altumint
SAFE COMMUNITIES. SMART SOLUTIONS.

Massachusetts DOT

TITLE: Road Safety Request for Information: Safety Cameras

RFI NO: BD-24-1030-CPO1-CPO1-97530

FROM:
Altumint, Inc.
Holly Cooper
4600 Forbes Boulevard, Suite 203
Lanham, MD 20706

DATE SUBMITTED: March 28, 2024

SUBMIT TO: COMMBUYS

altumint
SAFE COMMUNITIES. SMART SOLUTIONS.

Transmittal Letter
March 28, 2024

RE: Roadway Safety Request for Information & Ideas

The Commonwealth of Massachusetts is looking for an innovative way to use speed safety cameras to help meet the goals of the Safe System approach to the challenge of roadway safety. Altumint is proud to contribute a solution for the program: our Automated Reckless Speed Warnings solution can help raise speed awareness and encourage Massachusetts drivers to slow down...all within the parameters of existing legislation. Even better, the cost of the Automated Reckless Speed Warning Solution is eligible for federal funding via SS4A and Section 402 grants.

ALTUMINT ADVANTAGES

- 100% USA-owned and operated
- Full turnkey services
- In-house design and build
- Proprietary AI software to process speed violations
- Multi-lane LIDAR and RADAR violation detection
- 4K color digital video
- Infrared illumination-no white flash
- World-class operational excellence
- History of 90%+ speed reductions
- Access to Altumint's Advisory Board
- Customers in 8 states
- Deep data analysis of traffic data as part of the program

This portable system allows the Commonwealth to issue speed warnings to registered owners of cars going over the speed limit. The detection system uses the same proven technology as our automated enforcement systems, but it emphasizes changing driver behavior rather than issuing violations. In addition, the system gathers 24X7 traffic data, allowing Massachusetts to quantify the system's effect on traffic speeds.

We are US-based and design, build, and maintain our full suite of automated road safety camera solutions here. To provide quick issue resolution and rapid deployment of technical upgrades throughout the life of the enforcement program, we support each customer with a local team.

As the Commonwealth explores adopting new technologies to address critical public safety concerns, Altumint can support this journey with our industry's widest array of solutions, including red light violation systems, photo stop arm for school buses, school zone enforcement systems, and work zone enforcement systems.

Our solution extends beyond technical innovation to leadership support. We are honored to have the only Strategic Advisory Board in our industry. Retired Commissioner Ed Davis, Retired President Mark Moon, and Retired Chief Mark Magaw bring over 100 years of collective law enforcement experience, insights, and advice to all our clients. A relationship with Altumint would give MassDOT access to these experienced leaders.

We are confident Altumint meets the needs of the Commonwealth. If you have any questions or concerns regarding our submission, please contact Mike Phelan, Director of Strategic Accounts, at 301.520.6405 or michael.phelan@altumint.com.

Sincerely,

DocuSigned by:
Holly Cooper
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Holly Cooper, Chief Executive Officer
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Table of Contents

1. Where else has your technology been implemented? Or, to the best of your knowledge, would we be the first place to try it?

We have implemented speed safety cameras in the following jurisdictions.

Altavista, Virginia
Americus, Georgia
Banks County, Georgia
Bartow County, Georgia
Berwyn Heights, Maryland
Calvert County, Maryland
Charles City, Iowa
Cherokee County, Georgia
Chesapeake Beach, Maryland
Cheverly, Maryland
Clermont, Iowa
College Park, Maryland
Dayton, Ohio
Denton, Maryland
Edmonston, Maryland
El Portal, Florida
Eustis, Florida
Fauquier County, Virginia
Fayette, Iowa
Fruitland, Maryland
Gilmer County, Georgia
Glenarden, Maryland
Greenbelt, Maryland
Greene County, Virginia
Hagerstown, Maryland
Hapeville, Georgia
Harrisonburg, Virginia
Hendry County, Florida
Higginsport, Ohio
LaPorte, Iowa
Laurel, Maryland
Lumpkin, Georgia
Macon-Bibb County, Georgia
Maynard, Iowa
Nashville, Georgia
New Carrollton, Maryland
New Rochelle, New York
Olin, Iowa
Petersburg, Virginia
Portsmouth, Virginia
Postville, Iowa
Riverdale Park, Maryland
Salisbury, Maryland
Seat Pleasant, Maryland
Smithsburg, Maryland
Strawberry Point, Iowa
Suffolk, Virginia
Sumter County, Georgia
Tama, Iowa
Washington County, Maryland
West Union, Iowa
Winchester, Virginia

2. Have any of your deployments faced challenges based on racial equity or equity concerns? If so, how did you work with partners to address these concerns?

Yes, one of our deployments faced challenges based on racial equality. To address this, we worked with our customer to ensure that the deployments were nearly evenly distributed between the East and West sides of the city.

If the Commonwealth of Massachusetts intends to use the technology for speed warnings rather than violations (as stated in question #12), concerns about racial equity can be answered in three ways:

(1) Since the system only issues warnings, there is no worry of a financial impact to any of the speeders

(2) Since the system captures all speeders in a certain area, regardless of who the driver is, the technology applies the law equally to all drivers

(3) The Automated Reckless Speed Warning system offers a portable configuration, allowing it to be deployed across jurisdictions with varied racial and economic profiles

(4) This system can be dedicated to only speed enforcement, avoiding potential controversy about using speed cameras for other monitoring purposes

3. Do you have staff or a company footprint in New England?

We do have staff in New England. If awarded a contract, Altumint would create a local presence by hiring our own local qualified operations engineers and field technicians authorized and trained to perform repairs and replacements.

4. Does your hardware solution require a power source? Can it be solar/battery-powered? Does it need network connectivity?

Our hardware solution works with multiple power sources such as

- Shore power (120 – 240 VAC)
- Solar battery powered
- Diesel battery powered
- Battery powered

For connectivity, Altumint uses a 4G LTE modem. The modem is integrated into our hardware system and securely sends data to our servers.

5. Describe the operational approach your company would take to validate the accuracy of your cameras.

Altumint's Automated Speed Enforcement Systems perform a self-test upon starting or restarting the system to verify the full functionality of the lane sensors, cameras, data processing unit, and facility resource status (such as power). This daily self-test meets applicable legal requirements and disables the collection of violations if it does not pass. The self-test is set up in accordance with State laws and simulates a recorded violation for testing purposes. Altumint posts these reports online for client use and as evidence that the system was operating properly at the time of the violation. Our systems run at least one self-check daily or upon starting or restarting the system. The system can be configured to run these self-checks at any interval to ensure system accuracy.

Vehicle speed is determined by two independent receive antennas. The speed is measured first by the Doppler shift and second by the range progress over time. The two measurements are independent and redundant and must be equal for a speed to be reported. The radar "tracks" each vehicle through its field of view (FOV) assigning each a discrete object ID. The violation system uses these tracks to determine which lane the vehicle is traveling in.

6. What is the minimum resolution needed for your software to accurately determine (or 'read') a license plate?

The minimum resolution needed for our software to accurately determine (or 'read') a license plate is 2K or 2048 pixels × 1080 pixels.

7. How does your technology handle inclement weather? License plate covers? Night-time and direct sunlight?

Altumint's speed safety cameras use a state-of-the-art 4D UHD radar sensor for vehicle speed detection and tracking, integrated with a 4K color video camera with auto aperture for violation capture and powerful infrared (IR) illuminators. Unlike white light strobe flashes that can cause driver disorientation or visual distraction, the IR illuminators do not affect the driver's ability to stay safe.

Our enforcement systems use video cameras to capture many frames of the rear of the vehicle and the vehicle registration plate. Using these multiple images, we can mitigate the effects of plate blockers that use polarizers to prevent viewing the plate.

For events captured during the night or with direct sunlight behind the plate, Altumint uses bracketing, alternating the exposure of frames in a video from light to dark, to improve image quality and plate character clarity. The video toggles between the different exposure levels to improve still image extraction; no modifications occur on the video itself, and the changing exposures happen live.

Please see the following pages for examples of images captured under multiple conditions.

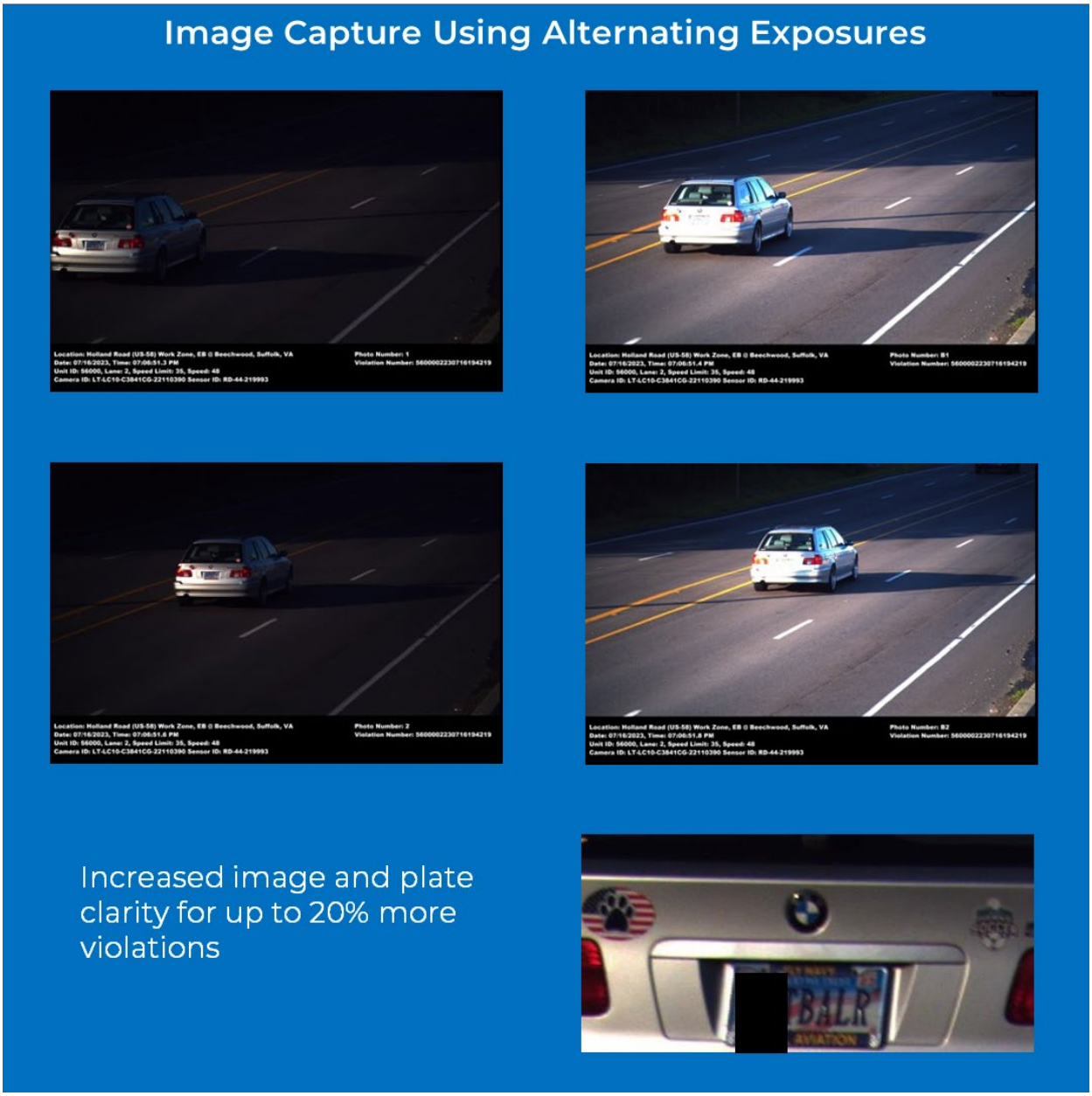

Figure 1: Bracketing Example (License Plate Partially Redacted)

Figure 2: Events Captured in Rain

Figure 3: Events Captured During the Day

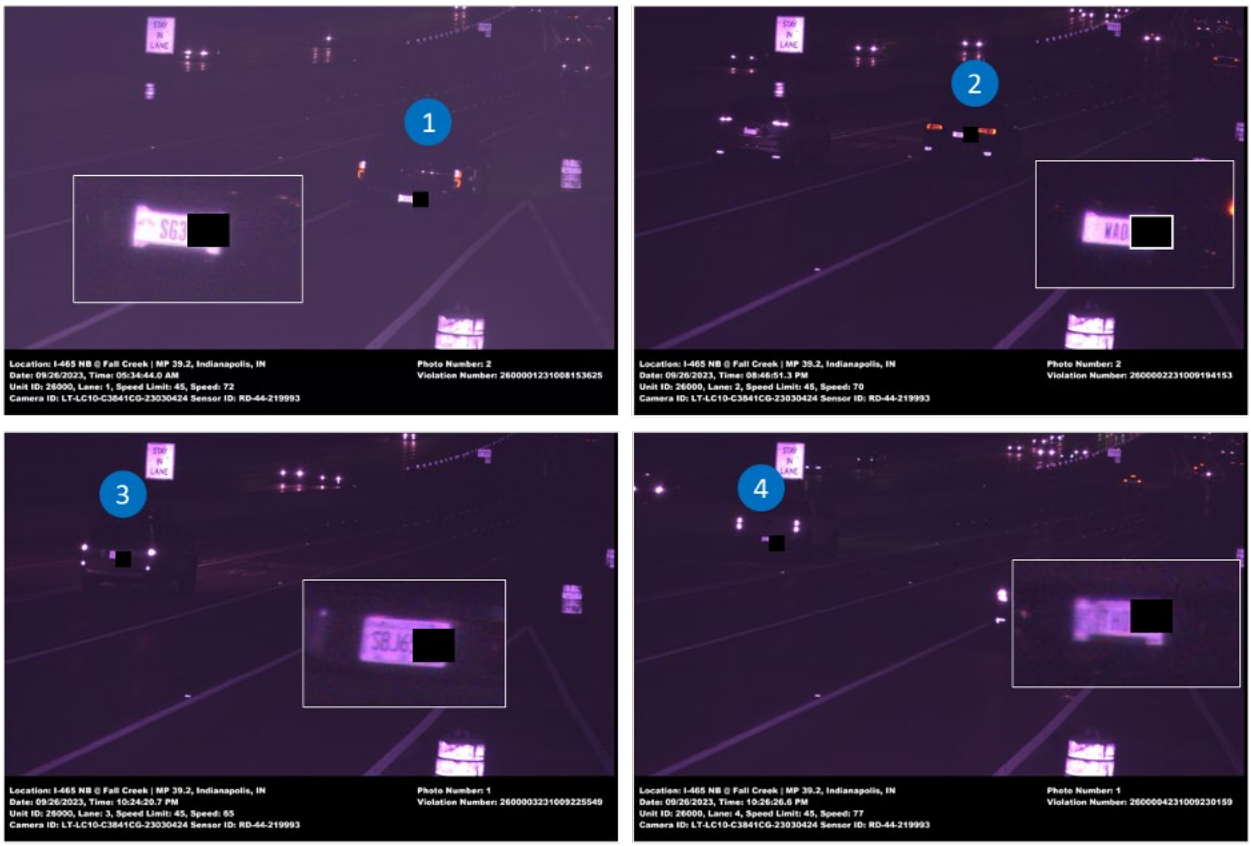

Figure 4: Events Captured at Night

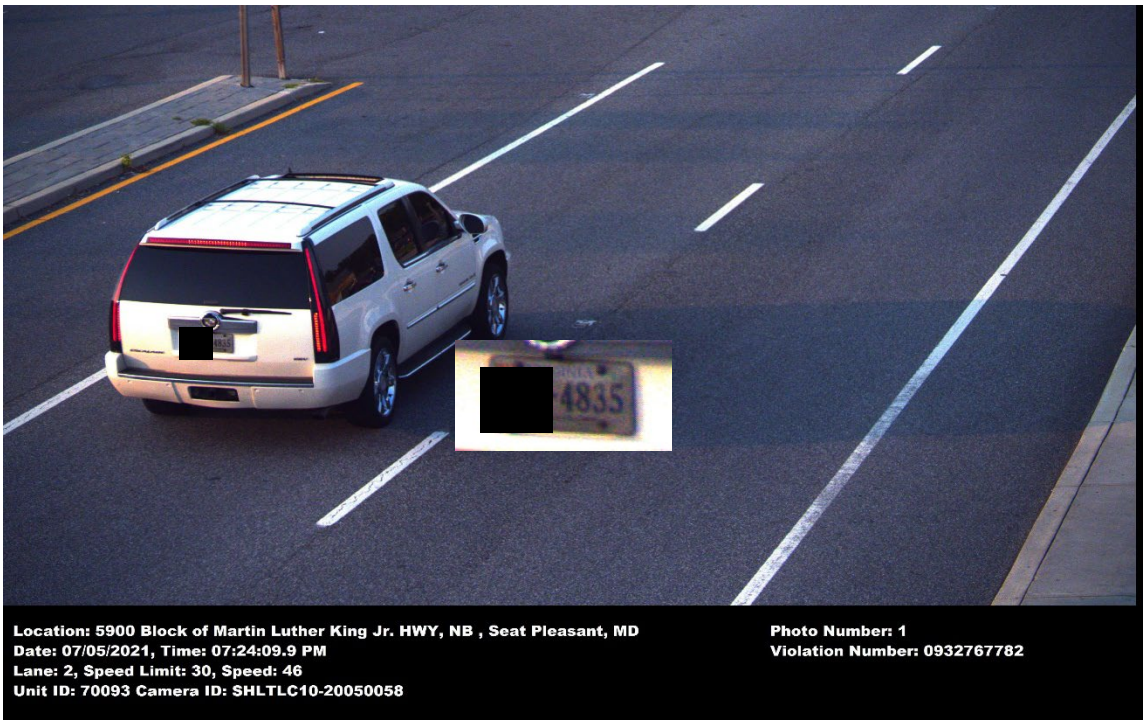

Figure 5: Event Captured from Vehicle with Plate Covers

8. If you provide physical infrastructure as part of your solution, is it mobile or fixed equipment? If mobile, how long does calibration take in a new location? Describe any relevant criteria for the use of one over the other if you offer both.

Altumint's field deployed hardware is flexible in its deployment configurations. This allows us to meet the needs of each individual jurisdiction and location.

We provide fixed, portable (trailer or cabinet based), and mobile (vehicle based) speed safety cameras. Our fixed and portable system takes approximately 3 hours to set up. Our mobile-based solution takes approximately 30 minutes to set up.

Altumint's fixed speed safety cameras provide a one-time set up application. It can be fully autonomous if future laws allow it. However, if not, we can offer the ability for an officer to remote in and start up the system, run daily verifications and start enforcement if an officer's presence is required. The system can enforce up to 24/7 if future laws allow it.

Altumint's portable speed safety cameras have the same benefits as fixed systems with the flexibility of moving them from site to site. If optioning for a solar option, 24/7 enforcement would be eliminated for 24/7 enforcement. Note that the setup application is applied each time a move is requested. If that been our experience that jurisdictions will opt to move the systems a couple times a year.

Altumint's mobile based speed safety cameras will provide the easiest way to accommodate the officer's presence requirement currently in place as they can drive, set up and place the system in enforcement each day. The downside to this solution is that it puts the most responsibility and effort onto the jurisdiction as they must provide an officer each day they want to enforce at each physical location. The fixed and portable systems can use just one officer to view all the locations at once remotely if necessary.

9. Please describe the requirements for any space or physical assets needed for installation of equipment.

Fixed speed safety cameras require a 2' x 2' area for the pole. The fixed pole cameras also require a power source (utility pole or city owned power source with access to 110 – 240VAC) close to the intended location of the pole.

Portable and mobile speed safety cameras require a maximum area of 16' x 10' (roughly the size of a parking spot) for physical placement.

10. Please describe any criteria for heights and distances to ensure accuracy of the data collected.

Speed Safety cameras can operate accurately at a height of 5' – 20' and between 2' and 20' away from the first lane of enforcement.

11. Do you offer a turnkey service? If so, what is included in that service and what is the minimum scale needed to implement?

Our turnkey service includes the provisioning, deployment, maintenance, and service of each Speed Camera System. It also includes our full suite of back-office services such as event processing, printing, mailing, lockbox payment processing, court docket preparation, training, expert witness testimony, call center agents, etc., as appropriate for the program. The minimum scale needed to implement is just one location.

12. Does your company provide data processing, violation review and mailing services? If yes, please describe the general approach for how these services would be delivered. Please pay particular attention to the note above that we are not issuing tickets, fines, or fees in response to the observed violation.

We do provide these services. Based on MassDOT's request, the activities described below will result in a warning mailed to the registered owner of the speeding vehicle.

A potential violation goes through the full process of multiple Altumint event reviews, tag lookup, and law enforcement approval. Events that become approved citations will then be printed, mailed, and tracked by Vioview to the eventual payment or dismissal of the citation. Altumint performs the initial review to verify it is a violation, either manually or through Artificial Intelligence (AI).

After that, our Quality Assurance personnel perform a DMV lookup and second verification, matching the vehicle type with the photo images to ensure that the citation is associated with the correct car. 48 states and Washington D.C. registered owner lookups are requested through Nlets, the International Justice and Public Safety Network provider of the National Crime Information Center (NCIC) based in Phoenix, Arizona. Vehicle owner data requests are submitted to Nlets, which then makes requests to the appropriate Department of Motor Vehicles and returns the response data to Altumint.

Over the past ten years, we have achieved an overall registered owner lookup success rate of over 90% due to the quality of our back-office processes. Then, the citation is turned over to the Town to review and approve.

Next, the citation is turned over to MassDOT for review and approval. Once the MassDOT approves a citation in Vioview, Altumint will execute a warning in accordance with the Massachusetts Code. This summons will include copies of the images the speed camera system captures. Violators will also be given a unique case number and pin to review the images and warnings online. Altumint will work with MassDOT to design the form these warnings will follow.

Upon approval by the state-designated authority, the violations are issued to the address returned by the Nlets request process. Any returned notice is passed through a second step to verify that the original or nominated address is current. The address is checked against the United States Postal Services' National Change of Address database. This allows Altumint to obtain the most recent address for vehicle owners needing to update their registered address.

13. What integration would you need to have with the Registry of Motor Vehicles in order to mail safety messages to drivers who are observed violating the speed limit?

The customer will need to complete an NLET authorization form. That form should list the customer's Organization Record Identifier (ORI) Number and grant permission for Altumint to use it to look up vehicle registration information pertaining to each event.

14. How long would it take you to implement your solution, from signed contract to solution go-live? In other implementations, what tends to slow down the path to deployment?

Our goal is a 120-day implementation schedule from contract signing to solution go-live. Permit approval and power hookups from the local power company tend to be the two largest slowdowns.

15. Describe the smallest high-fidelity implementation scenario you can imagine. Please include information like minimum size of a deployment, minimum suggested duration, what *types* of costs (not actuals) are included in your business model (e.g., installation, on-going service, mailing, deinstallation).

Our smallest high-fidelity implementation scenario is one location for one year.

For program costs, there are two major categories of costs:

- Those costs related to the equipment itself (design, installation, operations and maintenance), including:
  - Equipment system costs
  - Construction and installation quotes
  - Supporting equipment (trailers, poles, or vehicles)
  - Field service technicians and engineers
  - Truck and fuel costs
  - Camera power or battery costs
  - Spare parts
  - Telecom costs for cameras
  - Calibrations
  - Signage and sign posts
- Those costs associated with communicating with the individuals who are speeding (DMV lookups, violation review, citation printing and mailing, customer service), including:
  - Public information and education
  - Quality assurance
  - Nlets lookup
  - Customer service
  - Printing and postage
  - Envelopes and mailing
  - Overall program support

16. What is your approach and delivery of staff training as it relates to your proposed solution?

Our classes include frequently asked questions, procedural walkthroughs, and hands-on learning training. Altumint will work with you to develop a customized training plan and schedule. Below is a summary of the types of training we offer.

Table 1: Training Types

Training	Initial Training	Class Size	Follow-up Frequency
Police Officer/Approver	Before Warning Period	Up to 20	As Needed
Financial	During Warning Period	Up to 5	Monthly
Court	During Warning Period	Up to 20	Monthly
IT	Before Warning Period	Up to 5	As Needed

Below is an example of a training curriculum for those who approve citations:

Vioview Approver Training Summary

Intended Audience: Those responsible for approving citations.

- Overview of the program
- Overview of citation processing
- Your role in citation processing
- The citation timeline
- What data is captured in a citation?
- Controllable versus uncontrollable reject reasons
- What is Vioview?
- Logging into Vioview
- Looking at the queue
- "Red" citations
- Reviewing a citation
- Next steps in the citation process

17. Is your company currently providing services to the Commonwealth of Massachusetts? If so, what kind?

Altumint currently provides no services to the Commonwealth of Massachusetts.

18. Personally Identifiable Information (PII) is any information about an individual that can be used to determine an individual's identity, including an individual's name, social security number, date of birth, medical or educational records, geolocation data, photographic images, or other information that is linked to any of the above. If your technology collects data, does your proposed data collection tool involve the collection of PII?

Altumint only collects and records the vehicle registration owner names and addresses necessary to mail citation notices. None of the other listed PII is collected or stored in any of our IT systems.

19. Provide a brief (yes/no) answer to the following questions.

Would MassDOT own the raw data collected?

Yes. The raw data includes not just the violations captured but also the presence and speed of all traffic. We also capture the vehicle length and the gap between vehicles. Having this data makes it possible to see the program impact on the overall speed of all vehicles instead of just measuring the number of violations.

Would the raw data be anonymized?

No, but only authorized personnel and the approving police officer view this information.

Would the data be deleted periodically? If so, how often?

Yes. The frequency is determined by the Jurisdiction and state law.

Would any third parties have access to the raw data collected?

No.

20. Provide a brief table that outlines the lifecycle of the data collected. Please indicate the following:

Below are the "default" data activities in Vioview for data. Please note that these activities are customizable for state and program requirements.

Event	Associated Data Actions
Event capture	▪ The system embeds the violation data in a data bar at the time of capture. ▪ Events captured by automated enforcement systems are continuously transferred to Altumint's server through secure 4G LTE modems for review and processing.
AI processing	▪ Altumint AI performs the initial review to verify it is a violation.

Event	Associated Data Actions
	▪ The AI also performs the initial license plate lookup.
Quality assurance	▪ Non-issued event images and video are retained for 45 days for audit prior to purging. ▪ QA performs a DMV lookup and second review, verifying the vehicle type with the photo images to ensure that the warning is associated with the correct vehicle.
Police review	▪ Once MassDOT approves a violation in Vioview, the event is queued for mailing.
Mailing	▪ The warning (we are assuming as per question #12, only warnings and not citations) is issued to the address returned by the Nlets request process. ▪ Any subsequent warning is passed through a second step to verify that the original or nominated address is current.
Disposition close	▪ Issued warnings are retained for 12 months post life cycle completion prior to purging images and videos.
Record purge	▪ Text-based data is retained for all records for historical purposes until the client. ▪ Altumint offers the option of providing database records on external media prior to purging those records

Where will the data be stored and processed?

The data is hosted and maintained on-premise in our Lanham, MD data center with a backup hosted in the NOVA environment in Arizona.

Who will own and have access to the data?

The clients own their own data. Both parties will have access to the data.

How will data security be maintained?

Altumint utilizes the principle of least privilege to control access to the data. Our data is backed up on-site as well as at an off-site location, and we deploy end-point protection for breach prevention and detection.

Altumint maintains CJIS compliance and is audited tri-annually.

Whether the data will contain PII; whether and how any such PII will be anonymized?

Out of data that is PII, Altumint only collects and records the vehicle registration owner names and addresses necessary to mail citation notices. No other listed PII is collected or stored in any of our IT systems. The PII is needed to issue warnings or citations.

How will the data be disposed of, destroyed, sent elsewhere, or made public?

Please see the “Disposition close” and “Record purge” topics in the table above.

In your previous deployments, how long will the data need to be stored before deletion, if applicable?

Altumint has multiple clients in 8 states. Regulations on data retention are usually dependent on the jurisdiction and state laws. An example of what Altumint does for one client is.

- Non-issued event images and video are retained for 45 days for audit prior to purging.
- Issued citations are retained for 12 months post life cycle completion prior to purging images and videos.
- Data is retained for all records for historical purposes.
- Optional: Provide database records on external media to client prior to purging.

21. What risks or vulnerabilities are associated with the data collection you require to perform the tasks stated by your offering?

Just like any other web-based application, Altumint's Vioview application can potentially face the following risks or vulnerabilities:

- Hacking
- Ransomware
- Malware
- Phishing
- Negligence

However, we have undertaken multiple security measures, including software, encryption, and training, as detailed below, to safeguard our data.

22. How have you ensured safe and limited access to motor vehicle registration data and systems in your previous deployments?

Altumint's systems and data are protected by the following:

- We use CrowdStrike to protect our solution against malware and viruses regardless of the host operating system.
- Our workstations are protected with local disk encryption and end-point protection for malware and virus protection.
- Altumint's network firewalls are kept up to date with the latest updates and security patches.
- Physical access to the offices is provided by a keycard entry system for authorized personnel.
- Physical access to network devices is controlled to allow authorized personnel only.
- Altumint fingerprints all employees and performs background checks according to CJIS requirements.
- Users are required to complete IT security awareness training on an annual basis.
- All user remote access utilizes a client VPN with multi-factor authentication.
- All data is encrypted in transit. Violation data is kept secure through automated processes to transfer data through secure data communication channels without direct user access.

- All interaction with the data is controlled through the back-office web application, which controls allowed access via predefined roles with specific, assigned permissions.
- Altumint utilizes the principle of least privilege to control access to the data. Our data is backed up on-site as well as at an off-site location, and we deploy end-point protection for breach prevention and detection.
- Altumint maintains CJIS compliance and is audited tri-annually.
- Altumint also practices frequent password changes (every 90 days) with the following requirements.
  - At least 8 characters in length
  - One upper-case letter
  - One lowercase letter
  - One number
  - One special character

  In addition, our system requires Multi-Factor Authentication (MFA). Upon successful username and password entry, a 4-digit multi-factor authentication code is emailed to the user.

TRANSFORMING ROAD SAFETY WITH AUTOMATED RECKLESS SPEED WARNINGS

Combat reckless speeding with a USDOT FHWA Proven Safety Countermeasure - Automated Speed Safety Cameras that issue personalized warnings to vehicle owners.

Program Benefits

Effective Deterrent:
Warnings are proven deterrents to risky driving, fostering a safer environment.

Funding:
Eligible for federal funding via SS4A and Section 402 grants.

Resource Optimization:
Overcome law enforcement resource challenges with a turnkey service that requires negligible agency involvement.

Equity & Safety:
Address equity concerns in law enforcement interactions while curbing the rise in traffic-related accidents and fatalities.

Key Features:

Solar-Powered Portability

Compact, solar-powered trailers fit seamlessly within roadway right-of-ways.

Data Accessibility

4D radar sensors provide 24/7 traffic stats, accessible via FTP for comprehensive analysis.

Privacy-Focused Design

IR illumination for nighttime operation. tracks only receding vehicles.

Agency Ownership

Data and warnings are owned by the agency/ jurisdiction, ensuring control and compliance.

How it Works:

Data-Driven Deployment
Portable automated traffic safety cameras capture real-time traffic stats, enabling data-driven deployment.

Turnkey Service
Altumint handles system build, installation, operation, and maintenance, ensuring a hassle-free experience for agencies.

Personalized Warnings
4D radar sensors capture vehicle details, allowing for customized, owner-specific reckless speed warnings.

100% Designed, Engineered, Manufactured, and Supported in the USA.
We never offshore our service, support or processing.

Mailable warnings can come in many different formats. Customize your message to fit the needs of your community. See example below.

Contact Us Today! info@altumint.com or 888.332.8528