **Continue to promote and expand the ARLE program.**

B. **Consider legislative changes to further improve ARLE program.**

C. **Establish an ongoing process for future ARLE program evaluations.**

D. **Update the ARLE Summit Document.**

E. **Reinvest some ARLE Funding Program dollars back into ARLE.**

F. **Require a local match for projects funded by the ARLE Funding Program.**

G. **Establish a standardized municipal reporting protocol to provide documentation supporting PennDOT's oversight.**

H. **Provide a program of technical assistance to prospective and current ARLE municipalities.**

I. **Consider a statewide contracting vehicle for ARLE to encourage municipal participation.**

J. **Provide targeted information and awareness for elected officials and municipalities.**

K. **Strategically engage MPOs and RPOs in the ARLE program.**

L. **Provide updated PennDOT website data.**

This TAC study fulfills a legislative requirement to evaluate the ARLE program's effectiveness.

Red-light-running crashes caused 709 deaths and an estimated 126,000 injuries in the U.S. in 2014.
–Highway Loss Data Institute, Insurance Institute for Highway Safety

Study Purpose

This study by the Pennsylvania Transportation Advisory Committee (TAC) fulfills a requirement of Act 101 of 2016 to conduct an independent and objective assessment of the ARLE program in Pennsylvania.

The following aspects of Pennsylvania's ARLE program were evaluated:

- ARLE legislation
- Violation, crash, and injury data for ARLE intersections
- Fine revenue and program expenses
- ARLE Funding Program (safety improvement grants)
- Benefits and costs
- Relevant ARLE developments in other states
- Issues and opportunities for expanding the ARLE program

Highlights of the above data and analysis are provided in this summary.

The document concludes with study findings and recommendations, taking a strategic view of ARLE through 2027.

Overview of ARLE in PA

Pennsylvania's Automated Red-Light Enforcement (ARLE) program was established by Act 123 of 2002.

Its intent is to improve safety by reducing vehicle crashes and injuries due to red-light running at signalized intersections.

If a driver runs a red light, cameras photograph the vehicle's license plate. A ticket is issued to the vehicle owner after a thorough review of the infraction.

ARLE has been implemented at 30 intersections in the City of Philadelphia and three in Abington Township, Montgomery County.

ARLE was authorized by the Pennsylvania General Assembly in 2002. The program has been extended (through 2027) by a series of legislative Acts.

Pennsylvania is one of 24 states that operate ARLE programs.

Year	Legislative Milestone	Noteworthy Elements
2002	Act 123 Vehicle Code (Title 75) provided enabling authority for ARLE program	• Authorized Cities of the First Class (Philadelphia)
2002	Act 152 extended ARLE through 2006	
2004	Act 8 extended ARLE through 2007	• Initiated Transportation Enhancements program (ARLE Funding Program)
2005	Act 50 revised public warning period for cameras (60 days)	• First ARLE cameras installed in Philadelphia
2007	Act 67 extended initial ARLE program through 2011	
2011	Act 129 extended ARLE program through June 30, 2012	
2012	Act 84 extended ARLE program through July 15, 2017	• Expanded authorization to Second and Third Class cities with total population greater than 20,000 • Revised the distribution of ARLE Funding Program grants
2016	Act 101 extended ARLE program through July 15, 2027	• Required an evaluation of the ARLE program

Document Terminology: "ARLE program" vs. "ARLE Funding Program"

The "ARLE program" refers to automated red-light enforcement in eligible communities at appropriate intersections.

The "ARLE Funding Program" refers to the state-administered competitive grant program established in 2004. It uses net revenue from ARLE violations to fund highway safety projects statewide.
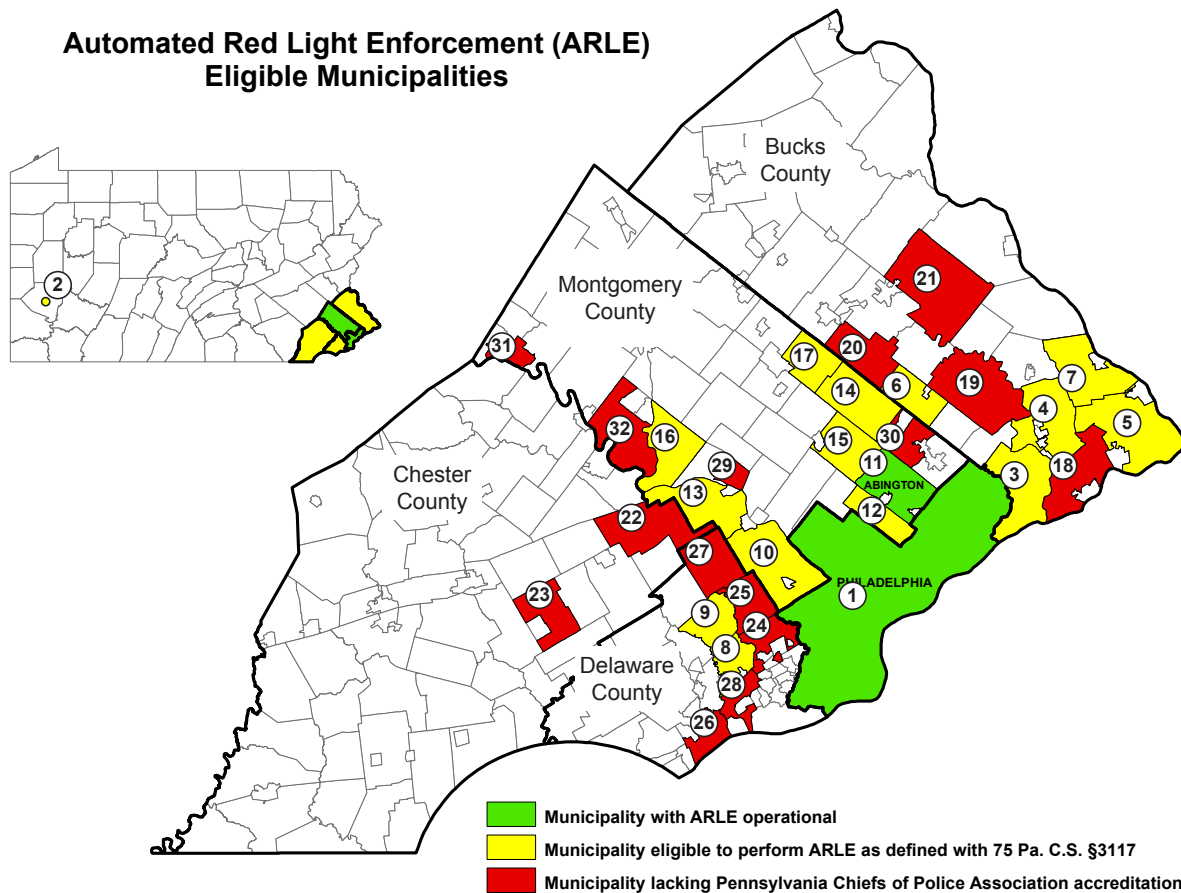
17 Pennsylvania municipalities are eligible to implement ARLE since 2012.

Only two have done so.

Automated Red Light Enforcement (ARLE) Eligible Municipalities

Legend:
- 🟩 Municipality with ARLE operational
- 🟨 Municipality eligible to perform ARLE as defined with 75 Pa. C.S. §3117
- 🟥 Municipality lacking Pennsylvania Chiefs of Police Association accreditation

	ARLE-Eligible Municipalities by County
1	City of Philadelphia (ARLE at 30 intersections)
2	City of Pittsburgh
	Bucks County
3	Bensalem Township
4	Middletown Township
5	Falls Township
6	Warminster Township
7	Lower Makefield Township
	Delaware County
8	Springfield Township
9	Marple Township
	Montgomery County
10	Lower Merion Township
11	Abington Township (ARLE at 3 intersections)
12	Cheltenham Township
13	Upper Merion Township
14	Horsham Township
15	Upper Dublin Township
16	Lower Providence Township
17	Montgomery Township

ARLE in Philadelphia

ARLE-Equipped Intersections

Philadelphia implemented ARLE in 2005, equipping three intersections with cameras. The City has added about three intersections per year, and had 30 ARLE intersections as of 2016.

Red-light violations on average have dropped by half at ARLE intersections within two years of implementation.

Individual intersections show considerable fluctuation in trends, but most experience a decline in violations over the long term.

Total ARLE Violations (Philadelphia)

Y-axis: Total Violations (10,000 – 35,000)
X-axis: Months of Red-Light Enforcement (1–24)
60-day warning period
29,692
15,145
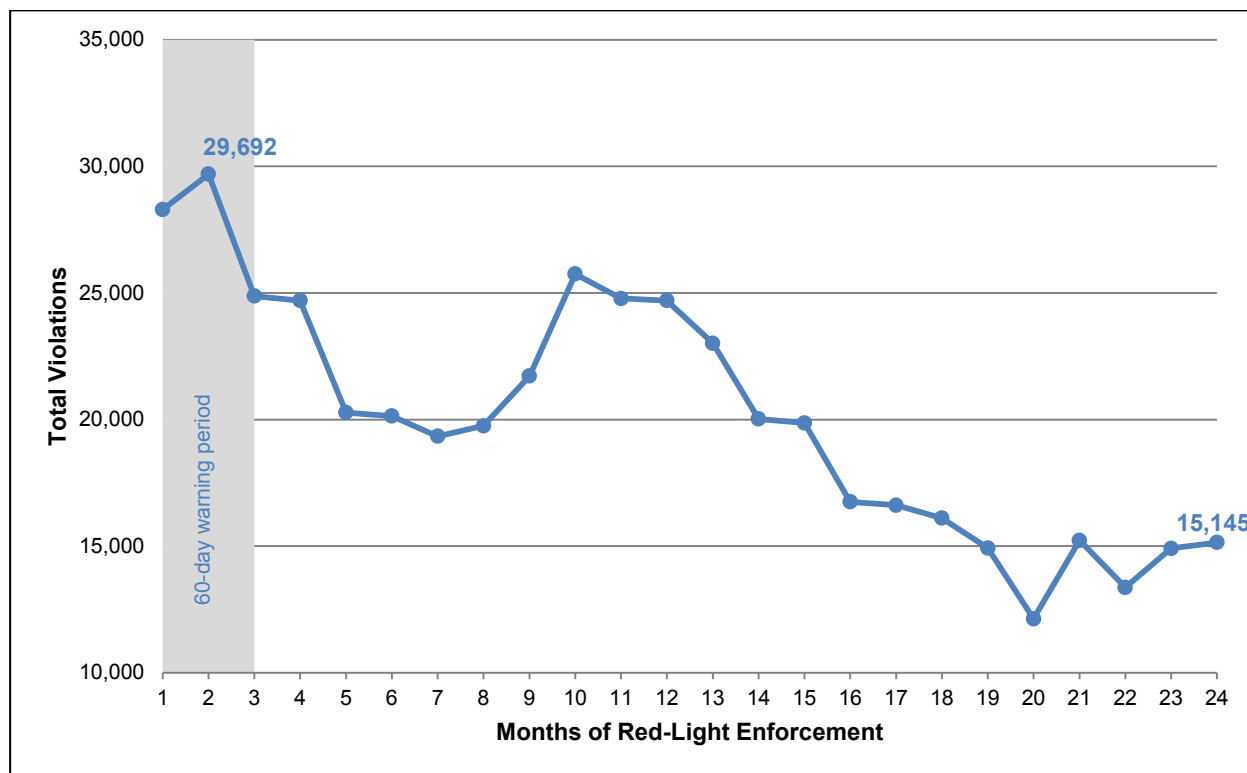
The chart to the left depicts violations in the first 24 months of red-light enforcement at the 21 Philadelphia ARLE intersections that were operational by 2012.

Five of the intersections included in the analysis did not follow the overall trend of decreasing violations by the end of Month 24. Had those intersections been excluded from the totals shown, the downward trend for the remaining 16 intersections would have been even more pronounced.

Because 27 of the 30 ARLE intersections presently in operation can be considered "mature," with no further significant decline in violations expected, the number of violations going forward should be fairly stable, assuming no change in other factors such as a significant increase in traffic volume.

The number of injuries caused by red-light-running crashes declines after ARLE implementation.

The crash analysis indicates that ARLE has significant safety benefits.

The reported number of injuries was selected as the measure for analyzing ARLE's safety effects because it most closely captures crash severity, and therefore reflects the intended safety outcome. Due to the low number of fatalities both before and after ARLE implementation, it is not possible to draw a statistically definitive conclusion about ARLE's effects on fatalities.

The percentage changes in the number of injuries were calculated for four sets of ARLE intersections: those added in 2005, 2007, 2009, and 2010. These intersections were chosen because there were at least three intersections added in the same year and because five years of post-ARLE implementation crash data is available.

Injuries caused by red-light-running crashes were lower after ARLE implementation in each group of intersections evaluated. The analysis strongly indicates that ARLE has safety benefits in the form of reduced injuries in crashes attributed to running red lights.

For the intersections added in 2005, injuries in all crashes are actually higher after ARLE, and in fact the increase exceeds the increase at non-ARLE intersections. One of the three intersections drives this negative result, suggesting that ARLE is not the solution for that intersection's safety challenges and that other measures are required.

Of the 27 intersections with at least three years of post-implementation crash data, 16 exhibited a reduction in crashes after ARLE implementation.

The data underscores the need to select ARLE intersections carefully to maximize the likelihood of yielding safety benefits. Crash statistics should be monitored continuously.
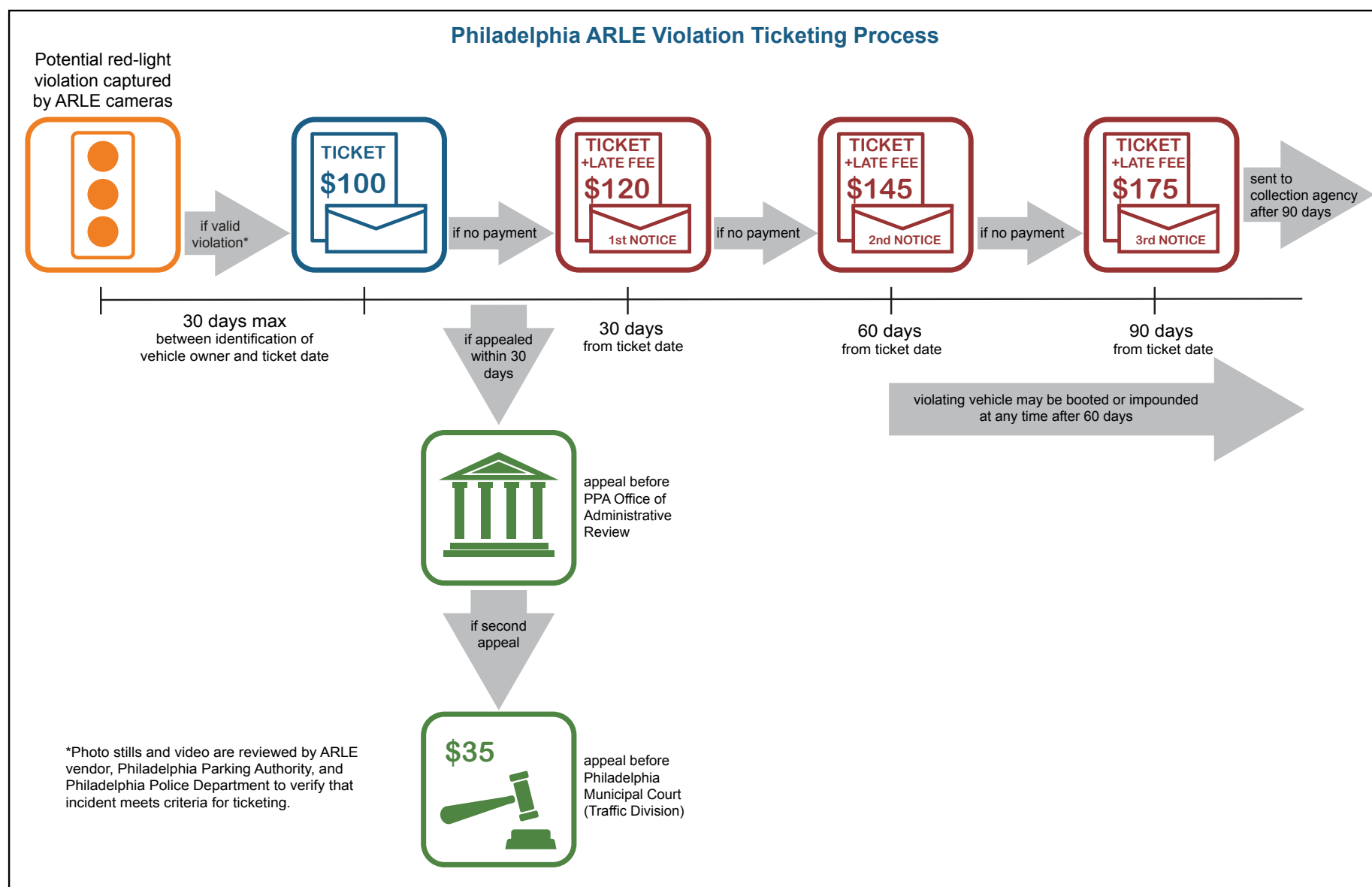
Percentage Change in Number of Injuries from Red-Light-Running Crashes at ARLE Intersections Compared to Non-ARLE Intersections
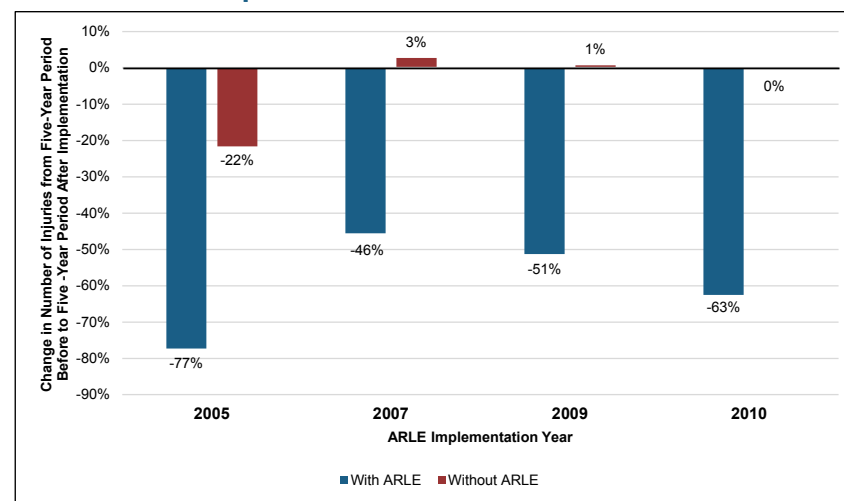
Percentage Change in Number of Injuries, All Crashes
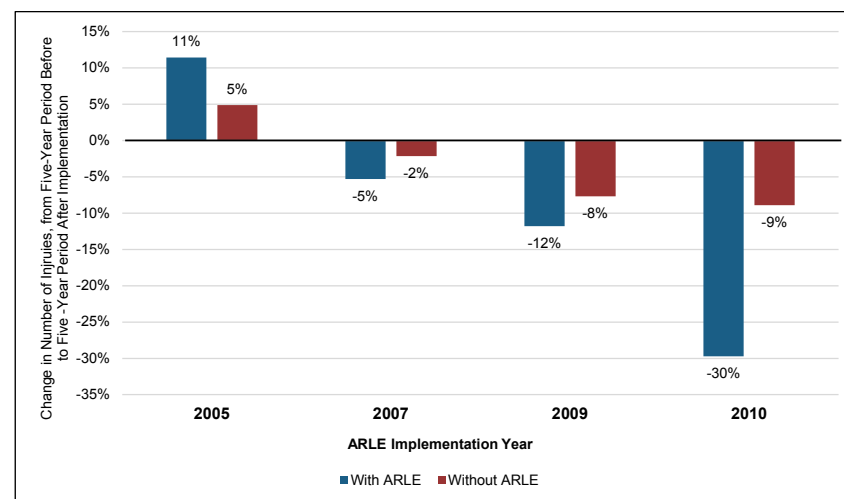
The process for evaluating potential violations, issuing tickets, and collecting fines is specified by state regulations and local ordinances.

Philadelphia ARLE Violation Ticketing Process

Potential red-light violation captured by ARLE cameras

if valid violation*

TICKET
$100

if no payment

TICKET
+LATE FEE
$120
1st NOTICE

if no payment

TICKET
+LATE FEE
$145
2nd NOTICE

if no payment

TICKET
+LATE FEE
$175
3rd NOTICE

sent to collection agency after 90 days

30 days max
between identification of vehicle owner and ticket date

30 days
from ticket date

60 days
from ticket date

90 days
from ticket date

violating vehicle may be booted or impounded at any time after 60 days

if appealed within 30 days

appeal before PPA Office of Administrative Review

if second appeal

$35

appeal before Philadelphia Municipal Court (Traffic Division)

*Photo stills and video are reviewed by ARLE vendor, Philadelphia Parking Authority, and Philadelphia Police Department to verify that incident meets criteria for ticketing.
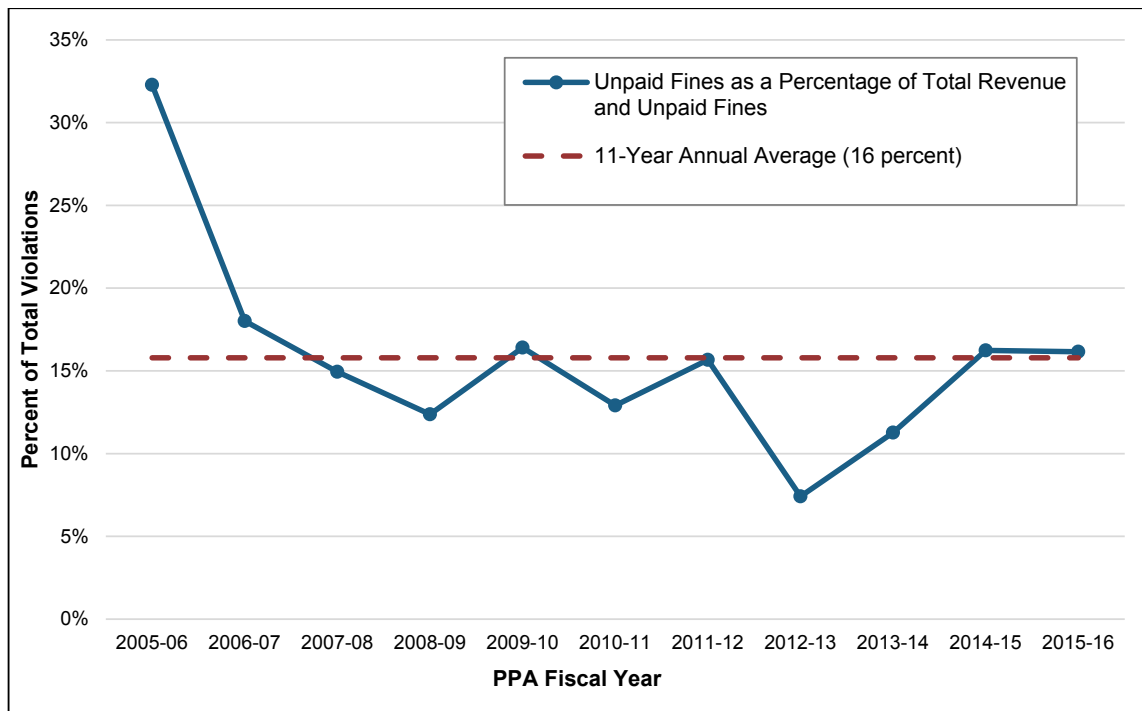
ARLE fine revenue has generally tracked with number of violations as would be expected.

The rate of unpaid violations is about 16 percent— better than other U.S. ARLE programs.

Cumulative unpaid violation fines in Philadelphia total $18.9 million.

Philadelphia Unpaid Fines as a Percentage of Total Potential Revenue

At the program's inception in 2005, unpaid fines accounted for 32 percent of the program's total potential violation revenue.

The rate of unpaid fines declined dramatically after the program's inaugural year (and the Philadelphia traffic code amendment that imposed penalties for non-payment), and has consistently remained at or below 16 percent since 2007. This rate is lower than that of other U.S. ARLE programs.

For Philadelphia to cover its ARLE operations and administration costs, 325 violations per month per ARLE intersection are necessary.

**Annual Average Violations per Month by Intersection in 2015**

Intersection	Violations
Belmont & Parkside	1,288
26th & Penrose	745
Second & Erie	1,102
Island & Bartram	1,814
Ogontz & Stenton	919
Byberry & Worthington	333
Knights & Woodhaven	871
Bustleton & Byberry Rd	351
Grant & Academy	287
Island & Lindbergh	592
Broad & Vine	603
Henry & Walnut	288
Aramingo & York	668
Aramingo & Castor	492
Rising Sun & Adams	442
JFK & Broad	551
South Penn & Broad	524
58th & Walnut	84
Broad & Hunting Park	329
9th & Roosevelt	377
Southampton & Roosevelt	373
Welsh & Roosevelt	243
Rhawn & Roosevelt	181
Levick & Roosevelt	581
Mascher & Roosevelt	352
34th & Grays Ferry	458
Broad & Oregon	82
Cottman & Roosevelt	666
Red Lion & Roosevelt	277
Grant & Roosevelt	299

break-even number of violations (325)

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The Philadelphia ARLE vendor contract accounts for the largest share of total program costs.

The share of PPA administrative expenses is increasing, in part due to vendor contract terms.

Expenses by Agency
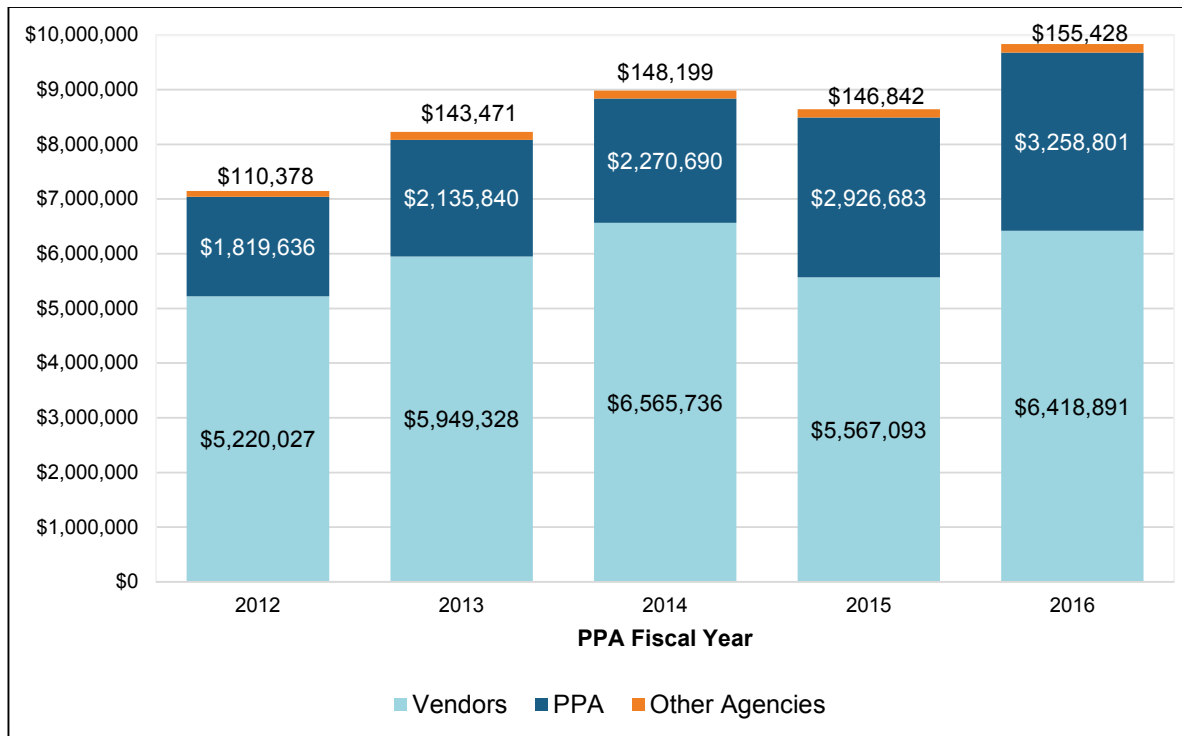
Vendor costs account for the largest share of total program costs. The chart also displays a generally increasing total expense trend, as the number of intersections has increased each year over this period.

The decline in total expenses from FY 2014 to 2015 reflects the substantial decrease in the vendor cost when PPA entered into a contract with a new equipment vendor.

Philadelphia's ARLE program generates a net revenue.

Philadelphia ARLE Program Net Revenues
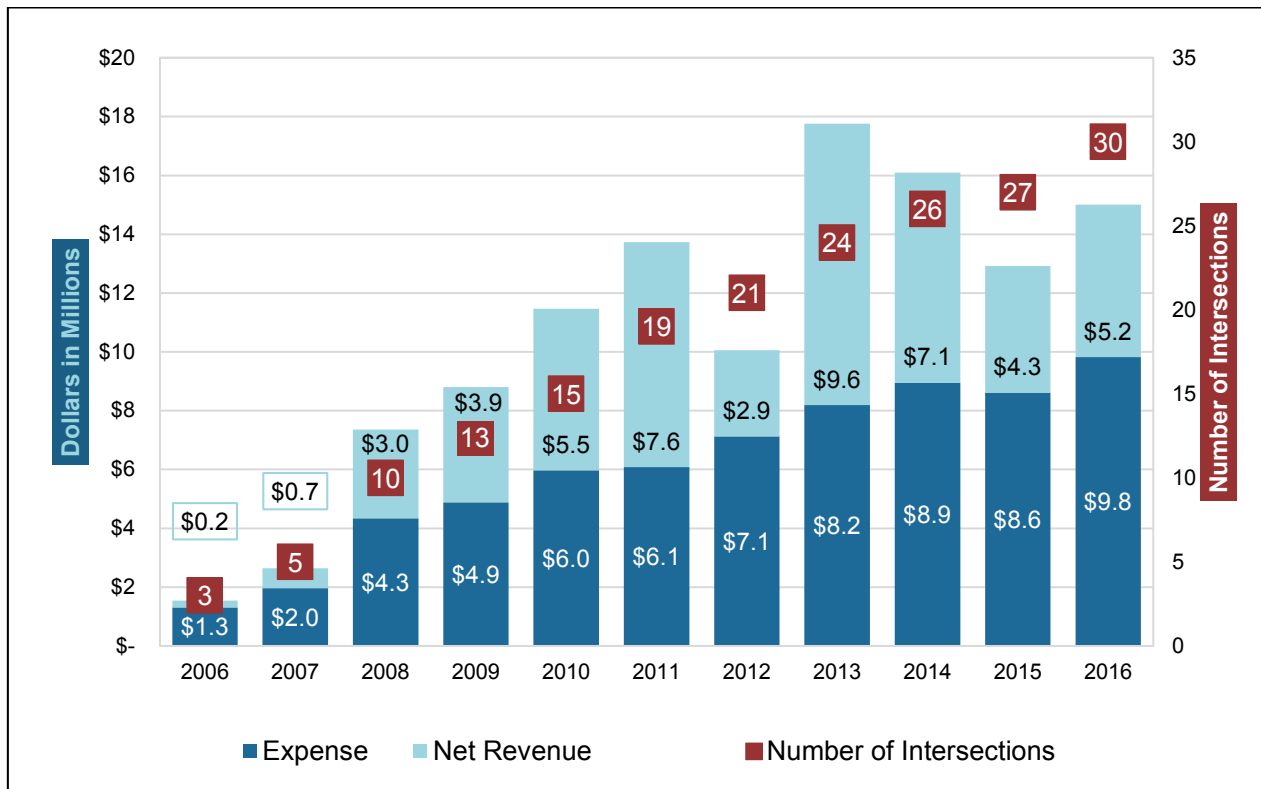
The number of violations in the Philadelphia ARLE program is sufficiently large that the revenue collected from the violation fees exceeds the expense of operating the system.

The statewide ARLE Funding Program was established to use any net revenue generated from automated enforcement for safety improvements on roadways throughout the Commonwealth.

It is important to underscore, however, that the purpose of the ARLE program is to improve safety by reducing the number of violations and crashes due to red-light running, not to generate revenue.

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The Pennsylvania Vehicle Code was amended in July 2012 to allow ARLE in smaller municipalities.

ARLE in Abington Township

Abington Township (population approximately 55,000) is a suburban Philadelphia community. The Township enacted a local ordinance authorizing ARLE in 2013, and implemented ARLE at three intersections in 2014.

Abington has been included in the summary report because its experience is relevent to other municipalities that might implement ARLE in the future.

Within a year of implementation, the number of violations decreased sharply and then generally leveled off to half the number before ARLE.

Non-residents reportedly account for 70% of ARLE violations in Abington Township.
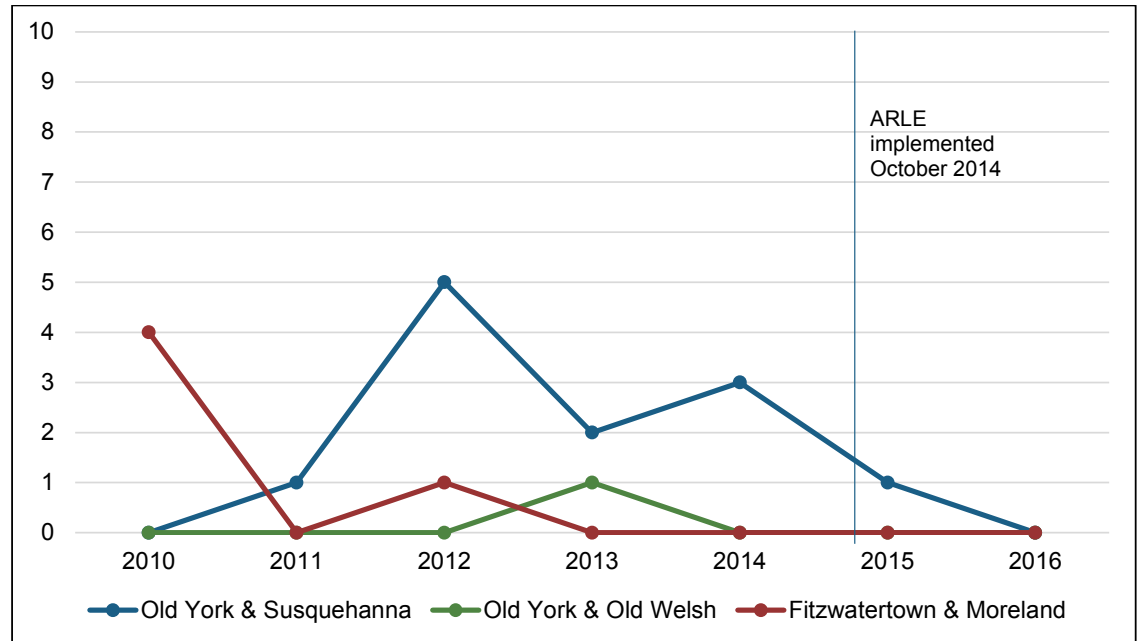
Total ARLE Violations (Abington Township)
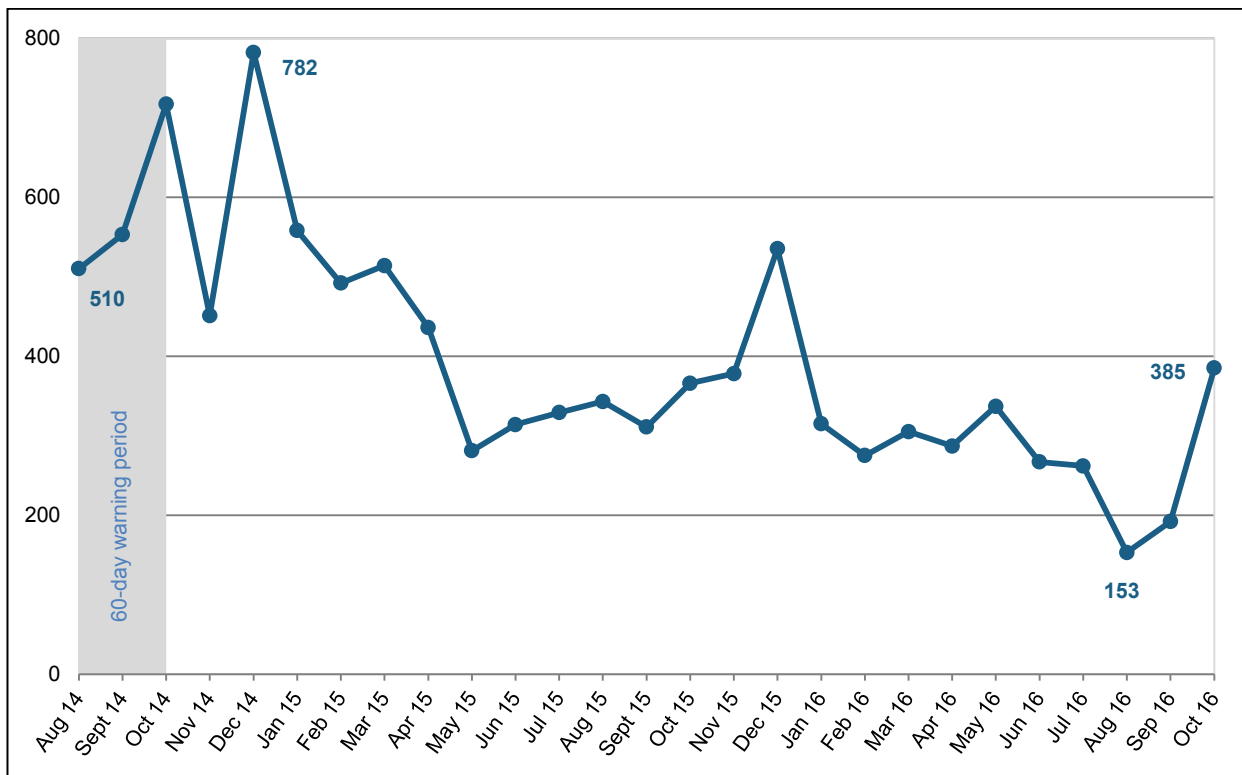
Apart from a spike in December 2015, violations remained relatively stable throughout the second year of the program. Some down time to upgrade the cameras in August 2016 reduced the number of violations recorded that month.
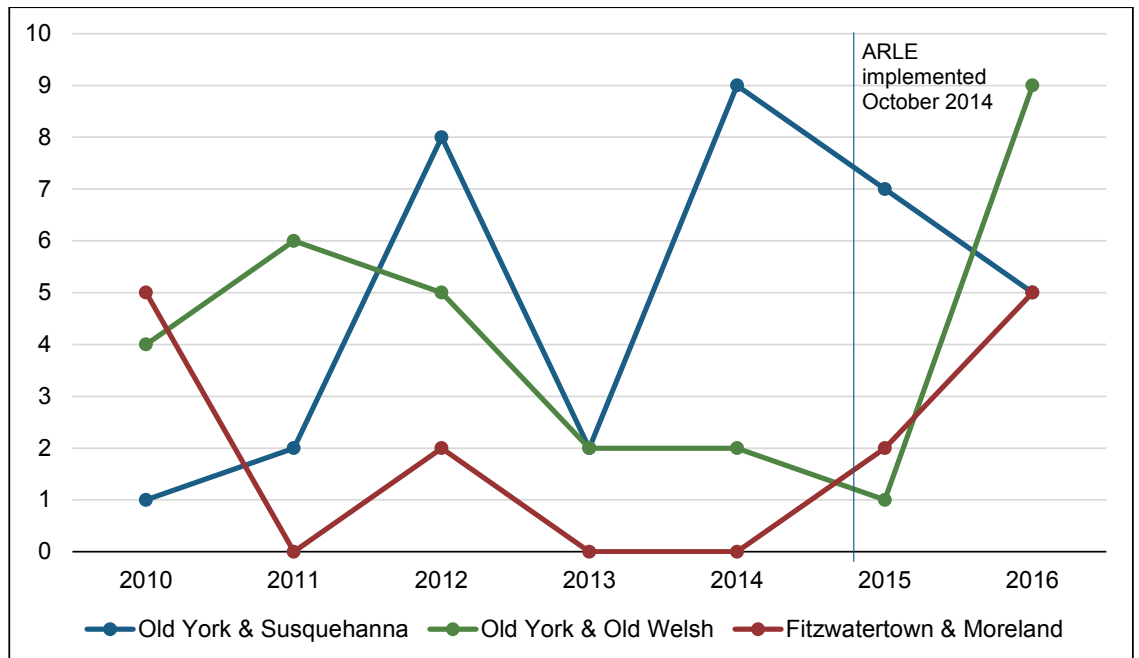
The ARLE program in Abington is too recent to draw definitive conclusions about its safety effects. However, red-light-running crashes are decreasing.

The "All Crashes" chart displays the substantial year-to-year variation in number of injuries that prevents reaching conclusions about the effects of the first two years of Abington's ARLE implementation.

Number of Injuries, Red-Light-Running Crashes by Intersection

ARLE implemented October 2014

Legend: Old York & Susquehanna — Old York & Old Welsh — Fitzwatertown & Moreland

Number of Injuries, All Crashes by Intersection

ARLE implemented October 2014

Legend: Old York & Susquehanna — Old York & Old Welsh — Fitzwatertown & Moreland

Abington Township's process for ARLE violation ticketing, fine collection, and appeals is consistent with state regulations and customized by local ordinance.

Abington ARLE Violation Ticketing Process

Potential red-light violation captured by ARLE cameras

if valid violation*

TICKET **$100**

if no payment, sent to collection agency after 79 days

TICKET +LATE FEE **$135**

30 days max
between identification of
vehicle owner and ticket date

if appealed within 30 days

79 days
from ticket date

appeal before Abington
Hearing Officer
(appointed by Abington
Police Department)

if second appeal

$135

appeal before
District Court

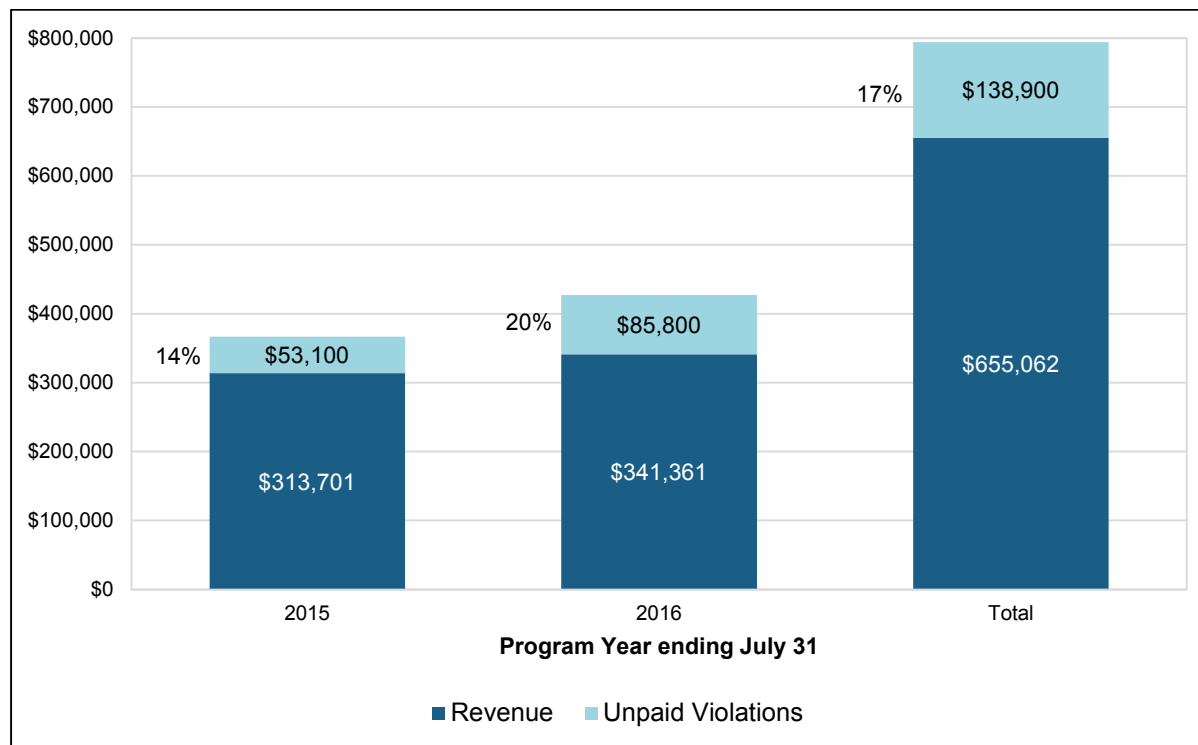*Violations are reviewed by vendor and
Abington Police Department to verify they
meet criteria for ticketing.

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The revenue collected from fines in Abington Township totaled $655,062 for the first two full years of the ARLE program.

Abington Township: ARLE Revenue and Unpaid Fines

Stacked bar chart. Vertical axis from $0 to $800,000 in $100,000 increments. Horizontal axis "Program Year ending July 31" with categories 2015, 2016, Total.

- 2015: Revenue $313,701, Unpaid Violations $53,100 (14%)
- 2016: Revenue $341,361, Unpaid Violations $85,800 (20%)
- Total: Revenue $655,062, Unpaid Violations $138,900 (17%)

Legend: ■ Revenue ■ Unpaid Violations

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Abington's program cost was $140 per violation in the 2016 program year.

Abington Township's contract with its ARLE vendor assigns the cost risk to the vendor.

Abington Township ARLE Program Expenses and Revenue

	For the ARLE Program Year ending July 31,		First Quarter Program Year 2017
	2015	**2016**	
Township ARLE Administrative Costs	71,130	54,572	11,648
ARLE Vendor (Gatso) Charges	420,000	504,000	126,000
Total Costs	$491,130	$558,572	$137,648
Violations	4,874	3,981	730
Personnel Cost/Violation	$15	$14	$16
Total Program Cost/Violation	$101	$140	$189
Net Revenue (Cost)	($177,429)	($217,210)	($394,639)

The total two-year cost of Abington Township's ARLE program through July 2016 was approximately $1 million. Based on the total revenue of $655,062, the fines collected would not be sufficient to cover the total cost of the program. However, Abington Township does not have to bear that cost, per its agreement with its ARLE vendor.

As fine revenue is received, Abington Township first reimburses its own ARLE administrative costs. Revenue in excess of those costs is accrued until $42,000 is accumulated. That amount—the vendor fee for 10 cameras for one month—is then paid to the ARLE vendor. At the end of the vendor's contract, any unpaid balance will be forgiven.
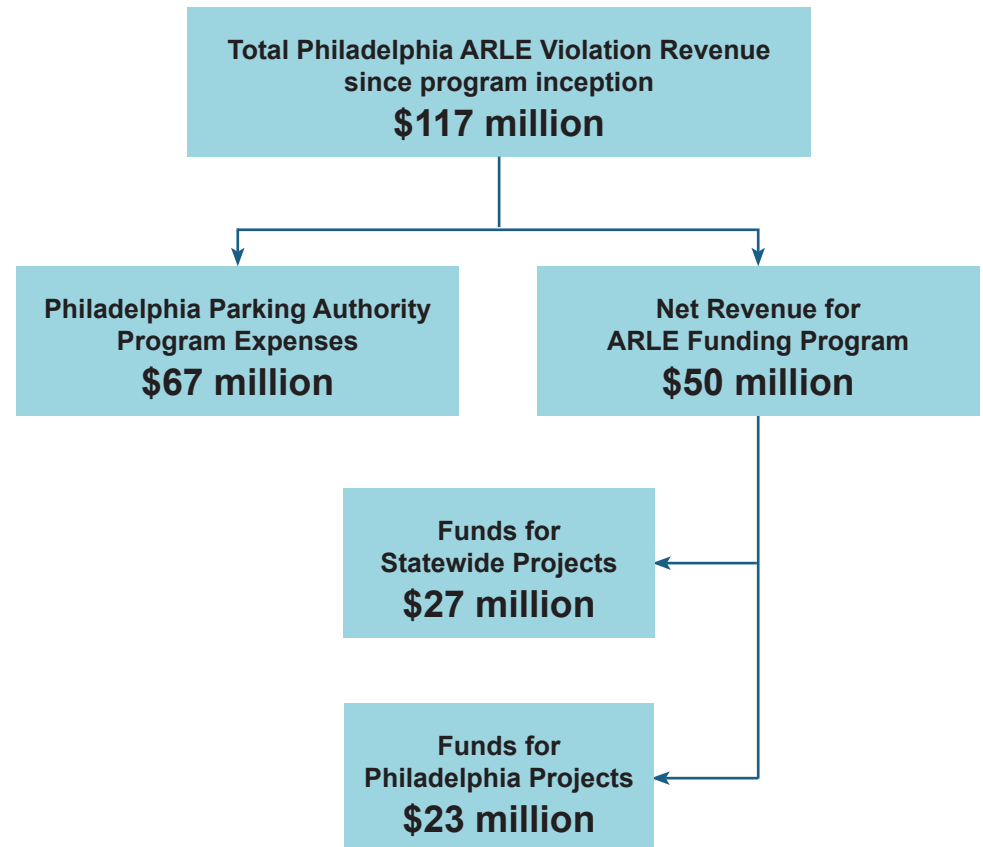
This vendor agreement demonstrates that it may be affordable for smaller municipalities to operate an ARLE program, provided they can negotiate favorable contract terms.

Philadelphia's ARLE program is presently the sole funding source for the statewide ARLE Funding Program.

More than 115 municipalities have received grants for safety improvement projects through the ARLE Funding Program.

- The City of Philadelphia is the only municipality whose ARLE program produces a net revenue; it is the sole funding source for the statewide ARLE Funding Program.

- More than $45 million in ARLE funds had been awarded through 2015.

- Philadelphia receives about half of the annual funding from the ARLE Funding Program.

- Safety improvement grants are awarded on a competitive basis by PennDOT based on the majority vote of an eight-member selection committee.

- The funding demand for these types of improvement projects greatly exceeds the available ARLE program funds.

- A total of 300 projects have been awarded out of 1,449 applications submitted since the ARLE Funding Program inception.

ARLE Funding Program Revenue Allocation

Total Philadelphia ARLE Violation Revenue since program inception
$117 million

Philadelphia Parking Authority Program Expenses
$67 million

Net Revenue for ARLE Funding Program
$50 million

Funds for Statewide Projects
$27 million

Funds for Philadelphia Projects
$23 million

ARLE benefits outweigh costs.

An ARLE program that prevents just one serious injury every five years would yield an annual benefit of more than $207,000 in avoided costs.

Comparing Costs and Benefits

A municipality that is contemplating a possible net cost of $96,000 (a hypothetical cost described in Figure 25 of the full report) to operate ARLE at an intersection should, of course, compare such prospective costs to the possible safety benefit. Using the values in the sidebar, an ARLE program that prevents just one serious injury every 10 years would offset this net cost with the annual average value of the safety benefit. The avoidance of even a single moderate injury every four years would more than offset this $96,000 cost. If the costs of automated enforcement technology decrease over time, the benefit-cost calculation would tip even further in favor of implementing ARLE at intersections with red-light-running safety problems.

USDOT Guidance on Valuing Crash Reduction Benefits

Item	Statistical Cost or Value in 2017 Dollars
Value of a statistical life	$9,870,000
Critical Injury	$5,852,910
Severe Injury	$2,625,420
Serious Injury	$1,036,350
Moderate Injury	$463,890
Minor Injury	$29,610
Property damage per vehicle	$4,123

Key Issues That Have Limited ARLE Implementation

Pennsylvanians need to know the facts about ARLE:

- The process for selecting ARLE intersections, configuring cameras, and evaluating potential violations optimizes safety benefits and safeguards against the potential concerns bulleted at right.

- Before-and-after statistical analysis of crash data demonstrate that ARLE has improved safety at some of Pennsylvania's intersections with the highest crash ratings.

- Vendors are willing to structure contracts to ensure that their fees do not exceed violation fine revenue, making ARLE affordable even for smaller municipalities.

These and other facts about ARLE dispel negative misconceptions and tell a positive story that should be the central message of expanded public information efforts.

1. Lack of public support and accurate awareness

The general public—and their elected officials—are generally unaware of the facts and benefits associated with ARLE. Many have unanswered questions or misconceptions about the program's purpose, operations, and results, leading to a lack of support for ARLE, or outright opposition to its use. Common ARLE myths:

- ARLE is a money-making scheme.
- ARLE invades privacy.
- ARLE increases crashes.
- ARLE is too expensive.

These assumptions are contrary to the facts (see sidebar). Strategic public outreach is needed to communicate the facts and shift public opinion.

2. Requirement for Municipal Police Force Accreditation

Before a municipality is eligible to implement ARLE, it must meet population thresholds and have earned police accreditation from the Pennsylvania Chiefs of Police Association. The process can be lengthy and time-consuming, and can be an obstacle to implementation. However, it is important to note that there are 15 municipalities fully eligible to participate in ARLE that have not done so.

3. Legislative, Technical, and Administrative Challenges

Implementing an ARLE program involves expertise in several areas that many municipalities do not have. Proper ordinances must be passed, traffic and crash data must be collected and analyzed, vendors and contracts must be evaluated, and processes must be developed for evaluating potential violations, issuing tickets, and collecting fines. PennDOT already provides technical support at key milestones, however there is an opportunity to provide additional guidance through state and local programs and peer-to-peer assistance.

Municipalities believe ARLE is too expensive for smaller communities.

The study team conducted a municipal survey to gauge the perception of the ARLE program and factors that may prevent municipalities from implementing ARLE.
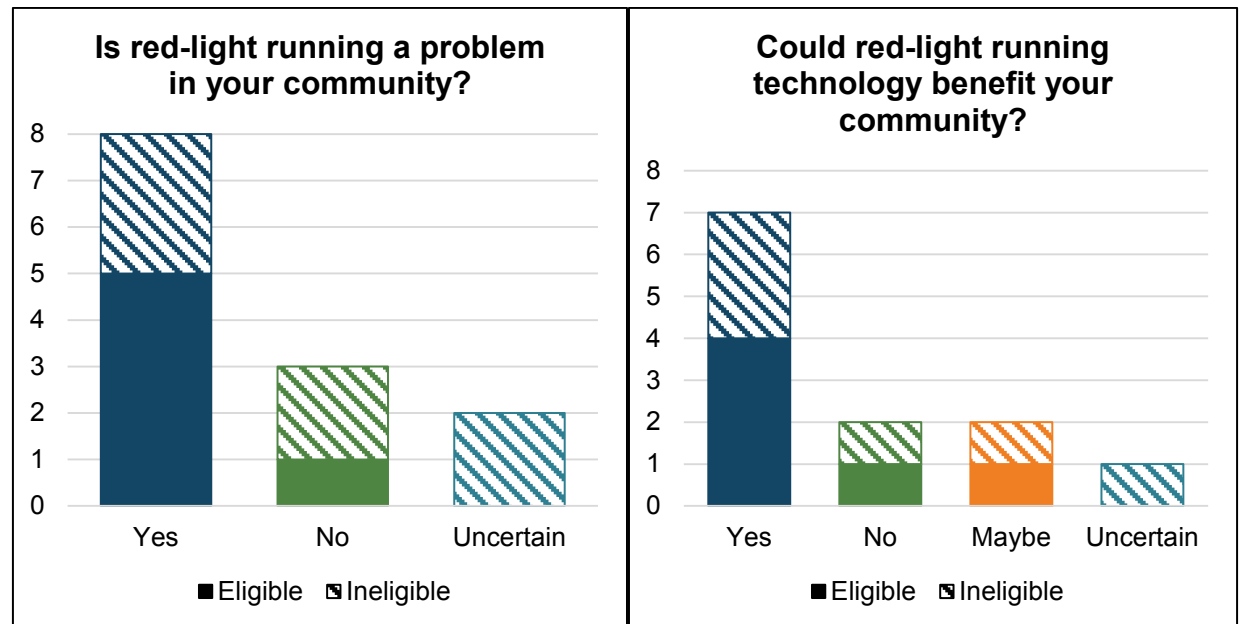
Twenty-nine municipalities were surveyed; 13 responded.

ARLE-Eligible Survey Respondents

- Lower Providence Township
- Falls Township
- Middletown Township
- Marple Township
- Montgomery Township
- Lower Merion Township

Presently ARLE-Ineligible Survey Respondents:

- City of Bethlehem
- Ferguson Township
- Lower Allen Township
- Straban Township
- West Chester Borough
- Lebanon County
- York County

Is red-light running a problem in your community?

	Yes	No	Uncertain
Eligible	5	1	0
Ineligible	3	2	2

Legend: ■ Eligible ◩ Ineligible

Could red-light running technology benefit your community?

	Yes	No	Maybe	Uncertain
Eligible	4	1	0	0
Ineligible	3	1	2	1

Legend: ■ Eligible ◩ Ineligible

ARLE-eligible municipalities cited cost and township officials/public support as factors that would need to change prior to their participation.

ARLE-ineligible municipalities requested more education and training on ARLE implementation as well as ARLE Funding Program grants. The Pennsylvania State Association of Township Supervisors (PSATS) was also questioned and suggested that the eligibility requirements (i.e., police department accreditation) might be burdensome for some municipalities to achieve.

For both eligible and ineligible municipalities, lack of awareness and training appears to be the main obstacle to understanding and implementing an ARLE program.

Considerations for Selecting ARLE Intersections

- A 2013 Transportation Research Board study conducted by Texas A&M Transportation Institute suggests that a significant safety benefit is achieved when installing ARLE at intersections that have four or more red-light-running crashes per year, or have two or more red-light-running crashes per 10,000 vehicles.

- ARLE systems are not necessarily appropriate for all signalized intersections—only those intersections where documented red-light violations and/or crash problems exist.

- Other appropriate countermeasures, should be implemented prior to considering an ARLE system. For example:

  - Ensure that the yellow change and all-red clearance intervals are in compliance.

  - Ensure that sight distance, alignment, grade, and/or other intersection geometry is not causing the red-light-running problem.

Pennsylvania's ARLE program compares favorably with other states.

Local government/state programs vary in certain ways, but generally the programs operate similarly.

Legislative issues

Legislation may present serious issues to the implementation and operation of an ARLE program. Limiting the dollar amount of penalty for a violation, allowing vendors to be paid on a per-violation basis rather than a flat fee, or designating specific yellow signal times are all factors that should be addressed in ARLE legislation or policy to avoid problems that have been observed in other states.

Safety benefits

Although the safety benefits of ARLE programs are often debated, numerous studies have shown that the most dangerous types of crashes decrease with the implementation of red-light cameras.

Revenue distribution

Many other states with ARLE programs redirect a portion of the violation revenue to help support various safety, health, or emergency services-related activities, either in that local municipality or in other communities statewide.

Pennsylvania has been highlighted favorably among other states for directing funds to traffic safety grants.

Vendor Contracting

Vendor agreements vary greatly among states and among the municipalities within those states.

Many agreements include the stipulation that the municipality will not have to pay the vendor any amount greater than violation revenue.

Public perception

Most of the information available on red-light cameras displays positive results regarding improving safety. A 2015 study by the American Automobile Association (AAA) Foundation for Traffic Safety noted that 57 percent of people surveyed were in favor of using ARLE on residential streets, and that 28 percent strongly favored it.

Red-Light Enforcement States

- Red light and speed
- Red light
- None
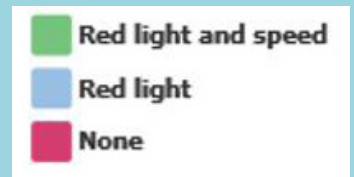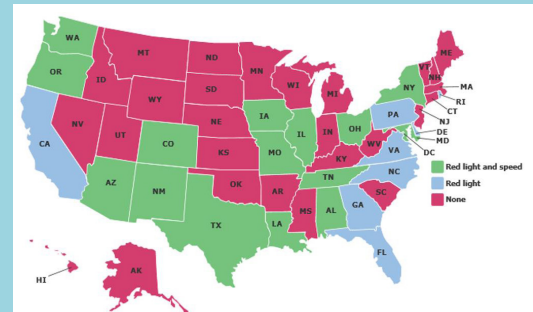
In addition to reviewing national statistics and studies of ARLE, researchers analyzed ARLE programs in Texas; Virginia; New Jersey; and Suffolk County, New York.

Key Findings

- **ARLE improves safety:** The ARLE program in Pennsylvania has been successful in improving safety by reducing the number of injuries and fatalities associated with intersection crashes.

- **ARLE works effectively in both large and smaller municipalities:** The ARLE program has proven to be successful in two distinct categories of municipality: major city (Philadelphia) and large township (Abington, Montgomery County), indicating that wider replication is possible.

- **ARLE benefits outweigh costs:** The reduction of fatalities and injuries represents a major benefit for the ARLE program. The cost of implementing ARLE must be considered in relation to these benefits that can accumulate to a very large extent even with the numbers of fatalities and injuries being seemingly few.

- **ARLE is feasible even where violation fines do not cover operating costs:** ARLE programs in smaller municipalities with comparatively lower traffic volumes and fewer violations would not be likely to generate sufficient revenue to cover program administration and operating costs, or provide additional revenue for the ARLE Funding Program. However, there may be ways to address this such as through the current methods by which vendor contract terms are set.

- **ARLE reinforces safe driver behavior:** After an initial peak in recorded red-light-running violations, intersections equipped with ARLE typically maintain a lower, but relatively steady, level of violations. With a fixed fine level of $100 and inflation expected to increase costs, some decrease in net revenue per intersection can be expected.

- **Safety benefits vary by intersection:** While ARLE is shown to be effective overall, the intersections vary in the effects of ARLE on violations and crashes and in the ability to generate sufficient fine revenue to cover expenses.

- **PA's ARLE law is comprehensive:** The Pennsylvania legislation (Act 123 of 2002) that initially authorized ARLE has been amended six times to improve various aspects of the program. The legislation is considered well-crafted and prevents many of the problems that have been experienced in other states with less-stringent legislation.

- **Present statutory population thresholds exclude many large municipalities:** The most recent legislation (2012) expanded ARLE eligibility to the City of Pittsburgh and to municipalities with more than 20,000 residents in the four southeastern counties of Pennsylvania. Municipalities elsewhere in the state remain ineligible to implement ARLE at their intersections.

- **Seventeen municipalities meet prerequisites for ARLE:** A total of 32 municipalities are in the designated counties and meet the population threshold for ARLE eligibility. However, only 17 of these municipalities meet the additional ARLE requirement of having an accredited police department.

- **Public opinion appears to be a significant barrier to broader implementation:** A survey of officials at 13 municipalities found that eight reported red-light running to be a problem. Lack of support by elected officials was the key reason cited for not implementing an ARLE program.

- **Only two municipalities have implemented ARLE:** Seventeen municipalities are currently eligible to implement an ARLE program in Pennsylvania, but only two (Philadelphia and Abington Township) have done so. This suggests that there are barriers to a broader implementation that should be addressed.

- **The ARLE Funding Program continues to be successful:** Net revenues from Philadelphia's ARLE program fund safety improvement projects throughout the state. Demand for ARLE Funding Program grants, as measured by the amount requested in grant applications, far exceeds available funding.

Recommendations

A. Continue to promote and expand the ARLE program.

TAC recommends that the municipalities with current ARLE programs consider additional intersections where ARLE may aid in reducing red-light-running violations and crashes.

In addition, TAC recommends that PennDOT move to a new phase in the program's development by promoting ARLE and assisting other eligible municipalities in implementing an ARLE program.

B. Consider legislative changes to further improve ARLE program.

Pennsylvania legislation authorizing the ARLE program is generally viewed as well-crafted and comprehensive. Since the initial ARLE program was authorized in 2002, the legislation has been periodically amended. In continuing to improve upon the ARLE program in Pennsylvania, it may be appropriate to refine the ARLE law as follows:

- Eliminate the requirement of municipal police force accreditation.
- Index the violation fine to inflation.
- Authorize PennDOT to remove cameras from ARLE intersections. (Alternatively PennDOT should consider advancing this recommendation if the statute does not expressly prohibit it in any way.)
- Expand the number of counties in which municipalities are eligible to implement ARLE.
- Require additional supporting documents with the local quarterly reports.

C. Establish an ongoing process for future ARLE program evaluations.

Effective public program design and delivery typically entails periodic program evaluations. This may include a review of any or all of the following:

- Program goals and objectives
- Cost-effectiveness and cost efficiency
- Customer / public satisfaction
- Other focus areas or measures specific to the program being evaluated
- Performance measurement

D. Update the ARLE Summit Document.

In September 2014, PennDOT's Bureau of Maintenance and Operations produced an excellent ARLE Summit Guidance document covering a wide range of topics. TAC recommends that the document be updated after the Department determines any new directions or emphasis areas related to this study, or otherwise. New areas of emphasis could include:

- An FAQ document or brochure that debunks some of the misconceptions regarding ARLE
- Program goals or objectives
- Program evaluation or performance measurement
- Municipal reporting
- Raising awareness of the public and public officials
- Incorporating additional program details into PennDOT policy

Recommendations

E. Reinvest some ARLE Funding Program dollars back into ARLE.

PennDOT should consider reinvesting a portion of net revenues back into the ARLE program for purposes that particularly relate to expansion, such as developing programs that would encourage more municipalities to implement ARLE and conducting periodic evaluations of the program.

F. Require a local match for projects funded by the ARLE Funding Program.

PennDOT's 2014 ARLE Guidance Document provides that no matching funds are required for ARLE Funding Program grants. However, the total funding requested is substantially higher than the available program funds. Requiring a local match may encourage municipalities to prioritize projects for which they seek ARLE Funding Program grants. It would also help stretch the funding to potentially allow additional safety improvements projects to advance.

G. Establish a standardized municipal reporting protocol to provide documentation supporting PennDOT's oversight.

PennDOT receives payments of net revenues from ARLE municipalities. Presently that only includes Philadelphia, as Abington does not have net revenues from its program. There is no supporting reporting required when the payment is made. For an appropriate audit trail and to reconcile the payment with the associated violations/fees, it is recommended that PennDOT develop a reporting template or protocol for ARLE municipalities.

H. Provide a program of technical assistance to prospective and current ARLE municipalities.

Technical assistance through programs such as the Local Technical Assistance Program (LTAP) could be the vehicle or model for an expanded ARLE technical assistance effort to advance potential implementation in other eligible municipalities.

I. Consider a statewide contracting vehicle for ARLE to encourage municipal participation.

Many eligible municipalities may lack the expertise to contract as effectively as possible with vendors. The opportunity for cost savings through a statewide contract could provide economies of scale for each municipality and would reduce their time and cost associated with the contracting process.

J. Provide targeted information and awareness for elected officials and municipalities.

Pennsylvania has numerous training venues and platforms for municipal officials, many of which can be used to raise awareness of the ARLE program.

Recommendations

K. Strategically engage MPOs in the ARLE program.

PennDOT's partnership with the metropolitan and rural planning partners across the state is recognized as one of the best in the nation. Metropolitan planning organizations should be engaged by PennDOT as a key strategic partner for promoting and facilitating ARLE.

L. Provide updated PennDOT website data.

The PennDOT website for the ARLE program can be enhanced to include public information, best practices, performance and trend data, profiles of successful municipalities and intersections, and FAQ-type information to help dispel misperceptions. A more robust and engaging website should be linked with local governments, local government associations, and other websites addressing highway safety.