City and County of San Francisco

Office of the Controller – City Services Auditor

Automated Speed Enforcement Implementation: Survey Findings and Lessons Learned From Around the Country

November 12, 2015

OFFICE OF THE CONTROLLER
CITY SERVICES AUDITOR

The City Services Auditor (CSA) was created in the Office of the Controller through an amendment to the Charter of the City and County of San Francisco (City) that was approved by voters in November 2003. Under Appendix F to the Charter, CSA has broad authority to:

- Report on the level and effectiveness of San Francisco's public services and benchmark the City to other public agencies and jurisdictions.
- Conduct financial and performance audits of city departments, contractors, and functions to assess efficiency and effectiveness of processes and services.
- Operate a whistleblower hotline and website and investigate reports of waste, fraud, and abuse of city resources.
- Ensure the financial integrity and improve the overall performance and efficiency of city government.

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Corina Monzón, Project Manager

City and County of San Francisco

Office of the Controller – City Services Auditor

Department Name: Municipal Transportation Agency **November 12, 2015**

Automated Speed Enforcement Implementation:
Survey Findings and Lessons Learned from Around the Country

Purpose of the Report

This report provides the results from a survey administered to six metropolitan jurisdictions that implemented Automated Speed Enforcement (ASE) programs to address speeding and improve safety for all road users.

Background

This report was done in support of Vision Zero, the City's policy goal to eliminate traffic deaths by 2024. Speeding is a leading cause of severe and fatal injury collisions in San Francisco. San Francisco is committed to eliminating traffic deaths and prioritizing safety improvements in addition to ASE implementation. ASE has been found to be an effective tool that over 130 communities throughout the country have implemented to improve safety for all road users. The City's adopted Vision Zero Action Strategy calls for the advancement of ASE authorization at the state level.

To inform the City's advancement of ASE legislation, the San Francisco Controller's Office administered a survey in June 2015 to Chicago, Denver, New York, Portland, Seattle and Washington D.C. What follows are key findings about the legislative process, various program implementation approaches and reported effectiveness of the technology from the surveyed jurisdictions.

Survey Findings

Effectiveness

- Effectiveness measures and results vary by jurisdiction, but all demonstrate that ASE is an effective tool to improve road safety. This finding is consistent with evaluation results reported by academic articles, white papers, and reports from federal, state, and local agencies.

Legislative Process

- The two most prevalent issues in garnering support for speed cameras are (1) demonstrating to the public that the purpose is improving safety rather than generating revenue and (2) combating the public perception that speeding is an acceptable driver behavior.

Program Administration and Staffing

- The majority of ASE programs are led by police departments; however, the jurisdictions that most recently implemented ASE programs, Chicago and New York, are led by their department of transportation.
- Programs are staffed with a combination of in-house and contractor support. Washington D.C. is the most reliant on outside vendors and New York is the least.

Lessons Learned

- Engage the public early and share facts about the effectiveness of speed cameras and dispel myths about cameras being used for purposes other than to reduce speeding.
- Keep citation fee rates lower than moving violations and direct revenue to safety improvements.
- Include school zones in the designated enforcement area.
- Use mobile cameras because they can move to address new areas of concern and spread out enforcement to reach a greater number of locations.
- Encrypt data to ensure privacy of personal information like names and addresses.
- Authorize citation issuance to the registered vehicle owner for simpler administration and enhance privacy as the camera will only capture the offender's license plate.
- Require reporting of program metrics to evaluate and monitor effectiveness.

Camera Location and Public Notice

- All jurisdictions except for Washington D.C. specify a designated ASE enforcement area in the authorizing legislation.
- Most jurisdictions use both fixed and mobile cameras.
- All jurisdictions except New York City provide notice to the public about speed camera locations.

Speed Threshold and Fines

- Half of all jurisdictions fine speed camera violators a reduced amount compared to a traditional speeding ticket issued by a police officer.
- With the exception of New York, all jurisdictions based citation fines on miles over the speed threshold, and in the case of Denver and Portland also on the designated enforcement area (i.e. work zone, school zone, etc.).
- The majority of survey respondents place the citation responsibility on the registered vehicle owner; only Denver and Portland issue the citation to the driver of the vehicle because they are driver liability states.

System Maintenance and Accuracy

- When maintained properly, speed cameras are accurate within 1 mile per hour.
- There is a wide range of how often the equipment is calibrated. The most often equipment is calibrated is in Chicago, which does weekly calibration.

Program Cost and Revenue

- All jurisdictions that submitted this data reported that their revenues cover the cost of the program.
- Most surveyed jurisdictions direct at least a portion of the revenues to safety improvements.

Data Use

- Every jurisdiction surveyed encrypts speed camera data and only uses the data for law enforcement purposes. All jurisdictions reported having a data use policy that also extends to their vendors.

CITY AND COUNTY OF SAN FRANCISCO
OFFICE OF THE CONTROLLER

Ben Rosenfield
Controller

Todd Rydstrom
Deputy Controller

November 12, 2015

Mayor Edwin M. Lee
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

Board of Supervisors
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

Dear Mayor Lee and Members of the Board of Supervisors:

The Controller's Office, City Services Auditor Division, presents its Automated Speed Enforcement Report on implementation techniques and lessons learned around the country. This work was conducted at the request of the San Francisco Municipal Transportation Agency (SFMTA) and with the full support of the San Francisco Police Department (SFPD). The project objectives were to identify how other metropolitan jurisdictions implemented automated speed enforcement camera programs and their successes and challenges to encourage local and state support for a speed camera program in San Francisco, as approved in the City's Two-Year Vision Zero Action Strategy.

The project concluded that there are a variety of speed camera implementation techniques that other jurisdictions employ to deter speeding. State legislative changes will be needed to allow an ASE program in California. The report recommends that should the City and County of San Francisco support state legislative authorization for ASE, that the program begin with a focus on high injury corridors, areas of chronic speeding, and areas where the most vulnerable populations, such as school children and seniors, are present.

We appreciate the assistance provided by staff from the SFMTA and SFPD, staff in other city departments, and staff from the jurisdictions surveyed.

Respectfully,

Ben Rosenfield, Controller

Edward D. Reiskin, Director of Transportation, San Francisco Municipal Transportation Agency

Greg Suhr, Chief of Police, San Francisco Police Department

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS

- AAA: American Automobile Association
- ASE: Automated Speed Enforcement
- ATS: American Traffic Solutions
- DMV: Department of Motor Vehicles
- DOF: Department of Finance
- DOT: Department of Transportation
- FTE: Full Time Employee
- MPH: Miles Per Hour
- NYC: New York City
- PD: Police Department
- SFMTA: San Francisco Municipal Transportation Agency

BACKGROUND

The San Francisco Controller's Office administered a survey in June 2015 to jurisdictions across the country to gather information about their Automated Speed Enforcement (ASE) implementation practices and lessons learned. The purpose of this data collection effort is to support San Francisco's own advancement of ASE authorization as called for in the City's Two-Year Vision Zero Action Strategy. Vision Zero is San Francisco's goal to eliminate traffic deaths by 2024.

ASE is a safety technique that uses cameras with vehicle speed sensors to snap photos of motor vehicles traveling above a defined threshold. Images captured by ASE cameras are processed and reviewed for validity. Violations are reviewed and verified prior to issuing a citation. Jurisdictions utilize ASE technology to deter speeding, and improve safety for all road users.

Speed is a major factor in traffic safety and how fast a vehicle is traveling has a direct impact on whether someone survives a collision. People struck by a vehicle traveling 20 miles per hour (mph) have a 10% chance of dying, whereas if a person is hit by a car traveling 40 mph a person has an 80% chance of dying. Speed-related crashes are responsible for an estimated $52 billion in economic losses each year nationwide.[1] In San Francisco, $15 million a year in medical costs are related to pedestrian injuries and $564 million in total annual health related economic costs.[2]

Source: Vision Zero Two-Year Action Strategy

San Francisco Experience

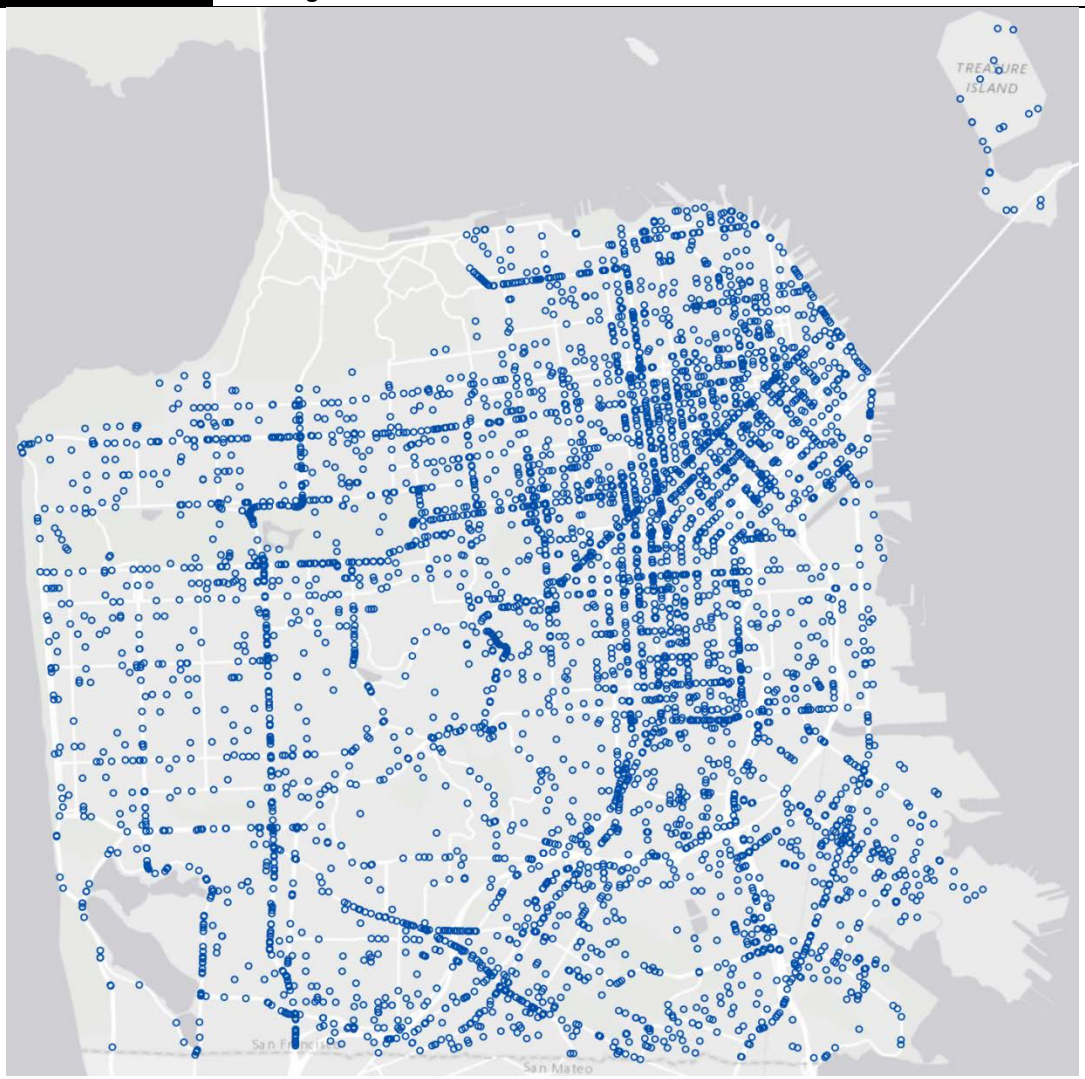
Between 2008 and 2012, speeding was the top primary collision factor.[3] Exhibit 1 on the following page shows collisions where unsafe speed was the leading factor between 2008 and 2012. In San Francisco over 4,100 pedestrians were injured or killed in collisions between 2007 and 2011. In 2014, 31 people were killed and approximately 515 people were seriously injured from April 2014 to April 2015, according to the San Francisco Department of Public Health. Each week, approximately two people are killed or severely injured while walking on our streets. These injuries account for almost one-quarter of trauma cases seen at San Francisco General Hospital. These injuries and deaths are preventable.

[1] National Highway Traffic Safety Administration. *The Economic and Societal Impact of Motor Vehicle Crashes.* 2010. http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf

[2] WalkFirst SF, WF_FAQ_140304.pdf

[3] SFMTA Collision Report, https://www.sfmta.com/sites/default/files/Collision_report_2010_2011_000.pdf

EXHIBIT 1 2008-2012 San Francisco collisions where unsafe speed was the leading factor



Source: San Francisco Municipal Transportation Agency

ASE Nationwide

ASE programs, in addition to traditional enforcement, have reduced speeding and crashes worldwide for over 30 years. According to a National Highway Traffic Safety Administration (NHTSA) report on ASE evaluation, “Research indicates that automated enforcement systems can result in measurable safety improvements at high crash locations.” Based on a number of evaluation case studies in the NHTSA report, all jurisdictions reported decreases in injury crashes and/or all types of crashes at sites where speed cameras were located.

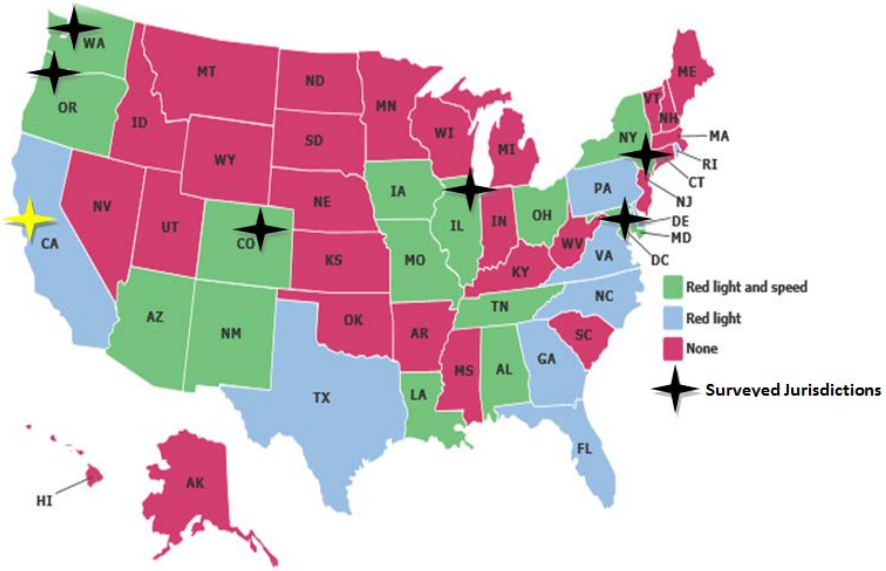
Benefits to using ASE in addition to traditional enforcement include the following:[4]

1. Detect multiple speeding violations per minute, which increases enforcement to change driver behavior and reduce speed
2. Operate in locations that may be otherwise dangerous for law enforcement personnel to be stationed
3. Impartially and consistently enforces the speed limit
4. Enhances the enforcement influence to reduce driving speeds and improve safety without significant additional staff and resources

ASE cameras can be fixed, meaning they are mounted on infrastructure; or mobile, typically meaning that they are mounted on vans that are moved to various locations. If the law allows, jurisdictions generally opt for a mix of both fixed and mobile cameras. Mobile cameras can be moved to address new streets of concern, thereby providing a proactive and flexible approach to deter speeding. Fixed cameras can often use existing infrastructure or share space with red light cameras and they are used in areas that need consistent enforcement such as schools, parks, and senior centers.

The following map from the Insurance Institute for Highway Safety shows the states that currently have speed and/or red light camera programs. As of November 2015, 140 communities around the country use ASE.[5] All states with speed camera programs also have red light camera programs. The locations of the six jurisdictions with existing ASE programs that were surveyed as part of this research effort are starred in black and San Francisco is shown in yellow below.

EXHIBIT 2 Six jurisdictions were surveyed for this report of 140 total communities using ASE



Source: Insurance Institute for Highway Safety

[4] National Highway Traffic Safety Administration. *Speed Enforcement Camera Systems Operational Guidelines.* 2008. http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/810916.pdf

[5] Insurance Institute for Highway Safety. November 2015. http://www.iihs.org/iihs/topics/laws/automated_enforcement/

METHODOLOGY

The San Francisco Controller's Office administered a survey to six jurisdictions in June 2015 to gather information about the implementation of their Automated Speed Enforcement (ASE) Programs. The six jurisdictions were selected based on achieving the following criteria:

- major metropolitan areas with populations greater than 600,000;
- geographic diversity; and
- recent ASE implementation and long-standing programs.

EXHIBIT 3 Six jurisdictions were surveyed as part of this research effort

Jurisdiction	Population (2014 census estimate)	ASE Program Start Date	Geographic Diversity
Chicago	2,722,389	2013	Central
Denver	663,862	1998	Central
New York	8,491,079	2013	East
Portland	619,360	1995	West
Seattle	668,342	2008	West
Washington D.C.	658,893	2001	East
San Francisco	852,469	N/A	West

Source: Controller's Office Survey, US Census data

This survey was the second part of the City's data collection effort regarding ASE programs. The same six jurisdictions were interviewed by the Controller's Office in January 2014 via e-mail and telephone to provide basic information about their ASE programs and legislative changes needed to implement the program.[6] The survey administered in June 2015 built off of the 2014 research and was designed to gather information about implementation practices and lessons learned in order to support San Francisco's own advancement of ASE authorization as called for in the City's Two-Year Vision Zero Action Strategy.[7]

The survey had five main areas: [8]

1. **Program Authority/General Planning (Legislative Process)**: Survey questions were aimed to understand the legislative process and what approaches worked well and what challenges existed to determine how legislative support was obtained, which advocacy groups were in engaged, and the top legislator concerns for passing ASE legislation.

2. **Program Start-Up**: This section of questions asked about jurisdiction's start-up process that included initial costs, vendor roles and responsibilities, how speed thresholds and camera locations were determined, and if/how drivers are alerted to cameras.

[6] See Appendix A for an overview of the preliminary research completed in 2014.
[7] San Francisco Vision Zero. 2015. http://visionzerosf.org/about/two-year-action-strategy/
[8] See Appendix B for survey questions. Survey responses were collected online and/or over the phone. The City of Chicago was not able to provide written responses; therefore, the information in this report was derived from online research, documentation and telephone correspondence.

3. **Operations/Implementation**: This section aimed to determine what approaches jurisdictions used when implementing the program and also ASE operations. Questions included which agency leads program administration, number of full time employees (FTEs) administering the program, who maintains/calibrates the system, and who reviews the photos.

4. **Data Use**: The data use questions focused on how ASE data is collected and used, which agency houses and collects the data, if the data is encrypted, if there is data use policy, and how long is data stored.

5. **Program Evaluation**: ASE evaluation questions provide an understanding of how successful the program has been and how jurisdictions are measuring success. Questions included how effective they found their ASE program to date, how many citations were issued last year, how many were paid, how many were challenged, and how many were repeat offenders.

The survey results were further supplemented by additional online research to develop this comprehensive report. The following chapters present the survey responses from each jurisdiction, data collected during interviews and online research.

CHAPTER 1: LEGISLATIVE PROCESS

Introduction

San Francisco is required to obtain legislative approval for ASE implementation.This chapter examines how survey respondents obtained legislative support for ASE implementation. All six jurisdictions were required to introduce and pass state or district level legislation to initially implement ASE. For some, such as New York City, this was an exceptionally long process, spanning ten years, including negotiations of how restrictive the program and fines should be. In contrast Washington D.C. had swift District legislation passed and the program implemented shortly thereafter.[9] There are lessons to be gleaned from all these experiences because similar to the jurisdictions surveyed, San Francisco must obtain state legislative approval to implement ASE.

Currently, California law prohibits the use of automated enforcement for speeding. California Vehicle Code 21455.6.(c) states the following:

> "The authorization in Section 21455.5 to use automated enforcement systems does not authorize the use of photo radar for speed enforcement purposes by any jurisdiction."

Since 2007, 16 bills relating to automated enforcement systems have been introduced in the California Legislature. Some bills aimed to allow the use of ASE, while others aimed to limit or prohibit the use of automated enforcement (Refer to Appendix C for a list of California State Legislation relating to automated enforcement).

Findings and Lessons Learned

The Controller's Office survey asked jurisdictions to select the top three concerns from legislators regarding passing ASE legislation. As shown in Exhibit 4, the greatest concerns were revenue and public perception.

EXHIBIT 4 Revenue and public perception were cited the most as the greatest concerns about implementing ASE

Jurisdiction	Revenue	Public Perception	Privacy	Effectiveness	Camera Location	Technology
Chicago		X		X		
Denver	X	X			X	
New York	X		X			
Portland	X	X	X			
Seattle	X	X	X	X		
Washington D.C.				X		X

Source: Controller's Office Survey

[9] Washington D.C. reported that their process may be faster than states because once their mayor passes legislation it can directly go into effect within the District without going through a large state legislative body.

Revenue

Based on the open-ended comments from survey respondents and supplemented by a scan of media reporting on ASE legislation, the reason revenue is as a top concern is based on the assumption that cities use ASE as a revenue generating technique to offset costs and balance the budget.

There are different approaches to address the concern that the purpose of ASE is to generate revenue. Based on survey follow up and additional research, directing revenues to safety improvements, deploying cameras using a data-driven strategy to areas where speeding is a concern, and keeping fines lower than a traditional speeding ticket are potential approaches to address revenue generating concerns. In addition, ASE vendors should be compensated based on specific services provided as listed in a contract rather than on the number of citations issued. This reduces any potential incentive or perceived incentive for a vendor to issue more citations. Another suggestion, through survey follow up, was to issue warning tickets for at least 30 days before issuing tickets, which shows that the program is about reducing speeding for safety rather than for revenue generation.

Public Perception

Through Controller's Office survey results and research of media and online sources, public perception was found to be a common concern with four of the six jurisdictions noting it as a concern equal to revenue. In general the public perceives that there is a wide range of "acceptable" levels of speeding, which is one of the most difficult challenges to overcome in order to gain support for ASE.

The 2014 AAA Traffic Safety Culture Index surveyed 384 licensed CA drivers and found that 46% of respondents supported speed cameras on residential streets (ticketing at 10+ mph over the speed limit). In the same survey, 44% of respondents admitted to speeding more than 10 mph over the posted speed limit on a residential street. Although the public is concerned about safety, they also admit to speeding which may contribute to the public's perception about ASE.

To address the issue of public perception, surveyed jurisdictions suggest being transparent and engaging the community prior to implementation plans, in addition to demonstrating that ASE is an effective method of reducing speed-related crashes. Based on the 2014 research, alerting drivers to camera locations is a potential solution to address public perception concerns because it shows that the jurisdiction is transparent in their implementation and enforcement process.

Other partners to engage in the process include the state department of transportation, state highway patrol, and other cities with similar safety concerns. A united approach, combined with local and state advocates, has been successful in gathering support for ASE legislation and program implementation. In Seattle, walking and biking advocacy groups came out early in support of ASE, while only individuals opposed; organized groups did not oppose. In Washington D.C., the Insurance Institute for Highway Safety and other highway and safety advocates were ASE proponents. Many of the proponents were from groups who attended council meetings over the years and had a working relationship with the District. Opponents in Washington D.C. tended to be individual drivers; the staunchest opponents were AAA Mid-Atlantic.

Privacy

A third area of concern is privacy with three of the six jurisdictions listing it as a top concern regarding obtaining support for passing ASE legislation. To address privacy concerns and for simpler administration, most jurisdictions do not identify the driver of the vehicle. Cameras are set up to only capture photos of the car's license plates. This means that violations are a civil rather than a criminal matter and are treated like a parking ticket. In addition, jurisdictions do not need to address the issue of who was driving, which tends to lessen the number of challenged citations. Lastly, the 2014 analysis identified that data confidentiality is a potential solution to privacy concerns. Data confidentiality is the process of separating personal information from speed camera data for reporting purposes. Another solution identified in the 2014 research was to develop a privacy policy that extends to the vendor and explicitly states how ASE data can be used. Exhibit 5 lists the most common implementation concerns and potential solutions.

EXHIBIT 5 Revenue, public perception and other common concerns may be addressed with a variety of implementation choices and solutions

Issue	Potential Solutions
Revenue	1. Direct revenue to safety improvements, not for the general fund 2. Keep fines lower than citations issued through traditional enforcement 3. Use mobile ASE units to address areas of concern based on a data-driven deployment 4. Limit vendor compensation to the cost of services and equipment without being tied to the number of citations issued.
Public Perception	1. Engage partners early and develop a united approach with local and statewide partners 2. Work with the community to address concerns before rolling out a larger program 3. Alert drivers to camera locations 4. Provide education and outreach about the effectiveness of ASE (data-driven and fact-based) prior to implementation
Privacy	1. Photographs of license plates only, not the driver (cannot make the driver liable to pay the fine) 2. Data confidentiality 3. Privacy policy

Source: Controller's Office Survey and 2014 Controller's Office Interviews

CHAPTER 2: PROGRAM IMPLEMENTATION

This chapter details how jurisdictions implemented their ASE programs. Survey respondents employed a variety of different implementation techniques regarding program administration and staffing, camera locations, speed thresholds and fines, system maintenance and citation review. The survey results also show a wide range of program costs and revenue. Program implementation is linked to the legislative process described in Chapter 1 of this report. Legislation may specify how jurisdictions must implement the program. For example, New York City is restricted to school zones, around school hours, and a $50 flat rate fine based on their legislation. In contrast, Washington D.C. did not have specific and restrictive legislation, which provided more flexibility to select locations, fine amounts, and times of the day to enforce.

Program Administration and Staffing

The six jurisdictions surveyed for this report varied in program start date, administrative lead department, number of staff dedicated to ASE, and level of contractor support. As shown in Exhibit 6, the majority of ASE programs are led by police departments because they are tasked with speed enforcement. However, the jurisdictions that most recently implemented ASE programs, Chicago and New York, are led by the respective Department of Transportation (DOT). Both jurisdictions that do and do not have a police department lead have stated that a city DOT may be better equipped to lead implementation. DOT officials are responsible for posting speed limits and often collect and disseminate data and statistics, which typically make the engineers responsible for program evaluation. Police departments are responsible for enforcement and are in the center of ASE operations; however, police often have competing demands with traditional enforcement and other responsibilities. Therefore, according to some survey respondents, dedicated DOT leadership and staff are essential to leading a successful program.

ASE programs are staffed with a combination of in-house and contractor support. The Controller's Office survey asked each jurisdiction to report the number of internal full time employees dedicated to the ASE program by agency and role; however, the responses that were received did not allow us to accurately compare the jurisdictions.

EXHIBIT 6 Police Departments lead ASE programs in four of the six jurisdictions

Jurisdiction	Program Start Date	Program Administration Lead	Dedicated FTEs	# of cameras (2014)[10]
Chicago	2013	DOT	54 (includes red light and speed camera)	144
Denver	1998	Police Department	15	4
New York	2013	DOT	Data not available	20
Portland	1995	Police Department	2	4
Seattle	2008	Police Department	2	17
Washington D.C.	2001	Police Department	29	87

Source: Controller's Office Survey

[10] Estimates based on available data from jurisdictions' online reports

The number of full time employees (FTEs) varies. All jurisdictions surveyed have at least two employees fully dedicated to the ASE program. ASE programs typically require a city staff project manager/lead, photo reviewers, and those who send and track the citations.

In addition to internal FTEs dedicated to speed camera programs, there are a number of speed camera vendors that jurisdictions contract with to perform key tasks. All survey respondents use contractors for installing and maintaining at least some of the camera equipment, and half use contractors to initially review the violator photos. Two of the survey respondents also use contractors to mail citations. Washington D.C. and Chicago are the only jurisdictions that have different vendors for different roles.

EXHIBIT 7 Vendor roles and responsibilities vary by jurisdiction

Jurisdiction	Vendor Name	Install Equipment	Maintain Equipment	Review camera footage	Mail Citations	Respond to Appeals
Chicago	American Traffic Solutions (ATS), IBM	X	X	X		
Denver	Xerox State and Local Solutions	X	X		X	
New York	American Traffic Solutions (ATS)	X	X			
Portland	Xerox	X	X	X		
Seattle	American Traffic Solutions (ATS)	X	X	X	X	
Washington D.C.	ATS, Sensys, Redflex, Xerox[11]					

Source: Controller's Office Survey

Camera Locations and Public Notice

All jurisdictions except for Washington D.C. specify ASE enforcement areas in the authorizing legislation, but each vary by level of restrictiveness (see Exhibit 8). For example, New York City is limited to school zones, meaning street segments that abut a school, which is very specific and restrictive. In contrast, Washington D.C. does not specifically limit camera deployment to certain areas as long as the devices are used to deter speeding and increase safety. Washington D.C. uses a data-driven approach to camera deployment by targeting areas with recent incidents of speed-related crashes and fatalities, proximity to school zones and other places where vulnerable populations may be present, as well as known sites of chronic speeding.

Seattle

Mobile cameras are more flexible because jurisdictions can move the cameras to address new areas of concern or spread out enforcement to reach a greater number of drivers. This

[11] For ATS units, the vendor installs and maintains the equipment as well as reviews the footage initially. The Washington D.C. police department performs these tasks for the majority of the equipment, which is provided by Sensys and Redflex, as well as mails the citations.

flexibility is especially helpful when legislation restricts the speed camera enforcement area. Half of surveyed jurisdictions use both fixed and mobile cameras.

EXHIBIT 8 Camera type, enforcement area, and driver notification vary by jurisdiction

Jurisdiction	Camera Type	ASE Enforcement Area	Alert Drivers to Camera Locations	Type of Location Notification	Alert Stipulated by Law
Chicago	Fixed	School and park zones	Yes	Signage, posted on website	No
Denver	Mobile	School and construction zones	Yes	Signage	Yes
New York City	Fixed and Mobile	School zones	No	Does not alert drivers	No
Portland	Mobile	State highway construction zones and any street or roadway with a history of speeding problems	Yes	Signage	Yes
Seattle	Fixed and Mobile	School zones	Yes	Signage, posted on website	Yes
Washington D.C.	Fixed and Mobile	Recent incidents of speeding-related crashes and fatalities, proximity to school zones and other places where children or other vulnerable populations are present, and known sites of chronic speeding	Yes	Signage posted on website	No

Source: Controller's Office Survey

Exhibit 8 also shows that most jurisdictions provide notice to the public about speed camera locations. In some cases, this is a stipulation in ASE legislation. New York City (NYC) is the only jurisdiction surveyed that does not alert drivers to camera locations. According to the NYC DOT website, speeding is illegal and there is no reason to alert drivers to a speed camera location because drivers should always follow the law. As previously mentioned, NYC also has the most restrictive ASE enforcement area with camera locations limited to school zones during certain times of the day when children are present.

The other five jurisdictions alert drivers to camera locations by posting lists, maps, or other public announcements such as press releases on their websites and/or mailing postcards to the proximate community. Each of the five jurisdictions posts signage in advance of the speed camera, alerting drivers to the use of speed cameras. According to NHTSA, a best practice is to have ASE signs on the same post as speed limit signs.

Speed Threshold and Fines

The jurisdictions surveyed implemented different fine amounts, citation responsibility and speed thresholds. Often these decisions are a result of the enacting legislation. In jurisdictions that do not identify the driver, violations are considered civil, and administered like a parking ticket. Identifying the driver is typically determined by state law, which is the case in both Portland and Denver. Three jurisdictions fine speed camera violators a reduced amount compared to a traditional speeding ticket issued by a police officer. Portland, Seattle and Washington D.C. charge the same amount regardless of the enforcement technique.

With the exception of New York, all jurisdictions base citation fines on miles over the speed threshold, and in the case of Denver and Portland also the enforcement area. New York noted that having a flat fine requires simpler administration. Jurisdictions do not raise the fine for repeat offenders.

The majority of survey respondents (four of six) place the citation responsibility on the registered vehicle owner; only Denver and Portland issue the citation to the driver of the vehicle because they are driver liability states. Four of six jurisdictions start citing at 10 miles per hour above the speed limit. Seattle has the lowest speed threshold at six miles above the posted speed limit whereas Washington D.C. has the highest at 11 miles over the posted speed limit. The following table shows the differences between each of the six surveyed jurisdictions.

EXHIBIT 9 Most jurisdictions start citing at 10 mph over the speed limit and vary in fine schedules and citation responsibility

Jurisdiction	Citation Responsibility	MPH Above Posted Speed Limit for Violation	Citation Fine Schedule
Chicago	Vehicle Owner	10	$35 for 10 mph $100 for 11+
Denver	Driver	10	$40-$80 based on type of enforcement area
New York	Vehicle Owner	10	$50
Portland	Driver	10	$110-$1,150 based on enforcement area and mph (typically $160 fine)
Seattle	Vehicle Owner	6	$234
Washington D.C.	Vehicle Owner	11	$100-$300 based on mph

Source: Controller's Office Survey

To determine speed thresholds and fines, jurisdictions (Chicago, New York, Seattle, Washington D.C.) used data-driven approaches such as identifying what speed threshold severe injuries occur and how fast drivers are speeding in the areas they wanted to implement an ASE program. In Washington D.C. the speed data was based on citations issued by traditional enforcement.

System Maintenance and Accuracy

All jurisdictions' vendors calibrate and maintain the equipment to ensure that it is accurately performing to contract specification. There is a wide range of how often the equipment is calibrated. The most often equipment is calibrated is in Chicago, which does weekly calibration. Seattle has their contractor calibrate the cameras monthly and Washington D.C. and Denver have annual calibration. In Washington D.C. the equipment is also tested for accuracy every four days by a police officer or technician per the District's regulations.

According to the National Highway Traffic Safety Administration *Speed Enforcement Camera Systems Operational Guidelines*, ASE camera equipment is accurate within 1 mph when implemented and maintained properly. Although the guidelines do not specify how often equipment should be calibrated, it does state that maintenance and testing should be done on a "regular basis."[12]

Citation Review

Based on survey results, all jurisdictions perform a review prior to issuing a citation; however, the jurisdictions' review process differs by the number of reviews and who reviews. For jurisdictions where the police department leads the ASE program administration, trained police personnel review speed camera photos to determine if a violation occurred. For example, Denver, Seattle and Washington D.C. trained police department staff to review the violation photos for validity. The contractor usually provides the training, but already trained expert city staff may train other city reviewers.

Portland requires police officers to be present in the mobile van to witness a speeding violation as it occurs and only then can they confirm the speed citation for further processing. Portland's mobile vans can only be in the same location for 4 hours. July 2015, Portland State Legislature enacted legislation that will allow Portland to use fixed speed cameras on the most dangerous urban corridors without the need for a police offer to be present to issue a citation. This fixed camera program is targeting implementation for July 2016.

In Chicago, one of the two surveyed jurisdictions where the department of transportation is the lead agency, a police officer does not determine if a violation occurred. Instead, before a citation is issued, three reviewers must verify that it is a speeding violation. First, the contractor reviews the photos, then a second contractor for the Department of Finance (DOF) reviews the photos, and finally the designated DOF reviewers will determine if it is a legitimate violation. The photos are time stamped so that reviewers can see the difference in time between the first and second photo, which can verify the speed of the vehicle using the distance traveled and time from when the first and second photo were taken. After all three reviewers agree that there was a violation, the DOF sends out a citation to the registered vehicle owner. This process does not involve the Chicago Police Department.

[4] NHTSA. *Speed Enforcement Camera Systems Operational Guideline*. 2008. http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/810916.pdf.

EXHIBIT 10 Four of the six jurisdictions have their vendor(s) review speed camera photos and most reviewers from the jurisdictions are staff in the police departments

Jurisdiction	Vendor(s) Review Photos	Jurisdiction's Department Reviewers
Chicago	X	Finance
Denver		Police
New York City		Transportation
Portland	X	Police
Seattle	X	Police
Washington D.C.	X	Police

Source: Controller's Office Survey

After the photo review process, information must be collected to issue a citation. Once a violation is reviewed and deemed legitimate, the city must acquire the registered vehicle owner name and address to issue a ticket. Often there are memorandums of understanding in place between the city and the state Department of Motor Vehicles (DMV) detailing the responsibilities of both parties. Citation review takes on a different level of complexity depending on whether the citation responsibility is on the vehicle owner or driver. Four of the six jurisdictions surveyed (Chicago, New York, Seattle and Washington D.C.) cite the registered vehicle owner. In order to obtain vehicle registration information, the DMV is an essential program partner.

Based on survey follow up, without driver identification, citation review and processing is more efficient because only the name and address of the registered owner is required. This approach avoids challenges from those who claim they were not driving the car. For states that identify the driver, typically the driver's license photo from the DMV is required to positively identify the driver. In Portland and Denver, driver-identification states, the registered owner may challenge the ticket and provide the required information to the police department to prove that they were not driving the vehicle when the violation occurred.

Program Costs and Revenue

Survey results show that start-up costs varied by jurisdiction, which may be based on a variety of factors such as the program start date, type and length of contract, contractor roles and responsibilities, or type and number of cameras. Jurisdictions reported start-up costs ranging from $67 million for a 5 year contract (Chicago), to a $176,000 flat fee (Seattle), to a $2,000 per mobile van per month plus a citation rate (Portland).

Five jurisdictions had fixed start-up costs and the ongoing costs are either based on the number of cameras or a flat rate. Annual ongoing costs vary based on the size and type of the program. In addition to the vendor services, there are employee salaries and benefit costs that vary based on the program and total number of full time dedicated employees. See Exhibit 11 for jurisdictions' ASE operating costs.

New York has the highest ongoing costs at an estimated $16 million. Seattle has the lowest ongoing costs at a reported $1.2 million. Seattle's costs are based on the number of cameras. As of September 2015, the rate was $4,750 per camera per month, which is about $969,000 per year plus personnel costs.

Portland's cost structure differs from the other five jurisdictions in that they pay the vendor a flat fee for each mobile speed van in addition to a citation rate between $17 and $26 based on the number of payments collected in each month.

The five other jurisdictions cautioned against paying the vendor based on citations issued because the public may construe that the vendor is incentivized to cite more because they generate more revenue. This is not necessarily true in practice, but public perception directly affects the success of an ASE program.

EXHIBIT 11 Four jurisdictions lease the cameras, but costs vary by jurisdiction

Jurisdiction	Estimated Annual Operating Costs	Lead Agency FY15 Proposed Operating Budget	Own or Lease Cameras	Dedicated FTEs	# of cameras (2014)[13]
Chicago	$13,400,000[14]	$548,977,863	Lease	54 (includes red light camera staff)	144
Denver	$2,345,220	$213,397,500	Lease	15	4
New York	$16,000,000	$831,836,798	Own	Data not available	20
Portland	Data not available	$190,133,277	Lease	2	4
Seattle	$1,200,000	$293,610,000	Lease	2	17
Washington D.C.	$14,000,000[15]	$514,200,000	Own	29	87

Source: Controller's Office Survey

[13] Estimates based on available data from jurisdictions' online reports

[14] Based on per year cost from 5 year, $67M contract document

[15] Estimate based on survey follow up

Revenue Use

Survey results show varying approaches to revenue use. Three of the six jurisdictions do not direct ASE revenue for a specific purpose and deposit revenues into the jurisdictions' general fund. Seattle suggested directing the revenue to safety initiatives because this helps address the public's concerns about an ASE program being a revenue generator for cities. Portland, Seattle and Denver designate their ASE revenue to safety initiatives. Seattle's revenue is designated specifically for school zones per their city municipal code, whereas other jurisdictions have more flexibility to use funding for various safety improvements citywide.

For all surveyed jurisdictions, any revenue generated beyond the cost of the program goes to the jurisdiction for safety improvements or the general fund, except in Portland where the state receives 70% of their revenue and the city keeps the remaining 30%.

EXHIBIT 12 Revenue use is deposited to the general fund and/or for safety improvements

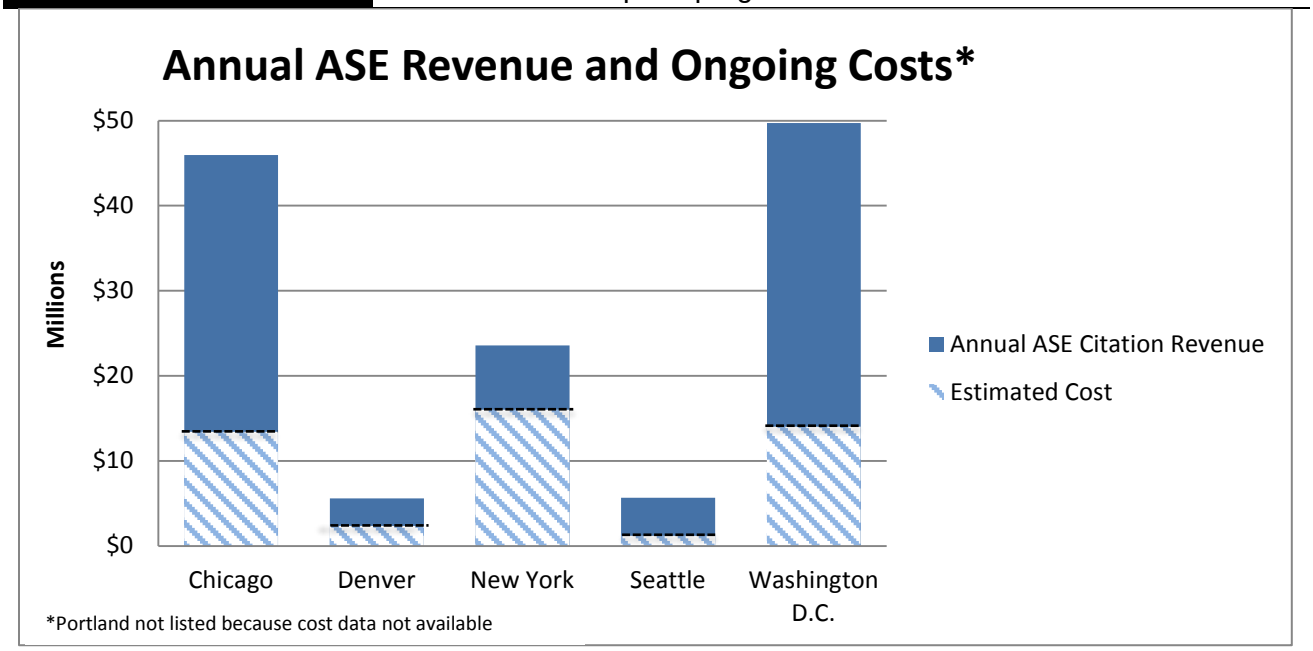
Jurisdiction	Annual ASE Citation Gross Revenue	Revenue Use	Revenue Distribution
Chicago	$45,951,940	General Fund, 5% for safety initiatives	City
Denver	$5,597,307	Safety programs	City
New York	$23,581,250	General Fund	City
Portland	$5,357,760[16]	General Fund and traffic safety	70% State 30% City
Seattle	$5,652,522	Safety improvements in school zones	City
Washington D.C.	$49,733,573	General Fund	District

Source: Controller's Office Survey

Based on annual ASE citation revenue and estimated ongoing costs all jurisdictions that track this data reported that their revenues clearly cover the cost of the program. Additional revenues are directed as noted in Exhibit 12. Washington D.C. has the highest revenue at $49.7 million and an annual cost estimated at about $14 million. The higher revenue may be due to the tiered speed camera fines that are the same amount as traditional speed enforcement fines. Washington D.C. also has the oldest running program of the six jurisdictions. Exhibit 13 shows annual revenue and the estimated annual operating costs for all surveyed jurisdictions except Portland where operating costs were not available.

[16] Estimated based on the annual citation number and average fine amount because surveyed agency did not provide this data

EXHIBIT 13 ASE revenues outpace program costs



Source: Controller's Office Survey

CHAPTER 3: ASE DATA AND EFFECTIVENESS

This chapter examines what ASE program data is tracked, how it's used and whether privacy and data use policies are in place. This chapter also reports on how survey respondents evaluate the effectiveness of their ASE program. Survey results showed that jurisdictions track the number of citations issued by ASE, as well as how many violations are challenged and how many challengers are successful. Five of six jurisdictions surveyed have data policies, but the length of time data is stored varies by jurisdiction. Data on the effectiveness of ASE implementation is also tracked by each jurisdiction; however, the effectiveness measures differ by jurisdiction.

Citations Issued/Challenged

A key benefit of automated enforcement is that speeding violations are addressed more efficiently than traditional enforcement alone. ASE programs are not a replacement, but a supplement to traditional speed enforcement. For example, in 2013, Washington D.C. issued 581,975 tickets using automated speed enforcement compared to 79,600 moving violations cited at the moment of violation by a police officer.[17] As reported during survey follow up, New York City issued over 445,000 speed camera citations and an estimated 120,000 by traditional enforcement in 2014. Greater coverage with cameras allows for more enforcement without draining resources, which allows police officers to address areas where cameras are not located that may not otherwise be prioritized or regularly enforced.

Larger cities with more cameras such as Chicago, New York, and Washington D.C. had a greater volume of citations. These jurisdictions also saw the highest rate of paid citations.

EXHIBIT 14 Annual citations, challenged citations and percent of paid citations vary by jurisdiction

Jurisdiction	Annual ASE Citations	% Citations Paid	% of Citations Challenged	% of Challengers Successful
Chicago	528,032	99%	2%	.2%
Denver	196,956	60%	Data Not Available	Data Not Available
New York	445,065	77%[18]	3%	20%
Portland	33,486	65%-80%	25%	5%
Seattle	41,185	73%	6%	0%
Washington D.C.	359,795	70-80%[19]	19%	42%

Source: Controller's Office Survey

The highest rate of citation challengers was in Portland, with 25%. Portland is a driver-liability state; so, that may have an effect on the number of people who challenge a speeding ticket because they were not driving the vehicle. Denver does not track this data at this time, so we cannot substantiate this further with another example from a driver-liability state. Although Washington D.C. puts the responsibility on the vehicle owner, they too have

[17] Government of the District of Columbia Office of the Inspector General. Parking and Automated Traffic Enforcement Tickets. September 2014, http://app.oig.dc.gov/news/view2.asp?url=release10/PATE_final_9-8-2014.pdf&mode=release&archived=0&month=00000&agency=0

[18] Estimated range based on the average fine amount and the number of citations in FY14

[19] Estimated range based on the average fine amount and the number of citations in FY14

a high number of citations challenged at 19%. The challengers also have the highest chance of being successful (42%), compared to New York City (20%), Portland (5%) and Chicago (.2%). Washington D.C. reported that they see a higher appeal rate than most because many respondents ask for a reduction in the fine amount or removal of the late payment penalty.

Another note on citation data is that some jurisdictions find that many violators are not residents of the area. In Chicago, their 2014 annual report showed that 41% of citations are mailed to registered owners outside of the city. Washington D.C. reported that 75% of violators are not District residents.

Data Use

Every jurisdiction surveyed encrypts speed camera data and only uses the data for law enforcement purposes that cannot extend beyond the purpose of the ASE cameras to deter speeding by issuing citations. All jurisdictions reported having a data use policy that also extends to their vendors.

All jurisdictions with data policies, except New York, cover how long ASE data can be stored. During survey follow up, New York City reported that they do not delete their data. For the other jurisdictions surveyed, there are variations among how long data can be kept and what the appropriate uses are. Data is stored based on type. For example, data for citations that were rejected or cases that were resolved is kept between 10 and 30 days.

In general, based on survey results, data is retained for reporting purposes between 1 and 5 years. In the case of Washington D.C. the police department deletes photos and video images after 60 days, but the data is retained by the DMV and can be accessed by the police department for research and reporting purposes. As stipulated in the contract, Portland directs their vendor to delete the digital images within two years after the citation date. However, the City of Portland has access to the data up to five years after the citation was issued. Denver's policy allows the data to be stored for three years.

EXHIBIT 15 All jurisdictions surveyed encrypt ASE data, but data storage varies

Jurisdiction	Data Use Policy	Data Encrypted	Data Storage
Chicago	Yes	Yes	30 days to 5 years depending on data type
Denver	Yes	Yes	Deleted after 3 years
New York	Yes	Yes	Never deleted
Portland	Yes	Yes	Images deleted with 2 years or 30 days after disposition of the case
Seattle	Yes	Yes	Images deleted after 30 days following closure of a violation
Washington D.C.	Yes	Yes	Images deleted after 60 days

Source: Controller's Office Survey

All jurisdictions' data is confidential and only used for law enforcement purposes. Only the licensed vehicle owner or driver (depending on the responsibility) can access personal information from their photos and/or video.

Reporting

All surveyed jurisdictions do some level of reporting on the ASE program. This may include departmental annual reports, reports to the legislature, and reports from the vendor. Portland requires the vendor to submit monthly reports on number of citations, photos and percent of violations as well as provide training classes and sessions for the Portland Police Department, who operate the system, as well as court staff.

Reports are structured in a variety of ways with different performance measures, but the focus is on program effectiveness. Some jurisdictions report on the percent speed decreases on specific corridors that were monitored before and after ASE implementation. Others report on the number of violations to assess whether cars are slowing down where cameras are located. Often the reports focus on the reduction of severe and fatal injuries on corridors where cameras are present. Exhibit 16 below shows which jurisdictions are required by authorizing legislation to submit reports on ASE effectiveness.

EXHIBIT 16 Four of six jurisdictions have reporting requirements stipulated by ASE legislation

Jurisdiction	Reporting Required by Law[20]
Chicago	Yes
Denver	No
New York	Yes
Portland	Yes
Seattle	Yes
Washington D.C.	No

Source: Controller's Office Survey Follow Up

[20] Based on online research from jurisdictions' written legislation

Effectiveness

Academic articles, white papers, and reports from federal, state, and local agencies have illustrated the effectiveness of ASE programs in reducing speeding and severe/fatal injuries, as well as improving the overall safety of road users. The six surveyed jurisdictions also found that ASE is an effective safety tool. They measure effectiveness in different ways, as shown in the table below.

EXHIBIT 17 Evaluation measures vary by jurisdiction with commonality in reductions of speed, citations, and violations.

Evaluation Method	Seattle	Portland	Washington D.C.	Chicago	Denver	New York
Speed (mph)	X		X		X	
Collisions/Crashes						X
Citations/Violations	X		X	X		
Fatalities		X	X			
Enforcement hours/vehicles monitored		X				
Violations captured	X	X		X		
Number of speeding vehicles	X					

Source: Controller's Office Survey Follow Up

Statistics reported on the effectiveness of ASE programs by jurisdictions include the following:

- ***Chicago*** reported a 31% decline in speeding vehicles. Within the first year of ASE, the number of speeding events recorded by each camera reduced by an average of 43%.[21]

- ***Washington D.C.*** had a reduction in drivers speeding more than 10 mph over the speed limit from 1 in 3 to 1 in 40; and they reported a 70% reduction in fatalities.

- In ***New York City*** a public organization that is not connected with NYC DOT found a 13.4% decline in crashes with injuries that were within approximately 500 feet of installed cameras.[22]

- ***Portland*** reported a 53% reduction in fatalities since program inception.

- ***Portland's*** 2013-2014 Photo Enforcement Report to the legislature states that between 1986 and 1995, before the ASE program began, the annual fatality rate averaged 56.8. After the program was introduced, between 1997 and 2005, the fatality rate decreased to 36.6 fatalities annually. In the most recent nine years (2006-2014), fatalities dropped to an annual rate of 30.5 traffic related deaths.

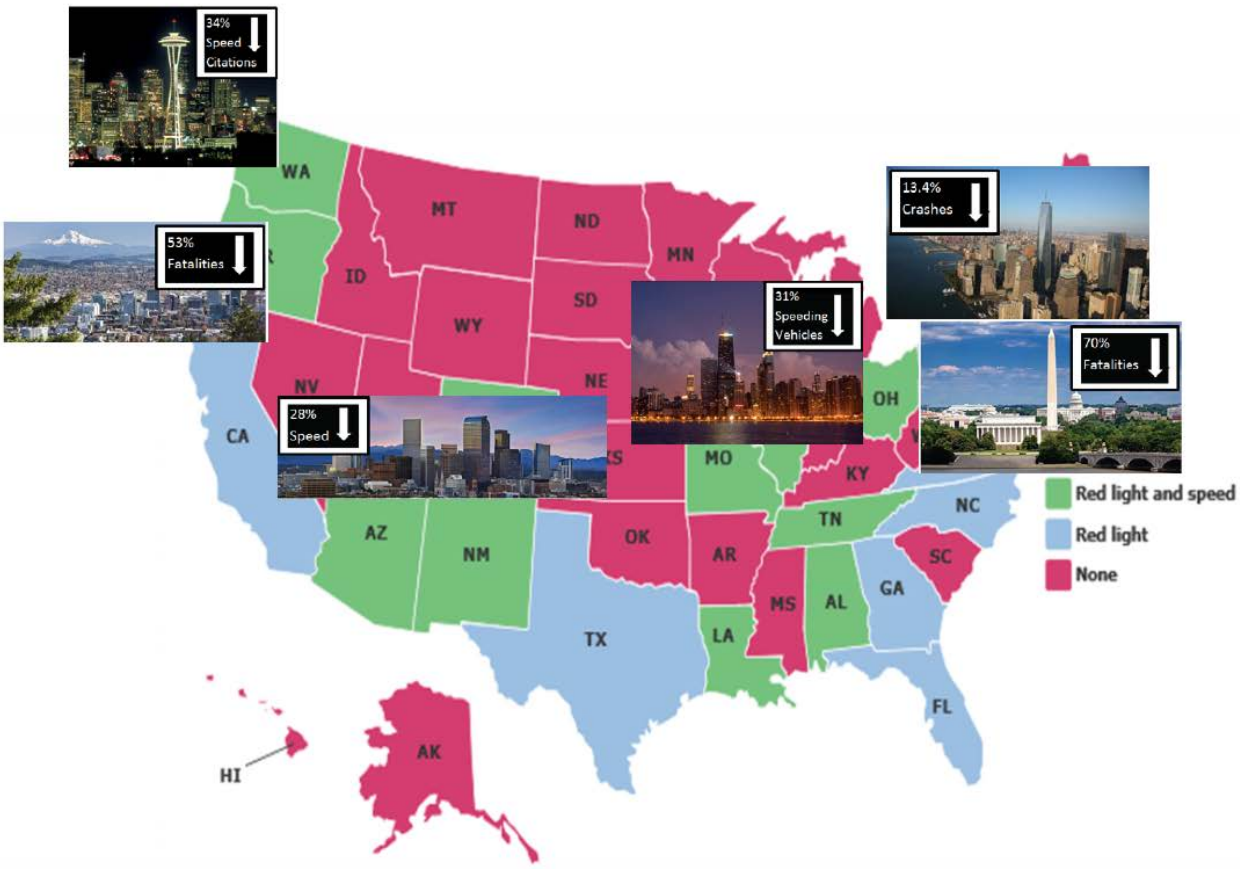
[21] CDOT. September 2015. http://www.cityofchicago.org/city/en/depts/cdot/supp_info/children_s_safetyzoneporgramautomaticspeedenforcement.html

[22] WNYC. 2015. http://project.wnyc.org/speed-cameras/

- ***Seattle's*** mobile van evaluation reported that for the four school zones in operation since December 2012, citations issued decreased by 34%, year over year, which equates to approximately 10,000 fewer speeding cars each year across the four school zones. [23]

- Since ***Seattle's*** fixed camera program inception in December 2012 to December 2014, the average number of traffic violations decreased by 64%.

EXHIBIT 18 Effectiveness measures and results vary by jurisdiction, but all demonstrate that ASE is an effective tool to improve road safety



Source: Controller's Office Survey

Fixed and mobile cameras are both effective tools to reduce speed related crashes, despite mobile cameras being removed and transferred to other locations thereby moving the enforcement area. For example, Portland research showed that in the demonstration zones, average speed was reduced by 5 mph when ASE was present and by 1-2 mph when ASE vans were not present.[24] This finding indicates that ASE had an effect on driver speed when cameras were removed from an area where they were previously located. NHTSA's ASE evaluation report cited a study that also showed mobile ASE units having a significant

[23] Seattle DOT Program Analysis Reports. 2015.

[24] Freedman M. et. al. (2006) Demonstration of Automated Speed Enforcement in School Zones in Portland, Oregon. Office of Research and Technology, National Highway Traffic Safety Administration, U.S. Department of Transportation.

impact on reducing crashes and speeding, although results are more variable than fixed ASE units.[25]

In Seattle, 90% of offenders have not received another citation. In Washington D.C. there is typically a 60% to 80% reduction in violators within four to six months of camera deployment. These results indicate that ASE is effective at deterring speeding where cameras were located, after a person received their first violation.

All surveyed jurisdictions recommend speed cameras as a tool in the larger toolkit for cities to improve road safety and prevent severe and fatal collisions. ASE programs are not meant to be the only effective tool, but they are reported as being one of the most effective tools that cities can use to keep all road users safe.

[25] NHTSA Automated Enforcement Evaluation A Compendium of Worldwide Evaluation Results. 2007. http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/HS810763.pdf.

CHAPTER 4: LESSONS LEARNED

The six jurisdictions surveyed employed various approaches for obtaining legislative approval and implementing their ASE programs. Appendix D provides an at a glance view of the implementation methods discussed throughout this report. While there is diversity in approach, there are overlapping ideas that we have summarized below as key lessons learned.

Legislative Process and Public Perception

Garnering legislative and public support is one of the largest impediments to an ASE program. According to survey respondents, public perception and revenue use are the most common concerns preventing support of ASE authorization. The public tends to think that ASE is aimed primarily at raising revenue for a jurisdiction and that speeding in an acceptable driver behavior. To address these and other concerns, there are various lessons learned that surveyed jurisdictions reported:

- Engage the public early in the process to foster a partnership; and in many cases, when the public supported speed cameras the legislation was passed with less opposition.
- Keep citation fee rates lower than most moving violations and direct revenue to safety improvements throughout the jurisdiction.
- Educate the public using a data-driven and fact-based approach about how speed cameras work and how effective they are at reducing speed and making streets safer.
- Focus on areas where vulnerable populations are such as where children are present.

Program Implementation

There are various implementation options for jurisdictions regarding ASE camera type, locations, fine amounts, and staffing. However, some key themes emerged from the survey results regarding operations that include the following:

- Use of both fixed and mobile cameras allows flexibility to address areas of concern and maintain enforcement around areas where vulnerable populations are present
- Include school zones in the designated enforcement area
- Alert drivers to camera locations
- Place citation responsibility on the registered vehicle owner for simpler administration and to protect privacy because the camera will only capture the violator’s license plate
- Supplement staff hours with contractor support

Data Use

All surveyed jurisdictions encrypt their data to keep personal information like names and addresses private. In addition, the following was also discovered:

- Five of the six jurisdictions have a data use policy that also extends to the vendor.
- Four of five data policies limit the length of time data can be stored.
- Basic citation data such as where speeding occurred and how fast cars were going is kept separate from personal information and aggregated for reporting purposes.
- In some cases vendors submit reports to jurisdictions. In addition, those with recently implemented ASE programs, such as New York City, are required (as stipulated in the legislation) to report to the legislature on program metrics to determine effectiveness.

Reporting and Effectiveness

All surveyed jurisdictions do some level of reporting on the ASE program. This may include departmental annual reports, reports to the legislature, and reports from the vendor. Reports are structured in a variety of ways with different performance measures, but the focus is on program effectiveness. Key measures include the following:

- Percent change in speed (mph) before and after ASE implementation
- Number or percent change in violations before and after ASE implementation
- Percent reduction in fatal and/or severe injuries
- Percent reduction of collisions/crashes

Appendix A: Overview of Preliminary Research

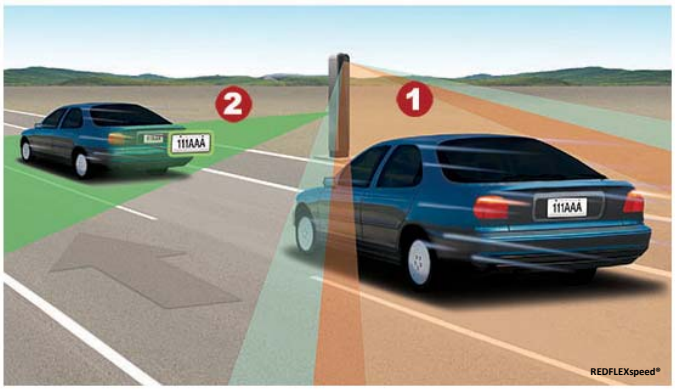
Automated Speed Enforcement
An Overview of Preliminary Research

Claire Phillips, Controller's Office City Performance Unit

What is ASE?

- Automated Speed Enforcement (ASE) is the use of customizable speed camera photo enforcement solution proven effective at reducing speeding incidents over time
- Automated enforcement cameras can be fixed on existing infrastructure or mobile on vans that are moved to various high priority locations as needed

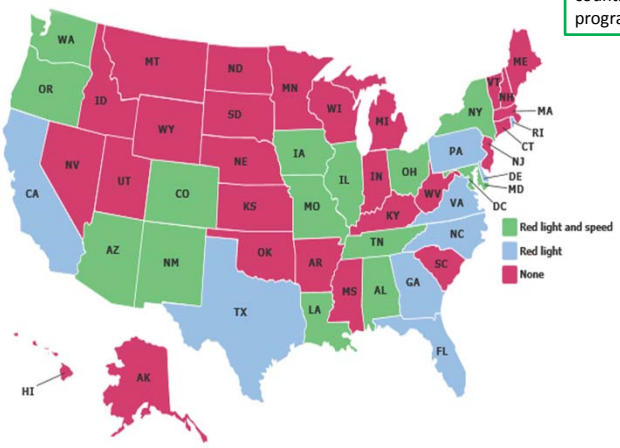
How does ASE work?



1. Vehicle enters the primary and secondary speed radar beams. Each beam individually measures the speed of the vehicle and both readings must agree within a pre-determined tolerance.
2. If the vehicle speed is detected above the approve speed limit, an image is taken of the vehicle with a close-up of the license plate for review and processing.

Jurisdictions in the U.S. that use ASE Cameras

As of August 2015, 139 communities across the country have speed camera programs.



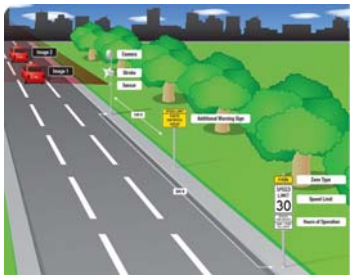
Source: Insurance Institute for Highway Safety, www.iihs.org, August 2015

Case Study: Chicago

- **Proposal**: Proposed by the Chicago Police Department and the Chicago Department of Transportation (CDOT); Mayor's Office of Legislative Affairs pursued the bill at the state level
- **Legislation**: Municipalities with a population of 1,000,000
- **Location:** Safety zones, one-eighth mile from school or park
  - Camera locations are chosen based on available data regarding traffic, speeding, and accidents
- **Enforcement:** Hours limited and speed limit threshold set based on school zone or park area
- **Implementation:** City is capping the locations where speed cameras can be installed to 20% of the 1,500 safety zone locations allowed by state law (approximately 300)
- **Revenue Use:** General fund; about 5% is invested in safety initiatives

In Chicago….

- *CDOT operate the system and work with installers/contractors*
- *3 agencies review photos before tickets are sent out*
- *CPD reports effective use on arterials, more effective at reducing speed than other traffic calming measures*



Speed (mph) Over the Posted Limit	Fine ($)
Warning sent for first offense	$0
6-10 mph	$35
11+ mph	$100

Case Study: New York City

- **Proposal:** State Legislature in July 2013
- **Legislation**: Cities of one million or more, 5 year demonstration program
- **Location**: Authorized to operate speed cameras at 140 school speed zones around times when school is in session
- **Implementation**: Fixed and mobile cameras
  - Cameras can be moved to other locations throughout the pilot
- **Enforcement Role:** Violations are enforced by the NYC Parking Violations Bureau
- **Revenue Use:** NYC DOT receives revenues, but they are not earmarked for specific types projects because of complexity of doing so
- **Fine Schedule:**

Speed (mph) Over the Posted Limit	Fine ($)
10 mph	Warning for first offense
10 mph	$50
Late payment	$25 plus the $50 fine

In NYC….

- *At the end of the pilot, the City must conduct a study and submit a report to the Governor and State Legislature concerning the effectiveness of the program*

Case Study: Seattle

- **Proposal**: Washington State Legislature (April 2005)
- **Legislation**: permits the use of automated traffic safety cameras in work zones and school zones
- **Implementation**: School Road Safety Initiative, SDOT partnered Seattle PD to operate speed cameras in 20 mph school zones while school zone beacons are flashing
  - Nine Seattle schools currently have these cameras in place and six more schools will receive them in 2015
- **Revenue Use**: Capital/safety improvements in school zones
- **Enforcement Role**: Police department tasked with enforcement and administration
- **Fine Schedule:**

Speed (mph) Over Posted Limit	Fine ($)
6-10 mph	$124
11-15mph	$154
16-20 mph	$195
21+ mph	$247

Effectiveness:

Citations decreased 34% from 2013 to 2014 for the four school zones where cameras were installed late in 2012.

SDOT reports that this equates to around 10,000 fewer speeding cars per year across all four school zones.

Case Study: Washington D.C.

- **Proposal**: Automated Speed Enforcement Program began in 2001, after Council Legislation passed in 1997 to give the District the option to use ASE
- **Legislation**: Locations are not restricted by law
- **Enforcement Use:** Sites are selected based on incidents of speeding-related fatalities and crashes, proximity to school zones and other places where children or other vulnerable populations may be present, and known sites of chronic speeding.
- **Implementation**: 214 locations posted on the MPD website
  - MPD has identified approximately six dozen enforcement zones, located throughout the District of Columbia, at which non-fixed speed camera units may be deployed. Mobile units are deployed to only a select number of locations at one time.
- **Revenue Use:** General Fund
- **Fine Schedule:**

Speed (mph) Over the Posted Limit	Fine ($)
11-15 mph	$100
16-20 mph	$150
21-25 mph	$200
26+ mph	$300

Effectiveness

Opposition Case Study: Nassau County, New York

Legislation:

- Implemented school zone ASE program in Summer 2014
- Issued $80 tickets for speeding
- December 2014 the State Legislature repealed the law allowing Nassau County's ASE program
- Reasons cited for repealing the program include public outrage and poor implementation

Implementation:

- Vendor was American Traffic Solutions
- 46,570 tickets were generated by people exceeding the speed limit by more than 21 mph
- The County reported that the cameras reduced speeding by 70%

Repeal and Next Steps:

- News articles state that the public thought there should be more signage warning them of cameras and that the program was just a revenue generator
- County officials plan to replace the cameras with increased police patrols, and will install flashing lights in school zones

Opposition Case Study: Arizona

Legislation:

- February 2015 State Legislature passed a bill out of the Public Safety Committee that would ban speed cameras statewide
- Representatives cite that cameras may make intersections less safe due to people braking for cameras and that photo enforcement violates the U.S. Constitution's protections against unreasonable searches
- City of Phoenix officials reply that cameras are 1 of many useful tools in improving safety
- Two other bills targeting photo radar have been introduced in the House
  - 1 would require a sworn officer to review tickets before they are issued instead of the vendor
  - 1 would prevent license suspensions because of a missed photo enforcement court date

Next Steps for Additional Research

- The Controller's Office City Performance Unit will research key privacy, revenue use, technology and other implementation considerations for Automated Speed Enforcement Programs.
- Controller's staff will interview select stakeholders to identify the key research questions and answer those questions through several methods such as surveys, interviews, and internet research.
- Deliverable: Report with an executive summary of key findings followed by a more in-depth analysis that addresses the research gaps to build a better body of knowledge

Appendix B: Survey Questions

Automated Speed Enforcement Programs: Best Practices Research

1. Introduction

The City and County of San Francisco is surveying jurisdictions across the country about their Automated Speed Enforcement (ASE) programs in order to learn from the successes and challenges in pursuing ASE legislation and implementing programs.

The survey is divided into 5 main categories:

1. Program Authority/General Planning
2. Program Start-Up
3. Operations
4. Data Use
5. Program Evaluation

Each category has its own page and set of questions. The progress bar at the top displays the percent complete by page. Once you complete a page, the percent complete will update.

This survey should take about 50 minutes to complete. You may save your responses by completing a page, clicking "next" and then exiting the survey. When you return by clicking the survey link again, it will put you back to where you left off. You can go back and edit or add information, as needed. Please be aware that answers are only saved after you click "next" and go to the next blank page. There is no way to save your answers that you entered without first moving forward and allowing the system to "capture" your responses.

If there is a question that can be answered by referencing existing documentation such as legislation, contracts, business rules, or other program materials, simply state that there is existing documentation in the answer space and we will follow up for a copy.

If you have any questions or need assistance, please contact Claire Phillips at 415-554-7569 or Claire.Phillips@sfgov.org.

Automated Speed Enforcement Programs: Best Practices Research

2. Program Authority/General Planning

This section focuses on the early stages of program planning, including garnering legislative support and lessons learned.

If there is a question that can be answered by referencing existing documentation, please state the document and we will follow up for a copy.

1. What is the name of your ASE program?

2. What year did your ASE program begin?

3. How did you obtain legislative/policy support for your program (select all that apply)?

- [ ] Built a coalition of advocates
- [ ] Modified the original legislation to address concerns
- [ ] Introduced the legislation as a pilot program
- [ ] Demonstrated efficacy through research
- [ ] There was minimal opposition from the community

Other (please specify)

Automated Speed Enforcement Programs: Best Practices Research

4. What public/private organizations and advocacy groups came out in support and in opposition to the legislation? Please list advocacy groups below.

5. If your legislation or other program materials are available online, please add a link to where we can find it. If you do not have a link, please let us know and we may follow up for a copy.

Automated Speed Enforcement Programs: Best Practices Research

6. What were the top 3 concerns that legislators had regarding passing ASE legislation? How were these concerns addressed (please specify in the space below)?

- ☐ Privacy
- ☐ Public Perception
- ☐ Camera Locations
- ☐ Revenue
- ☐ Technology
- ☐ Onus on the Driver
- ☐ Effectiveness
- ☐ Speed Citation Thresholds
- ☐ Other, please specify below.

Comments: How were concerns addressed?

7. Do you have any suggestions or lessons learned for branding/framing an ASE program in order to encourage legislative support and improve public perception?

Automated Speed Enforcement Programs: Best Practices Research

8. What are the ASE citation revenues used for? Is revenue use specified in the legislation?

9. Are citation revenues split between the state and local agencies? If so, how?

Automated Speed Enforcement Programs: Best Practices Research

10. Are citations based on driver identification or vehicle identification? What was the rationale behind doing so?

Automated Speed Enforcement Programs: Best Practices Research

3. Program Start-Up

This section focuses on how program implementation began, including costs, vendor information, speed thresholds, camera locations and signage/alerts.

If there is a question that can be answered by referencing existing documentation, please state the document and we will follow up for a copy.

11. What were the start-up costs? Please specify the costs by major category below.

ASE camera equipment (specify if leased or purchased)	
Professional Services	
Software	
Other equipment	
Training	
Public outreach (signage, community meetings, website, etc.)	
Other, please specify:	

12. What is the name of your ASE vendor?

13. What is (are) your vendor's primary ASE program duties? Check all duties that apply.

- [ ] Install equipment
- [ ] Maintain equipment
- [ ] Review camera footage
- [ ] Recommend citations
- [ ] Mail citations
- [ ] Respond to appeals
- [ ] Other (please specify)

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14. Does your agency own or lease the cameras from the vendor?

- [ ] Own
- [ ] Lease

Other (please specify)

15. a. How many miles per hour above the speed limit is the threshold set to capture speeding? b. How did you determine the threshold? c.Was the process data-driven? d. Does the type of street or enforcement restriction influence the threshold limit?

a. How many miles per hour above the speed limit is the threshold set to capture speeding?	
b. How did you determine the threshold?	
c. Was the process data-driven?	
d. Does the type of street or enforcement restriction influence the threshold limit?	

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16. Where can ASE cameras be located within your jurisdiction? Does your program have restrictions of when and where ASE cameras can be used? If so, which restrictions are legislatively imposed, which are self-imposed, and do any of these restrictions hinder the program's success?

17. Does your municipality alert drivers to the location of the cameras?

If so, how (please describe below)?

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18. What type of public awareness tools such as signage, websites etc. do you use to inform the public about the use of ASE and the locations? What education and outreach did you do when rolling out the program for the first time?

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4. Operations

This section focuses on the operations side of the program, such as administration, staff time, data collection and policies.

If there is a question that can be answered by referencing existing documentation, please state the document and we will follow up for a copy.

19. What agency leads the administration of the program? Please identify other agencies who work in collaboration to administer the program.

20. How many FTEs administer the program in each agency and what are their roles?

21. Who maintains/calibrates the cameras? How often?

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22. Which agency(s) and staff position(s) is involved in reviewing the photos to determine that a violation occurred? Is training provided to the staff who review the photos?

23. What is the ongoing annual cost of the program by major category i.e. staff salaries and benefits, maintenance and other expenses?

Staff Salaries and Benefits	
Maintenance	
Other Expenses (please specify)	
Other (please specify)	
Other (please specify)	

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5. Data Use

This section will focus on how data is used once collected and privacy/data use policies.

If there is a question that can be answered by referencing existing documentation, please state the document and we will follow up for a copy.

24. Which agency collects/houses the data (Police Department, DOT, other)?

25. Is the violation data encrypted?

- ◯ Yes
- ◯ No

26. Do you have a data use policy?

- ◯ Yes
- ◯ No

Other (please specify)

27. Does the policy cover how long data is stored (and in what form) and if it can be shared?

- ◯ Yes
- ◯ No
- ◯ We do not have a data use policy
- ◯ Other (please specify)

28. How long can data be stored and who can the data be shared with?

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29. Does the data use policy extend to the vendor?

- ◯ Yes
- ◯ No
- ◯ We do not have a data use policy
- ◯ Other (please specify)

30. Is the data use policy stipulated in the contract with the vendor?

- ◯ Yes
- ◯ No
- ◯ We do not have a data use policy
- ◯ Other (please specify)

31. Are ASE, red light enforcement, and/or illegal right turn data used for any use other than speed enforcement? If so, please describe below how the data is used.

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6. Program Evaluation

This is the final section of the survey, which focuses on how jurisdictions evaluate ASE program effectiveness on reducing speed and collisions.

If there is a question that can be answered by referencing existing documentation, please state the document and we will follow up for a copy.

32. How effective has the ASE program been at reducing speeding, injuries, and collisions?

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33. Have you evaluated ASE against other interventions to reduce speeding and severe/fatal collisions? What were the outcomes?

34. In the last year: a. How much revenue did the ASE camera citations generate? b. How many citations were issued? c. How many citations were actually paid? d. How many were repeat offenders? e. How many challenge the citation? f. How many challengers are successful?

a. ASE camera citation revenue	
b. Number of citations issued	
c. Number of citations actually paid	
d. Number or percent of repeat offenders	
e. Number or percent who challenge the citation	
f. Number or percent challengers are successful	

35. Is there anything that you would do differently if you were starting an ASE program and pursuing legislative changes today?

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36. Contact Information

Name	
Title	
Division	
Organization	
Phone	
E-mail	

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7. Thank you!

Thank you for taking the time to fill out our ASE survey. The San Francisco Controller's Office will analyze the information to develop an ASE report. We will share a draft of our report with those who received this survey to confirm our understanding prior to publishing the report to our website.

If you have any questions, concerns, or have the following materials to share with us, please send them to Claire.Phillips@sfgov.org:

1. RFPs and contracts
2. Outreach materials and public perception documents
3. Program Business Rules
4. Data use policy or privacy policy
5. Program effectiveness
6. Other materials that may support legislative/policy changes for an ASE program

Appendix C: California State Legislation - Automated Enforcement

This search is based on the following filters:
Topics: Automated Enforcement/Photo Monitoring
States: California

California CA A 1160
2015
Vehicles: Automated Traffic Enforcement Systems Status: Pending - Assembly Transportation Committee
Date of Last Action:* 4/14/2015
Author: Harper (R)
Additional Authors: Huff (R); Gatto (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Prohibits a governmental agency from installing an automated traffic enforcement system. Authorizes a governmental agency that is operating an automatic traffic enforcement system on a specified date to continue to do so after that date, if the agency begins conducting a traffic safety study at each intersection where a system is in use to determine whether the use of the system resulted in a reduction in the number of traffic accidents involving failure to stop at a red light or when making a right turn.

CA A 1287
2015
Vehicles: Parking Violations
Status: Pending - Senate Third Reading File
Date of Last Action:* 6/18/2015
Author: Chiu (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Amends existing law that requires San Francisco to provide to the transportation and judiciary committees of the Legislature an evaluation of the effectiveness and impact on privacy video imaging parking violations occurring in transit-only traffic lanes if the city installs automated forward-facing parking control devices on city-owned public transit vehicles. Deletes obsolete provisions requiring the evaluation. Deletes the repeal date for the city's authority to install the parking control devices.

2012
Vehicles: Automated Traffic Enforcement Systems
Status: Vetoed - Vetoed
Date of Last Action:* 10/07/2011 - Vetoed
Author: Simitian (D) **Additional Authors:** Huff (R);Anderson (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Amends provisions authorizing places where a driver is required to stop to be equipped with an automated enforcement system and signs identifying the system. Requires the agency that operates such a system to develop uniform guidelines for specified purposes by a specified date. Prohibits a governmental agency from considering revenue generation as a factor when considering installation of such devices. Relates to notice to appear procedures in connection with alleged violations.

CA A 432
2012
Transit: Sacramento County
Status: Enacted - Act No. 229
Date of Last Action:* 09/07/2012 - Enacted
Author: Dickinson (D) **Additional Authors:** Steinberg (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Authorizes the Sacramento Area Council of Governments to determine whether transit operators service Sacramento County, as a group, have met the requirements for claims for transit funds. Requires the Sacramento Regional Transit District to cover no less than a specified percentage of operating costs from fares even if the transit operators servicing the county are evaluated as a group under this provision.

CA S 1303
2012
Vehicles: Automated Traffic Enforcement Systems
Status: Enacted - Act No. 735
Date of Last Action:* 09/28/2012 - Enacted
Author: Simitian (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Relates to existing law authorizing the limit line, intersection, or other places where a driver is required to stop to be equipped with an automated traffic enforcement system if the system meets certain requirements. Requires signs identifying the system's location and their continued use. Relates to the information in a notice to appear for a violation. Prohibits revenue generation as a factor for installation. Requires the development of related guidelines and procedures to ensure guideline compliance.

CA A 1311
2012
Vehicles: Automated Speed Enforcement Systems
Status: Failed - ASSEMBLY
Date of Last Action:* 4/14/2011
Author: Miller (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Authorizes a local authority to participate in a local traffic safety program that studies the feasibility of using an automated speed enforcement system for speed enforcement only in areas designated as school zones.

CA S 29
2011
Vehicles: Automated Traffic Enforcement Systems
Status: Vetoed - Vetoed
Date of Last Action:* 10/07/2011 - Vetoed
Author: Simitian (D) **Additional Authors:** Huff (R);Anderson (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Amends provisions authorizing places where a driver is required to stop to be equipped with an automated enforcement system and signs identifying the system. Requires the agency that operates such a system to develop uniform guidelines for specified purposes by a specified date. Prohibits a governmental agency from considering revenue generation as a factor when considering installation of such devices. Relates to notice to appear procedures in connection with alleged violations.

CA A 432
2011
Vehicles: Notice to Appear: Service
Status: Pending - Carryover - Senate Transportation and Housing Committee
Date of Last Action:* 6/21/2011
Author: Hall (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Requires that only a peace officer or qualified employee of a law enforcement agency may serve a notice to appear for traffic violations recorded by an automatic traffic enforcement system. Requires that for those violations a governmental agency may not contract out to the manufacturer or supplier of the automated traffic enforcement system the requirement to maintain controls necessary to ensure that only those citations that have been reviewed and approved by law enforcement are delivered to violators.

CA A 1311
2011
Vehicles: Automated Speed Enforcement Systems
Status: Pending - Carryover - Assembly Transportation Committee
Date of Last Action:* 4/14/2011
Author: Miller (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Authorizes a local authority to participate in a local traffic safety program that studies the feasibility of using an automated speed enforcement system for speed enforcement only in areas designated as school zones.

CA S 1362
2010
Vehicles: Automated Traffic Enforcement Systems
Status: Failed - Adjourned - Assembly Appropriations Committee
Date of Last Action:* 8/2/2010
Author: Simitian (D) **Additional Authors:** Ashburn (R);Huff (R);Hill (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Amends an existing law that authorizes the installation of an automated traffic enforcement system and that authorizes a governmental agency to contract out the system's operation. Requires posting signs at intersections identifying the system. Requires establishing a need for the system at a specific location for safety reasons. Adds new requirements regarding the issuance and content of a notice to appear. Prohibits using revenue generation beyond costs as a factor for installation.

CA A 987
2009
Automated Speed Enforcement
Status: Pending - Assembly Transportation Committee
Date of Last Action:* 4/14/2009
Author: Ma (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Authorizes a city or county to establish a program utilizing an automated speed enforcement system for speed enforcement if specified conditions are met. Requires a city or county that adopts an automated speed enforcement program to submit a specified report to the Legislature.

CA S 432
2008
Transportation
Status: Vetoed - Vetoed
Date of Last Action:* 09/30/2008 - Vetoed
Author: Lowenthal (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Relates to the State Transportation Plan. Revises certain state highway route descriptions to reflect relinquishments to various cities that have been completed. Specifies requirements for determining the minimum yellow light change interval for automated traffic enforcement systems. Provides for substituting the federal Manual on Uniform Traffic Control Devices with the state manual or an approved supplement. Provides rules regarding bike paths and crossings. Relates to handicapped placards and parking.

CA S 1325
2008
Automated Speed Enforcement
Status: Failed - Adjourned - Senate Transportation and Housing Committee
Date of Last Action:* 2/20/2008
Author: Kuehl (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Authorizes the City of Beverly Hills to establish by ordinance a pilot project utilizing a mobile automated speed enforcement system.

CA A 1581
2008
Traffic-Actuated Signals: Bicycles and Motorcycles
Status: Enacted - Act No. 337
Date of Last Action:* 10/08/2007 - Enacted
Author: Fuller (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Relates to official traffic control devices. Includes a traffic-actuated signal that displays one or more of its indications in response to the presence of traffic detected by mechanical, visual, electrical, or other means. Requires specified devices to be installed so as to detect unlawful bicycle and motorcycle traffic. Requires cities and counties would not be required to comply until uniform standards, specifications, and guidelines for such detection are established.

CA S 432
2007
Streets and Highways: Description and Traffic Control
Status: Vetoed - Assembly Inactive File
Date of Last Action:* 7/11/2007
Author: Lowenthal (D)
Topics: Automated Enforcement/Photo Monitoring
Summary: Revises certain state highway route descriptions to reflect relinquishments to various cities that have been completed. Describes route 275. Provides that the minimum yellow light change interval for an automated traffic enforcement system be established in accordance with the state Manual on Uniform Traffic Control Devices. Provides for substituting the federal Manual on Uniform Traffic Control Devices with the state manual or an approved supplement to that manual as a signal regulatory source.

CA A 1581
2007
Traffic-Actuated Signals: Bicycles and Motorcycles
Status: Enacted - Act No. 337
Date of Last Action:* 10/08/2007 - Enacted
Author: Fuller (R)
Topics: Automated Enforcement/Photo Monitoring
Summary: Relates to official traffic control devices. Includes a traffic-actuated signal that displays one or more of its indications in response to the presence of traffic detected by mechanical, visual, electrical, or other means. Requires specified devices to be installed so as to detect unlawful bicycle and motorcycle traffic. Requires cities and counties would not be required to comply until uniform standards, specifications, and guidelines for such detection are established.

Appendix D: ASE Implementation: At a Glance

Jurisdiction	Camera Type	ASE Enforcement Area	Alert Drivers to Camera Locations	MPH Above Posted Speed Limit for Violation	Citation Fine Schedule	Revenue Use	Revenue Distribution	# of cameras	Annual Citations
Chicago	Fixed	School and park zones	Yes	10	$35 for 10 mph $100 for 11+ mph	General Fund, 5% for safety initiatives	City	144	528,032
Denver	Mobile	School and construction zones	Yes	10	$40-$80 based on enforcement area	Safety programs	City	4	196,956
New York City	Fixed and Mobile	School zones	No	10	$50	General Fund	City	20	445,065
Portland	Mobile	State highway construction zones and any street or roadway with a history of speeding problems	Yes	10	$110-$1,150 based on enforcement area and mph	General Fund and traffic safety	70% State 30% City	4	33,486
Seattle	Fixed and Mobile	School and construction zones	Yes	6	$234	Safety improvements in school zones	City	17	41,185
Washington D.C.	Fixed and Mobile	Recent incidents of speeding-related crashes and fatalities, proximity to school zones and other places where children or other vulnerable populations are present, and known sites of chronic speeding	Yes	11	$100-$300 based on mph	General Fund	District	87	359,795