AUTOMATED TRAFFIC ENFORCEMENT WHITE PAPER (DRAFT)

Impacts on Safety

XXXX 2026

AUTOMATED TRAFFIC ENFORCEMENT WHITE PAPER
Prepared by ICF and Fehr & Peers on behalf of National Capital Region Transportation Planning Board (TPB). This white paper reflects a review and synthesis of existing published sources only. Published in XXXX 2026.

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The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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INTRODUCTION

Purpose

The purpose of this white paper is to answer a central question for the Transportation Planning Board (TPB): How effective is automated traffic enforcement (ATE) in reducing severe crashes, and what practices can ensure fair, reliable, and publicly supported implementation of ATE throughout the metropolitan Washington region? ATE can include various tools such as speed, red-light, stop-sign, school bus stop-arm, bus lane, and restricted lane cameras. This white paper specifically focuses on ATE that uses speed and red-light cameras. The sections that follow synthesize research examining the effectiveness of ATE in reducing the number and severity of crashes, establishing target traffic speeds, and generating related safety benefits. This document also examines national and international practices to understand how programs can be designed and managed to minimize disproportionate impacts on marginalized communities and build long-term public trust.

Background and Regional Legal Context in D.C., Maryland, and Virginia

ATE has been used as a roadway safety strategy in the metropolitan Washington region since the District of Columbia first deployed red-light cameras in 1999. Over time, other metropolitan Washington jurisdictions have followed suit, with speed and red-light cameras designed to deter unsafe driving, manage speeds, and reduce crash frequency and severity. While the District of Columbia, Maryland, and Virginia (commonly referred to as the DMV region) share similar safety goals, their programs have evolved under distinct legal frameworks that shape where and how ATE can be deployed as seen in **Table 1**.

The District of Columbia was an early adopter, introducing red-light cameras in 1999 and later expanding their ATE program to include speed, stop-sign, and bus-lane enforcement. Authorized under D.C. Code § 50-2209.01–.11,[1] the program grants the Mayor of the District of Columbia broad authority to deploy ATE citywide. The code specifies a structure for semi-annual reporting from the District Department of Transportation (DDOT)/Department of Motor Vehicles (DMV) to the D.C. Council. These reports include information such as the top 15 camera locations by citation value, jurisdictions where vehicles with outstanding citations are registered, new camera installations and their justification, and citation counts by location. In addition, the Chief Financial Officer must provide monthly updates to the Mayor and Council on ATE revenue and projections. The statute further requires the Mayor to develop a multi-year expansion plan as part of the District's long-term safety strategy.

In Maryland, automated enforcement is authorized by the state but deployed under a locally implemented framework. Under Transportation Article §§ 21-809[2], 21-810[3], and 21-202.1[4], local jurisdictions may establish speed and red-light ATE programs by ordinance, provided they comply

[1] Council of the District of Columbia. D.C. Code §§ 50-2209.01 – 50-2209.11, Subchapter V. Automated Traffic Enforcement. https://code.dccouncil.gov/us/dc/council/code/titles/50/chapters/22/subchapters/V

[2] Maryland General Assembly. Maryland Annotated Code, Transportation Article §21–809. *https://mgaleg.maryland.gov/mgawebsite/laws/StatuteText?article=gtr&section=21-809&enactments=false*

[3] Maryland General Assembly. Maryland Annotated Code, Transportation Article §21–810. *https://mgaleg.maryland.gov/mgawebsite/laws/StatuteText?article=gtr&section=21-810&enactments=False&archived=False*

[4] Maryland General Assembly. Maryland Annotated Code, Transportation Article §21–202.1. *https://mgaleg.maryland.gov/mgawebsite/Laws/StatuteText?article=gtr&section=21-202.1*

with state requirements for signage, operational standards, and annual reporting. The state defines where cameras may be used, such as in school zones or residential areas with speed limits of 35 mph or less, and caps fines for violations, which are treated as civil penalties without driver points. Local jurisdictions, however, are responsible for identifying camera locations based on crash and speed data, operating and maintaining equipment, processing citations, and reinvesting revenue in safety programs. The state's Speed Monitoring Systems Reform Act of 2014[5] introduced error-rate limits and citizen complaint procedures.

Virginia began to implement automated enforcement in 2020. Code § 46.2-882.1[6] authorizes speed cameras in school and work zones and allows localities to adopt ordinances for implementation. The law allows ticketing only for drivers going more than 10 miles per hour (mph) over the posted speed limit; mandates officer certification of violations; and requires clear signage and data purging within defined timeframes. Red-light enforcement is permitted under earlier state statutes but varies by locality.

Table 1: Regional ATE Frameworks

State/ District	Code(s)	Year Passed	Addresses:	Grants Authority to:
District of Columbia	§§ 50-2209.01 – 50-2209.11	1999	Speed, stop-sign, and bus-lane enforcement	Mayor of D.C.
Maryland	§§ 21-809, 21-810, and 21-202.1	2014	Speed and red-light cameras, error-rate limits, citizen complaint procedures	Local jurisdictions
Virginia	§ 46.2-882.1	2020	Speed cameras in school/work zones, enforcement thresholds, officer cert. of violations, signage, data purging	Local jurisdictions

These frameworks illustrate the region's various approaches to ATE implementation and oversight. D.C. maintains centralized authority and long-term planning; Maryland balances local discretion with state-mandated safeguards; and Virginia employs targeted deployments with strict procedural requirements. These differences affect opportunities for regional coordination. For TPB, understanding these regional nuances is essential to identifying common standards for transparency, evaluation, and communication, ensuring that ATE programs across the region can be deployed in ways that are credible, equitable, and focused on safety.

Key Findings

A review of regional, national, and international research suggests that ATE can be an effective tool for improving roadway safety, but its long-term success depends on careful program design and

[5] Maryland General Assembly. Speed Monitoring Systems Reform Act of 2014. *Legislation – SB0350,* https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0350?ys=2014rs

[6] Virginia General Assembly. Code of Virginia § 46.2-882.1. Use of photo speed monitoring devices in highway work zones, school crossing zones, and high-risk intersection segments; civil penalty. *Legislative Information System,* https://law.lis.virginia.gov/vacode/title46.2/chapter8/section46.2-882.1/

public trust. The following key findings highlight the most important lessons for the metropolitan Washington region:

- **Crash Reduction:** Automated enforcement reduces both the number and severity of crashes by deterring high-risk driving behaviors. Results across different regions show consistent improvements when programs are sustained and strategically deployed.
- **Speed Management:** Speed cameras have been shown to lower excessive speeding and promote safer travel speeds, particularly in sensitive areas like school zones and high-crash corridors.
- **Integrating ATE into Comprehensive Safe System Strategies:** ATE strengthens overall roadway safety when combined with education, engineering/roadway design, and data-driven enforcement practices by protecting vulnerable users and reinforcing safer driving habits.
- **Long-Term Safety Impacts:** Sustained programs that are consistently evaluated and adjusted appropriately maintain safety benefits over time, while those that are paused or scaled back often experience a loss of earlier gains.
- **Considerations for ATE Implementation:** Different legal frameworks in D.C., Maryland, and Virginia shape how ATE programs operate. It is difficult, for each jurisdiction to enforce penalties against a driver from another jurisdiction who has not paid a citation. In the fall of 2024, the D.C. Council passed the "Strengthening Traffic Enforcement, Education, and Responsibility" (STEER) Act, enabling the District to sue out of state drivers with repeat and outstanding citations (Spiegel, 2024). Stronger regional coordination, transparency, and equity safeguards can enhance fairness, accountability, and long-term program credibility.

METHODOLOGY

This white paper focuses specifically on automated traffic enforcement through speed cameras and red-light cameras. The analysis combined literature collection and evaluation of regional, national, and international programs to understand how this technology influences safety outcomes. Specifically, it examined before-and-after studies of crash and speed trends; assessed outcomes from programs in the District of Columbia, Maryland, and Virginia; and reviewed lessons from national peer jurisdictions, such as New York City, to identify practices that improve program performance. Together, these steps informed the key findings and recommendations presented in this white paper.

Safe System Approach

Implementing automated speed and red-light camera enforcement aligns with the Safe System Approach (SSA), which emphasizes shared responsibility among road users, roadway designers, and policymakers to prevent fatalities and serious injuries. Two SSA elements are particularly relevant to ATE:

- **Safe Road Users:** ATE programs are designed to encourage compliance with traffic laws by deterring unsafe driving behaviors such as speeding and red-light running.
- **Safe Speeds:** Speed management is central to reducing crash risk and severity. Evaluating how ATE contributes to lowering mean speeds and reducing extreme speed violations provides a direct link to Safe System outcomes.

Literature Review

The literature review process focused on real-world outcomes of speed and red-light camera programs to establish a foundation for the white paper's findings. The team drew from 19 sources, both primary and secondary, including evaluations conducted by local jurisdictions, national research organizations,

and international case studies. Emphasis was placed on before-and-after analyses that quantified changes in crash rates, speed distributions, and violation frequencies. The team shared an initial literature list with TPB staff and added additional sources based on staff feedback. A complete list of these sources is presented in the Appendix.
Regional evaluations from the DMV region were reviewed to assess how ATE programs have performed locally, with particular attention to variations in legal and community context. These findings provided the basis for understanding ATE's safety effects and informed the synthesis of lessons learned and key takeaways presented in this white paper.

The literature collection and review focused on two primary areas:

- **Safety Outcomes:**
  - Crash Reduction: Impacts of ATE on total, fatal, and severe crashes.
  - Speed Management: Effects on mean speeds and high-end speed violations.
  - Integrating ATE into Comprehensive Safe System Strategies: Explores how ATE contributes to broader safety goals, such as preventing dangerous driving behaviors and protecting the most vulnerable road users, by complementing education, engineering, and equitable enforcement efforts.
  - Long-Term Safety Impacts: Evidence of sustained crash and speed reductions beyond initial deployment.
- **Considerations for ATE Implementation**
  - A synthesized overview of implementation focus areas for regional best practices, including comparison of the varying legal frameworks, equity considerations, public perception and engagement, and operational practices that shape ATE program performance.

FINDINGS

Safety Outcomes

Regional, national, and international examples show that automated enforcement is not experimental but a well-established safety practice. In the United States, ATE programs have expanded from large metropolitan areas such as New York City and Washington, DC to suburban jurisdictions such as Bellevue, Washington, Fairfax County, Virginia, and Montgomery County, Maryland. Countries such as Hungary, France, Sweden, and Australia have more than two decades of experience deploying speed cameras at scale and documenting sustained reductions in crashes and fatalities (International Transport Forum, 2021; Transport Accident Commission Victoria, 2023). The following ATE deployment examples provide insight into the technology's performance in a variety of environments.

The following sections describe evidence of ATE's safety outcomes, from the metropolitan Washington region and expanding to international research. The discussion is organized around measurable safety impacts: crash reduction, speed management, integration into comprehensive safe system strategies, and long-term outcomes.

CRASH REDUCTION

In the metropolitan Washington region, Washington, D.C. was among the first U.S. cities to adopt automated traffic enforcement. Following the initial deployment of speed cameras, studies documented a roughly 30% reduction in injury crashes near camera sites (Abdelhalim, 2021). At the time of the study, the District operated approximately 84 speed cameras across a mix of arterial

corridors and local streets, with 29 sites evaluated using before-and-after analysis. Montgomery County followed with one of the nation's first suburban speed camera programs, expanding it to 110 speed cameras and 51 red-light cameras by 2024. Corridors with speed cameras (school zones and high-crash corridors) were associated with a 39% reduction in crashes that resulted in an incapacitating or fatal injury (Montgomery County Police Department, 2024). While both programs show crash reductions, the scale of those reductions varies between the two jurisdictions, reflecting differences in program design and operating context. D.C.'s centralized program allows broad deployment across varied roadway types, producing strong reductions in some areas but more variable results in others. In contrast, Montgomery County's locally administered program focuses on school zones and high-crash corridors, yielding consistent reductions in severe crashes at enforced sites but more limited effects beyond them. These differences suggest that ATE effectiveness on reducing crashes depends not only on the technology itself but also on the geographic scale and deployment strategy.

Studies in other U.S. cities have also reported crash reductions following the implementation of ATE cameras. According to a study by the Insurance Institute for Highway Safety (IIHS), large cities that implemented red-light cameras experienced a 21% reduction in fatal crashes caused by red-light running and a 14% decrease in overall fatal crashes at signalized intersections compared to cities without similar programs (Hu & Cicchino, 2017). In New York City, one of the country's largest speed camera programs with over 2,200 cameras deployed across 750 school speed zones (within a quarter-mile radius of a school building) as of 2023, expanded to 24/7 operation in August 2022. This change resulted in an additional 8% reduction in injury crashes during overnight and weekend hours (NYC DOT, 2025). The city of Bellevue in Washington State offers another perspective as a small suburban city with more than a decade of photo enforcement experience. Since 2009, Bellevue has seen drops in violations and overall crash frequencies with 3 or fewer non-KSI crashes per year at its three school zone camera sites, mostly located along minor arterials and neighborhood collectors (Fehr & Peers, 2025).

Research around the globe consistently demonstrates that automated speed enforcement reduces crashes. A comprehensive analysis by the International Transport Forum found that lowering mean speeds produces substantial safety benefits. For example, when automated speed cameras were implemented on motorways in Italy in 2005, there was a 10% reduction in mean speed and a 14% reduction in speed variability, resulting in total crashes decreasing by 32%. Similarly, the introduction of speed cameras in France in 2003 was linked to sustained reductions in crashes; fatalities decreased by 25-35% in rural areas, 38% on urban motorways and 14% on urban roads (International Transport Forum, 2018).

Table 2: Crash Reduction from Speed / Red Light Cameras

Context	Location	Crash Reduction from Speed / Red Light Cameras
Regional	Washington, DC	30% reduction in injury crashes near camera sites
Regional	Montgomery County, MD	39% reduction in likelihood that a crash resulted in a KSI
National	Large cities in the U.S.	21% reduction in fatal crashes caused by red-light running and 14% overall decrease
National	NYC	8% decrease in crashes during overnight and weekend hours.
National	Bellevue, WA	>3 non-KSI crashes per year
International	France	25-35% fatal crash reduction in rural areas, 38% on urban motorways, and 14% on urban roads

Context	Location	Crash Reduction from Speed / Red Light Cameras
International	Hungary	32% reduction in total crashes

A complete list of sources is presented in the

Appendix.

SPEED MANAGEMENT

The relationship between speed and crash severity is well established: a pedestrian struck at 40 mph faces a fatality risk three times higher than one struck at 25 mph (National Highway Traffic Safety Administration [NHTSA], n.d.). Automated enforcement addresses this risk by reducing excessive speeding and curbing the most dangerous behaviors occurring at high-risk locations.

Within the metropolitan Washington region, jurisdictions have seen improvements in speed reduction where ATE is deployed. In Montgomery County, an independent study analyzing camera effects on speed 7.5 years after the program's implementation (when 92 speed cameras were in operation) found that speed cameras were associated with a 10% reduction in mean speeds and a 62% reduction in the likelihood that a vehicle was traveling more than 10 mph above the speed limit at camera sites (Montgomery County Police Department, 2024). In D.C., early deployment of speed cameras was associated with measurable speed reductions at seven camera sites selected randomly from a total of 60 targeted enforcement zones, with mean speeds decreasing by 14 percent and fewer drivers exceeding the posted limit by more than 10 mph over the first six months after implementation (Retting & Farmer, 2003). In Virginia, more targeted programs show that the speed management benefits extend to localized environments around school zones. The City of Alexandria installed five speed cameras along arterial roads in school zones in 2022, with speeds dropping between 14% and 30% after the first few weeks of enforcement at most sites, especially during school arrival and dismissal periods (City of Alexandria, 2024). Similarly, Fairfax County's pilot program, launched in 2023 in nine school zones and one construction zone, saw violations drop by 15% to 27% at school sites during the program's first year (Fairfax County Government, 2023–2025).

U.S. cities have confirmed the same dynamic. Within one year of the expansion of New York City's 24/7 speed camera operation in 2022, speeding violations at enforced locations declined by 30% (NYC DOT, 2023). In Philadelphia, an evaluation of the Roosevelt Boulevard automated speed enforcement program found significant safety gains, with excessive speeding violations dropping by more than 90% within two years of implementation (Governors Highway Safety Association [GHSA], 2023). Bellevue reinforces these findings from a suburban context. More recent evaluations have shown that Bellevue's school zone speed cameras have had positive effects, as speeding violation rates have continuously declined (Fehr & Peers, 2025).

International evidence shows that automated enforcement reduces both average travel speeds and the prevalence of excessive speeding. The International Traffic Safety Data and Analysis Group's 2021 Speed Camera Review examined outcomes from 12 jurisdictions, including Australia, France, Finland, Norway, the Netherlands, and the United Kingdom, and found that speed cameras consistently curb extreme speeding behavior. Across sites included in the review, the share of vehicles exceeding the limit by more than 15 km/h (~9 mph) typically dropped by 50–70%, while average speeds fell by 2–10 km/h (~1-6 mph) depending on roadway context. Reductions tended to be greater on urban and arterial corridors than on motorways or rural roads where higher design speeds and variable traditional enforcement (human officer-led) patterns limited behavioral change (International Traffic Safety Data and Analysis Group, 2021).

Table 3: Speed Reduction from Speed Cameras

Context	Location	Crash Reduction from Speed
Regional	Fairfax County	25% reduction in violations at school sites
Regional	Alexandria	Sustained speed compliance between school arrival and dismissal periods
Regional	Washington, DC	14% reduction in mean speed and fewer drivers exceeding the posted speed limit by more than 10 mph
Regional	Montgomery County, MD	62% decline in the likelihood that a vehicle was traveling more than 10 mph above the speed limit at camera sites
National	Bellevue, WA	Continuous decline of speeding violation rates
National	Philadelphia	90% decline in speeding violations across camera corridor
National	NYC	30% decline in speeding violations across camera zones
International	Australia	50 – 70% reduction in vehicles exceeding the speed limit over 15 km/h (~9 mph)

A complete list of sources is presented in the Appendix.

INTEGRATING ATE INTO COMPREHENSIVE SAFE SYSTEM STRATEGIES

ATE can influence roadway safety beyond reducing overall crash frequency. This section highlights how ATE affects the nature and severity of crashes, helps prevent the most life-threatening outcomes, and protects vulnerable road users.

The National Highway Traffic Safety Administration (NHTSA) identifies ATE as a proven countermeasure for reducing fatal and severe crashes, noting that it is most effective when paired with education, engineering, and equitable enforcement practices (NHTSA, n.d.). These pairings strengthen long-term behavioral change by reinforcing safe driving expectations through multiple channels.

In the metropolitan Washington region, police departments in D.C., Montgomery County, the City of Alexandria, and Fairfax County have adopted ATE as part of their enforcement toolkit, allowing officers to focus on other locations with safety needs. However, a recent article by the transportation and housing policy group Greater Greater Washington (GGWash), expressed concerns about revenue use and equity implications of ATE. The analysis noted that while D.C.'s camera network has expanded significantly since 2022, citation volumes have increased faster than payment rates, leading to declining average revenue per camera and raising questions about how those funds are used, as revenues were shifted from local street improvement projects to the District's general fund for fiscal year 2024 (GGWash, 2024). The article found that many cameras are located in lower-income, majority-Black neighborhoods, where fixed fines may impose a disproportionate financial burden. These concerns underscore the importance of clear communication on revenue reinvestment, transparent site selection based on safety data, and periodic evaluation to ensure that ATE programs prioritize safety and equity over revenue generation, thereby maintaining long-term public credibility.

Examples across jurisdictions (**Table 4**) illustrate how ATE pairings with other countermeasures translate into specific safety gains. Maryland's red-light camera program demonstrates the principle of targeted enforcement at high-risk intersections, recording reductions in side-impact (angle) crashes, one of the most dangerous crash types, while also discouraging aggressive driving and red-light running (MDOT SHA, 2018). Maryland's SafeZones program, an automated speed enforcement initiative operated by the Maryland Department of Transportation State Highway Administration (MDOT SHA) and the state police to reduce speeding in highway work zones, showed reduced

excessive speeding and fewer worker injuries through a combination of signage, public outreach, and consistent enforcement (Maryland SafeZones, 2019). Similarly, the City of Rockville observed that pairing an existing speed camera with new bike lanes produced a notable decline in speeding citations, reinforcing how street design and ATE can work together to sustain speed compliance (Barnett-Woods, 2024). In New York City, the time per day that speed cameras were active was expanded, which combined with school street redesigns and education campaigns, has led to fewer severe nighttime crashes, particularly those involving pedestrians (NYC DOT, 2023).

Table 4: ATE and Paired Strategies

Context	Location	ATE and Paired Strategy
Regional	Rockville	Speed camera & road diet and bike lanes
Regional	DMV	ATE cameras & police officer enforcement
Regional	Maryland	Red-light cameras & high-risk locations
Regional	Maryland	Work zone cameras & signage, public outreach, and consistent enforcement
National	NYC	Speed cameras in school zones & street redesigns and education campaigns

A complete list of sources is presented in the Appendix.

LONG-TERM SAFETY IMPACTS

The longevity of automated enforcement outcomes has been examined for more than two decades. Many jurisdictions report sustained reductions in risky driving behaviors, though some studies indicate that benefits may diminish over time or vary by location. Documented long-term benefits include sustained decreases in mean speeds, lower rates of high-end speeding, continued reductions in serious and fatal crashes, and more uniform traffic flows.

Maryland's evaluations illustrate the complexity of long-term impacts. Red-light cameras reduced aggressive driving and angle crashes in the years following installation, but effectiveness varied between intersections and measurable improvements were not universal, mostly due to environment variables such as intersection design, signal timing, approach speeds, and driver behavior (MDOT SHA, 2018). Similarly, the SafeZones program achieved notable reductions in excessive speeding. However, maintaining compliance required ongoing public outreach and monitoring efforts, including education campaigns through billboards, Public Service Announcements (PSA), and social media, as well as the use of large warning signs and digital speed trailers to alert drivers in advance (Maryland SafeZones, 2019).

D.C.'s long-standing program has contributed to safer travel conditions over two decades, though debates over equity and revenue highlight ongoing challenges. For example, analysis of the D.C. Policy Center and DC Fiscal Policy Institute found that some low-income, predominantly Black population wards in the District incur a higher fine burden relative to local income, in part because many new cameras are concentrated in those areas rather than more affluent ones (GGWASH, 2024). Montgomery County's program has continued to reduce high-risk speeding, though evaluations note that benefits are concentrated at enforced sites. This suggests that while targeted deployment can be effective at specific locations, broader system-wide improvements often require complementary measures, such as expanded coverage, public education, or road design, to influence regional driving behavior.

The effectiveness of ATE is further underscored by what happens when enforcement is withdrawn. A study examining the effects of deactivating red-light cameras in 14 large U.S. cities, including

Charlotte, NC, Baltimore, MD, San Diego, CA, and Houston, TX, found that turning cameras off, even temporarily, increases all fatal crashes by 16%, effectively reversing prior improvements (Hu & Cicchino, 2017).

Bellevue, Washington offers an example of lasting compliance at school zone camera sites, where violations dropped sharply after installation and stayed low for more than a decade. The persistence of these results is an example of how automated enforcement can foster long-term behavioral change when consistently applied and well-communicated. However, the same program's mixed red-light camera outcomes, showing fewer injury crashes at some intersections and minimal change at others, underscore that effectiveness depends on site-specific conditions and implementation context (Fehr & Peers, 2025).

International reviews note that long-term ATE results can differ across corridors, with variations often linked to roadway design, traffic conditions, and the visibility of ATE cameras and signage (International Transport Forum, 2018; International Traffic Safety Data and Analysis Group, 2021). For instance, results tend to be more consistent on arterial or urban corridors with clear lane delineation and lower speed limits, while multilane highways and rural roads with higher design speeds show smaller reductions (International Transport Forum, 2018). Sites with complex intersections or frequent access points may also see uneven compliance due to greater driving complexity and variable traffic flow. Visibility plays a key role as well, as programs that maintain conspicuous signage and cameras generally achieve more sustained speed reductions than covert or mobile deployments (International Transport Forum, 2018; International Traffic Safety Data and Analysis Group, 2021).

Taken together, the long-term record suggests that automated enforcement can deliver durable safety benefits, but only when programs are maintained, adapted to local conditions, and paired with broader safety strategies. Examples such as Bellevue's implementation of ATE in school zones and Maryland's SafeZones initiative show that programs can normalize compliance over time. At the same time, mixed results from red-light cameras, uneven site performance, and the rebound effects observed when cameras are deactivated all highlight a tool whose effectiveness depends on consistent application and integration with wider safety policies.

Considerations for Regional ATE Implementation

Building on the research findings, this section translates some of the observed outcomes into practical insights for how the effectiveness of ATE deployments can be strengthened by addressing regional challenges and leveraging available opportunities. Understanding the factors that shape implementation is essential to ensuring that automated enforcement achieves its intended safety goals in a equitable and sustainable way.

Using the MWCOG region as an example, this section examines how differing legal frameworks, operational structures, and public expectations influence program design and performance. The region offers a useful case study because D.C., Maryland, and Virginia have adopted varied approaches that reflect local priorities while navigating shared challenges. These examples help illuminate overarching considerations that regions may encounter when seeking to develop or refine automated enforcement programs. **Table 5** summarizes these cross-cutting considerations and highlights common focus areas, best practices, and case studies/examples drawn from across the metropolitan Washington area.

Table 5: Regional Implementation Focus Areas and Best Practices

Themes	Focus Areas	Best Practice	Case Studies/ Examples
Legal Context	Statutory differences across D.C., Maryland, and Virginia create inconsistencies in authorization, enforcement thresholds, and program oversight. These gaps complicate cross-jurisdictional coordination, data sharing, and public communication.	Regular information-sharing on signage practices, reporting approaches, and communication strategies can help jurisdictions learn from one another and improve program transparency. In places where jurisdictions choose to pursue it, reciprocal citation enforcement can further support consistency for travelers and reinforce equitable application of ATE.	D.C. operates under a centralized citywide statute; Maryland balances local discretion with state safeguards; Virginia's newer framework targets school and work zones with officer certification and strict procedural rules.
Equity Considerations	Without careful design, ATE programs can exacerbate inequities by imposing disproportionate fines on lower-income residents or by clustering cameras in already over-policed areas. Lack of transparency on where revenues are spent can also further erode public trust.	Jurisdictions can mitigate inequities through data-driven site selections focused on crash risk rather than citation volume; public-facing dashboards that report outcomes; and reinvestment of revenues into underserved communities. Pairing enforcement with education and engineering also helps to reduce unintended social impacts of ATE programs.	Montgomery County prioritizes school zones and high-crash corridors; Alexandria limits cameras to school zones protecting vulnerable users; Fairfax County links enforcement to Vision Zero and maintains public dashboards.
Public Perception and Engagement	Public skepticism persists due to concerns about fairness, transparency, and whether ATE functions as a safety tool or a revenue source. Inconsistent communication across agencies contributes to confusion and public opposition.	Building trust requires clear and consistent communication that frames ATE as part of broader Vision Zero and Safe System goals. Transparent reporting, community engagement during site selection, and visible reinvestment of revenues in safety improvements help demonstrate accountability.	Montgomery County and Alexandria publish detailed evaluations; Fairfax County engages the public through education campaigns and dashboards; D.C. continues to face scrutiny for limited transparency on revenue use, but, D.C. has an online dashboard where the public can see where cameras are located and the number of citations per camera.
Operational Practices	Program effectiveness depends on reliability, proper calibration, and transparent data reporting. Inconsistent maintenance or opaque data management can undermine credibility and raise legal challenges.	Standardizing operational practices, such as calibration schedules, error-rate reporting, and consistent evaluation of crash outcomes can enhance reliability and public confidence. Shared data frameworks also allow jurisdictions to compare performance and identify best practices regionally.	Montgomery County conducts regular performance reviews; Fairfax County phased their ATE rollout to ensure functionality; D.C.'s large system underscores the need for quality control at scale.

SUMMARY

Automated traffic enforcement has become an established component of roadway safety in the metropolitan Washington region. Evidence from international research, national evaluations, and local programs consistently demonstrate that ATE reduces crashes, lowers excessive speeds, and helps prevent severe and fatal injuries. In the region's major jurisdictions, deployments have shown measurable safety gains, especially in school zones and high-crash corridors. These results align with the Safe System Approach, which emphasizes managing speeds and shaping road user behavior to prevent life-threatening crashes.

At the same time, implementation challenges remain. Differences in state and local legal frameworks create uneven authority and operational rules, complicating regional coordination. Public skepticism in parts of the region reflects concerns about fairness, equity, and transparency. Sustained effectiveness depends not only on technical performance but also on building public trust through careful site selection, transparent reporting, and reinvestment of revenues toward safety improvements.

For the TPB, the regional experience suggests that automated enforcement is a proven tool that can support broader safety goals when designed and communicated appropriately. To maximize effectiveness, ATE must be consistently framed as a safety strategy; paired with roadway design, public outreach and education; and coordinated across jurisdictions. Additionally, equity safeguards are crucial, as incorporation of income-based fine reductions, payment plan options, and equitable camera placement can help avoid disproportionate impacts on lower-income or minority communities.

APPENDIX

List of Sources:

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