Dear residents, advocates, technologists, established companies, startups, researchers, neighbors across the Commonwealth, and anyone else who thinks they have a contribution to make on roadway safety –

We need to be honest about a big problem that affects all of us in the Commonwealth[1]: 344 people were killed on Massachusetts roadways in 2023[2]. Since the COVID pandemic, speeding-related serious injuries have steadily increased. We know there is no single solution, no silver bullet, no quick fix to achieving roadway safety. With that in mind, MassDOT is taking a Safe System approach[3] to the challenge of roadway safety and has identified initiatives that will only be addressed with all of us working together.

At MassDOT, we are hard at work implementing changes to improve safety. Cities and towns across the Commonwealth are actively tackling safety issues, too. You probably see these changes daily as roads are redesigned to better accommodate all users. But we know we don't have all the answers ourselves. We need to work in collaboration with partners – even unlikely ones. Through this Request for Ideas & Information (RFI), **we want to hear from you**. What ideas, tools, or solutions can you offer – or have heard of, or seen used elsewhere – to improve safety on our roads?

This RFI is structured around three Areas of Interest. You may choose to respond to one or more Area. Our Areas of Interest are:

1) Speed Safety Cameras (page 4)

2) Telematics (page 8)

3) Non-digital tools & ideas (page 11)

On the following pages, we go into more detail on each area. We also outline what information we are requesting. For each area, you will find links to relevant studies, datasets, or MassDOT public assets, if they exist.

[1] Impact Crash Portal: https://apps.impact.dot.state.ma.us/cdp/home
[2] Preliminary data as of January 20, 2024; subject to change.
[3] USDOT Safe Systems: www.transportation.gov/NRSS/SafeSystem

Any responses submitted to this RFI will be considered public record. Do not submit any sensitive, personally identifying, or financial data in your response. This RFI does not obligate us (the Massachusetts Department of Transportation, also known as MassDOT) to take any action. We may or may not issue a Request for Proposals (RFP) based on what we learn from this RFI. We may request an additional opportunity to meet with you to discuss your idea in more detail.

If you have any questions, please email them to **TheLab@dot.state.ma.us** (Yes, we tried to get an email with fewer dots, we're sorry!). We will collect and aggregate questions until February 23, 2024 at 5 p.m. Eastern Time and post responses the following week on Mass.gov and in COMMBUYS.

Responses are due on COMMBUYS (for any Area of Interest) or through the ideas submission form for Area of Interest #3 by 5 p.m. Eastern time on March 28, 2024.

COMMBUYS "Bid Number": BD-24-1030-CPO1-CPO1-97530

Questions and formal inquiries due by	Friday, February 23, 2024 at 5 p.m.
Responses to questions posted	On or before March 1
Submissions due	Thursday March 28, 2024 at 5 p.m.

Table of Contents

Area of Interest 1: Speed Safety Cameras

In MassDOT's 2023 Strategic Highway Safety Plan[4], the first initiative is ***Implement Speed Management to Realize Safer Speeds***. One tool in the speed management toolbox is 'photo enforcement', also sometimes called 'automated enforcement' or, as the Federal Highway Administration (FHWA) and MassDOT refer to them, 'speed safety cameras'. MassDOT explicitly calls out this technology in Section 4.2 of the Plan in hopes of 'accelerating research and the adoption of technology' through 'prospective pilots for automated enforcement or red light running, speed zones, and work zones'.

FHWA has rated speed safety cameras as a 5-star proven safety countermeasure. They have been shown to reduce roadway fatalities by 20 to 37 percent. *(See relevant studies list below.)*

> ***A disclaimer before we go any further:*** in case you don't keep up to date on Massachusetts law as closely as we do, you need to know that we are not legally allowed to issue tickets, fees, or fines for moving violations without a police officer present in the Commonwealth of Massachusetts.
>
> That doesn't preclude us from testing the technology without fines. This could help us to understand the true scope of the problem of speeding in Massachusetts or exploring non-punitive ways we can aim to reduce serious speeding on our roadways.

Through this RFI, we hope to:

- Better understand how your system can be deployed in a variety of use cases and physical contexts
- Learn about privacy-by-design workflows for your technology, data storage and disposal, and data access
- Understand whether your technology's communication method drives down unsafe behaviors without the threat of a fine
- Understand the impacts of your system in high-crash locations, mid-block crossings, work zones, and intersections

We want to note that we are not interested in revenue-sharing business models with respect to the number of tickets issued (see disclaimer above.) We are obsessively focused on ensuring any speed safety camera system is about safety and not revenue generation.

[4] Strategic Highway Safety Plan: www.mass.gov/doc/massachusetts-shsp-2023/

To help us understand the four items above, please describe your speed safety camera system to us. In particular, please address the following questions:

1. Where else has your technology been implemented? Or, to the best of your knowledge, would we be the first place to try it?
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?
3. Do you have staff or a company footprint in New England?
4. Does your hardware solution require a power source? Can it be solar/battery-powered? Does it need network connectivity?
5. Describe the operational approach your company would take to validate the accuracy of your cameras.
6. What is the minimum resolution needed for your software to accurately determine (or 'read') a license plate?
7. How does your technology handle inclement weather? License plate covers? Night-time and direct sunlight?
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.
9. Please describe the requirements for any space or physical assets needed for installation of equipment.
10. Please describe any criteria for heights and distances to ensure accuracy of the data collected.
11. Do you offer a turnkey service? If so, what is included in that service and what is the minimum scale needed to implement?
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.
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?
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?
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).

16. What is your approach and delivery of staff training as it relates to your proposed solution?
17. Is your company currently providing services to the Commonwealth of Massachusetts? If so, what kind?

Data Collection Questions

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?
19. Provide a brief (yes/no) answer to the following questions
    a. Would MassDOT own the raw data collected?
    b. Would the raw data be anonymized?
    c. Would the data be deleted periodically? If so, how often?
    d. Would any third parties have access to the raw data collected?
20. Provide a brief table that outlines the lifecycle of the data collected. Please indicate the following:
    a) Where will the data be stored and processed?
    b) Who will own and have access to the data?
    c) How will data security be maintained?
    d) Whether the data will contain PII; whether and how any such PII will be anonymized?
    e) How will the data be disposed of, destroyed, sent elsewhere, or made public?
    f) In your previous deployments, how long the data will need to be stored before deletion, if applicable.
21. What risks or vulnerabilities are associated with the data collection you require to perform that tasks stated by your offering?
22. How have you ensured safe and limited access to motor vehicle registration data and systems in your previous deployments?

MassDOT Assets of Interest

MassDOT is interested in different technologies for types of infrastructure. This ranges from arterials and collector roads for speeding, signalized intersections for red-light running and turn-on-red violations, and controlled access roadways (highways and parkways) for work zone safety tools.

In addition to MassDOT-managed assets, in the future, it's likely that permits would need to be obtained and other processes would need to be followed if deploying on city and town roadways, in addition to MassDOT-managed assets.

- To get a sense of MassDOT's assets: MassDOT Open Data Portal

Some Relevant Publications

- FHWA Speed Camera as proven safety countermeasure
- Effects on speed and safety of point-to-point speed enforcement systems: Evaluation on the urban motorway A56 Tangenziale di Napoli
- Before-and-After Empirical Bayes Evaluation of Automated Mobile Speed Enforcement on Urban Arterial Roads
- Perceptions of surveillance: Exploring feelings held by Black community leaders in Boston toward camera enforcement of roadway infractions
- FHWA/NHTSA Speed Safety Camera Program Guide

Area of Interest 2: Movement Telematics

We are calling this Area of Interest the *MassDOT Movement Telematics Challenge*. *Why?* Because addressing unsafe driving behaviors and roadway conditions is nothing if not a challenge. Massachusetts is home to both some of the leading telematics companies in the country and some of the world's leading research universities. We also know that a good idea can come from anywhere and from anyone, regardless of geopolitical boundaries. We want to leverage your knowledge and skills to support safety on our roads.

We welcome your novel submission in response to one of these three telematics-informed areas that can affect safety:

A. Unsafe driving behaviors, particularly distracted driving
B. Roadway condition
C. Traffic signal timing and phasing

Our civic research questions are listed below, but you are welcome to propose your own research question – and then answer it – to provide new insight that we could use to improve roadways in the Commonwealth. Please show us what you can do!

Our Civic Research Questions on Telematics

1. What are we able to learn about the relationship between distracted driving and land use (or other variables)?
2. Is there a geographic correlation between different types of poor driving behavior (speeding, distraction, harsh braking, etc.)?
3. How might we use telematics to inform traffic signal timing and phasing to improve safety for Vulnerable Road Users?
4. How might we use telematics information, such as driver distraction or seatbelt use, to inform driver education activities and campaigns?
5. Beyond aggregated and anonymized driver behaviors, can vehicle data like low tire pressure, brake wear, or wiper information be used in creative ways to improve safety?
6. What are the societal benefits of better pavement condition for non-motorists?
7. How do you envision MassDOT might use ubiquitous telematics data to supplement:
    a. our existing (annually refreshed) pavement condition collection program that informs our resurfacing plan,
    b. data to make spot improvements (e.g. a pothole finder),
    c. information for snow/ice operations, or
    d. ways to capture roadway marking quality

8. What sustainability metrics (like fuel consumption) are you able to provide insight into that could also correlate to safety improvements?
9. Show us something unique about your work that would provide new actionable insight for MassDOT in helping us prioritize resources.
10. How would your tool support insights in both heavily populated areas and more rural areas in Massachusetts?
11. How could your tool be leveraged to support the work of cities and towns in making their roadways safer through annual construction project planning?
12. … *or bring your own research question and answer it using your data and platform to generate useful insights.*

Our "challenge" to you

Please select one or more of the civic research questions above or propose an unasked question that you feel your team can uniquely answer. Provide a response that demonstrates your ability to answer that question and provide insights for MassDOT and other roadway owners in Massachusetts.

If you offer telematics services, please also answer the following questions:

1. Demonstrate that you can conflate your data insights to MassDOT's road inventory file (see MassDOT Assets below) **and** to Open Street Map or describe in some detail the process required to do this for roadway segments and the estimated time involved to do so.
2. Please describe how you protect and preserve privacy with your product.
3. Please explain your business model or models for working with government transportation authorities.
4. If relevant, please share how MassDOT would be involved in developing the product or if there are any opportunities for customization.
5. Please indicate the monthly volume of drivers/vehicles reflected in your data for Massachusetts roadways and the estimated percentage of drivers out of all of those on the roadway represented in your dataset.
6. Indicate if you have a demonstration with Massachusetts-based data that you would like to present in a workshop with MassDOT staff. Please include the topic you'd like to address and a few sentences on what you want to share.

Written responses to this Challenge ***may*** be posted publicly on our website so that our own residents – and other states – can be inspired by what's possible when we ask big questions of big data. Please limit your response to no more than fifteen pages, excluding an appendix.

MassDOT Assets, Information, & Studies

- Road inventory file
- Impact crash data portal
- MassDOT Highway Asset Management Plan
- 2020 Pavement Condition Data
- MassDOT Board Meeting Presentation on Roadway Safety (9/2023)
- Vulnerable Road User Safety Assessment

Area of Interest 3: Non-digital tools & ideas

There are many unsafe driving behaviors that we both see and experience on Massachusetts roads. Enforcement may be one of the ways to address these. We've accordingly pulled out Speed Safety Cameras into its own Area of Interest (see page 4). There are other components in a Safe System Approach, and we would like to hear your solutions – technology, policy, or otherwise – to addressing these unsafe driving behaviors on the roads.

For example, maybe you have been in Montana or West Virginia and seen their 'extended stop arm' school buses. These aim to increase the visibility of a stopped school bus as students get on or off it.

Mineral County School District in West Virginia (image: Kare 11 TV)

Here, the *technology* is a 54" piece of metal. The policy is a legislative mandate for all districts. Perhaps you think we should investigate this idea for Massachusetts.

Or perhaps you are following Colorado's[5] exploration into weight-based vehicle registration[6] in a bill that would apply only in the 15 most populous counties in the state. The bill aims to address the additional wear and tear on roadways as vehicles get heavier. The discussion around this policy also questions the implications for crashes, particularly those involving vulnerable road users, as vehicle sizes and weights increase[7].

[5] Colorado Public Radio article: www.cpr.org/2023/09/29/colorado-pedestrian-safety-suv-truck-owners/
[6] National Conference of State Legislatures: www.ncsl.org/transportation/vehicle-registration-fees-by-state
[7] EPA Automotive Trend Report: www.epa.gov/system/files/documents/2022-12/420r22029.pdf

These are just two examples of new approaches to existing problems. To help us understand your idea, please answer the following questions in addition to any other narrative or visual you wish to share.

Our Civic Research Questions for Your Idea

- Where else has this been implemented? Or would we be the first place to try it out, to your knowledge?
- To your knowledge, does this solution require a power source? Is it battery-powered? Does it need network connectivity?
- Please describe the requirements for any space or physical assets needed for installation of equipment if you are proposing physical equipment.
- How would Massachusetts residents experience your proposed idea? What interaction would they have with it and how would they help shape it?
- With which component(s) of the Safe System Approach does this solution correspond?

Safe System Approach

Source: FHWA

Relevant Resources

Data, Studies, and Relevant Policies

Vulnerable Road User Safety Assessment

Strategic Highway Safety Plan

IMPACT Crash Data Portal

Massachusetts Vehicle Census

Safe Speeds: Roadway Treatment Technical Toolkit

USDOT Principles of a Safe Systems Approach

MassDOT Assets via MassGIS

Disclosure & The Small Print

This RFI is for information and planning purposes only and shall not be construed as a solicitation or as an obligation on the part of MassDOT to issue any competitive procurement or award a contract.

MassDOT will not award a contract on the basis of responses to this RFI nor otherwise pay for the preparation of any information submitted, for any vendor presentation, or MassDOT's use of such information.

All responses to this RFI will be on public record under the Massachusetts' Public Records, Law, Mass. Gen. L. ch. 66 s. 10, regardless of confidentiality notices to the contrary. Please plan accordingly in your submission.

By submitting, the applicant authorizes MassDOT to publicize, refer to, and use your application as it sees fit.

Responses to this RFI may be reviewed and evaluated by any person(s) at the discretion of MassDOT, including independent consultants retained by MassDOT now or in the future.

Respondents to this Request for Information (RFI) are invited to respond to any or all of the questions in this document. Responses to this RFI shall serve solely to assist the Commonwealth in understanding the current state of the marketplace with regards to the solicited information or to inform the development of a possible solicitation for a Request for Responses (RFR) or Request for Quotes (RFQ) or Requests for Proposals (RFP) in the future. It may also be used to spark further research and inquiry into topics that appear in the submissions.

This RFI does not in any way obligate the Commonwealth to issue or amend a solicitation or to include any of the RFI provisions or responses in any solicitation. Responding to this RFI is entirely voluntary, and will in no way affect the Commonwealth's consideration of any proposal submitted in response to any existing or subsequent solicitation, nor will it serve as an advantage or disadvantage to the respondent in the course of any RFP, RFR, or RFQ that may be subsequently issued or amended.