



Charles D. Baker, Governor
 Karyn E. Polito, Lieutenant Governor
 Stephanie Pollack, MassDOT Secretary & CEO



Application to Test Automated Driving Systems on Public Ways in Massachusetts

CONTACT INFORMATION:

Name of Organization: _____

Primary Contact Person: _____

Title: _____ Email Address: _____ Tel. No.: _____

Street Address of Company's Headquarters Office: _____

City, Town of Headquarters Office: _____ State: _____ Zip Code: _____ Country: _____

Mailing Address of Headquarters Office (if different): _____

Website: _____

PHYSICAL PRESENCE IN MASSACHUSETTS:

Primary Massachusetts Contact Person (if different): _____

Title: _____ Email Address: _____ Tel. No.: _____

Street Address of Company's MA Office (if different): _____

City, Town of MA Office: _____ State: _____ Zip Code: _____ Country: _____

Mailing Address of MA Office (if different): _____

CERTIFICATION:

The Applicant certifies that all information contained within this application is true, accurate and complete to the best of its knowledge.

 Signature of Applicant's Representative

 Printed Name

 Date of Signing

 Position and Title

 Email address

 Tel. No.

Detailed Information

Detail # 1: Experience with Automated Driving Systems

Detail # 2: Operational Design Domain

Detail # 3: Summary of Training and Operations Protocol

Detail # 4: First Responders Interaction Plan

Detail # 5: Applicant's Voluntary Safety Self-Assessment

Detail # 6: Motor Vehicles in Testing Program

Detail # 7: Drivers in Testing Program

Detail # 8: Insurance Requirements

Detail # 9: Additional Questions

Notes: Applicants should not disclose any confidential information or other material considered to be trade secrets, as the applications are considered to be public records. The Massachusetts Public Records Law applies to records created by or in the custody of a state or local agency, board or other government entity. Every record that is made or received by a government entity or employee is presumed to be a public record unless a specific statutory exemption permits or requires it to be withheld in whole or in part. The exemptions are strictly and narrowly construed. More information on the Commonwealth's Public Records Law can be found on the [Secretary of the Commonwealth's website](#).

The Application and Detail responses should meet the Web Content Accessibility Guidelines (WCAG) 2.0 A and AA standards (see Guidelines for Accessible Electronic Document Creation).

MassDOT shall, at least every six months, review the technological advancements, federal policy progress, and developments in the automated driving systems industry and thereby adjust or modify this Application and associated requirements as appropriate.

Detail # 1: Experience with Automated Driving Systems

Please provide information describing all the Applicant's experience testing ADS-equipped vehicles globally within at least the preceding 12 month period.

- 1) A brief history of the Applicant's business as it regards ADS-equipped vehicles

- 2) A general summary of the Applicant's experience testing on private ways (closed to the public) and public ways (while the road was open to other road users), including for example:
 - a) Private test facility name(s), location(s), and a sample of photographs, videos, roadway cross sections, or detailed description of road types and testing activities
 - b) Public ways testing location(s) and a sample of photographs, videos, roadway cross sections, or detailed description of road types and testing activities
 - c) The amount of testing conducted on public and private ways (for example in miles, hours, frequency per day, week, or month, or other metric(s))
 - d) The type(s) of vehicle(s) used for the testing
 - e) The SAE J3016 Level(s) of the ADS which was tested
 - f) The operational design domain(s) which were tested, including geographical conditions, roadway types, speed ranges, environmental conditions, and other domain constraints
 - g) The governmental entity that approved and/or monitored the public ways testing, if any
 - h) Results of the testing

- 3) A description and summary of any major crashes that resulted during testing on public ways by the Applicant:
 - a) A description of the nature of physical damage to the vehicle or vehicles and or other personal or private property
 - b) Whether there was a determination of fault
 - c) Whether any personal injuries or fatalities occurred as a result of the crash, and if so, the seriousness of any injuries
 - d) Whether an official report of the crash or crashes were reported to police or other governmental agencies, and if a report or reports were filed, to whom they were filed
 - e) Whether any of the standard safety features on the vehicle were disabled at the time of the crash

Detail # 2: Operational Design Domain

The Operational Design Domain must define the domain(s) in which the ADS is designed to properly operate, including but not limited to geographical conditions, roadway types, speed ranges, environmental conditions, and other domain constraints for testing which is anticipated to occur in Massachusetts within the approval period.

1) Time of Day

- a. Daytime (Sunrise – Sunset)
- b. Nighttime (Sunset – Sunrise)

2) Environmental Conditions

- a) Clear and Fair Weather: no rain, fog or snow
- b) Light Rain and Fog: less than 5 mm/hr rate of rain and fog with limited impact on visibility
- c) Moderate Rain and Fog: less than 10 mm/hr rate of rain and fog with limited to moderate impact on visibility
- d) Heavy Rain and Fog: less than 20 mm/hr rate of rain and fog with moderate to high impact on visibility
- e) Light Snow: less than or equal to 10 mm/hr rate of unmelted snowfall, and visibility of at least 1 km
- f) Moderate Snow: greater than 10 mm/hr and less than or equal to 25 mm/hr rate of unmelted snowfall, and visibility of at least $\frac{1}{2}$ km
- g) Heavy Snow: greater than 25 mm/hr and less than 50 mm/hr rate of unmelted snowfall, and visibility of at least $\frac{1}{4}$ km
- h) Severe Weather: greater than 20 mm/hr rate of rain and fog with high impact on visibility, or greater than 50 mm/hr rate of unmelted snowfall and visibility of less than $\frac{1}{4}$ km

3) Road Typologies and Speeds

- a. Functional Classifications (Local Roads, Collectors, Arterials, Other Road Types)
- b. Limited Access (Motor Vehicles Only) or Multi-Modal (Mixed Traffic)
- c. Single or Multiple Lane
- d. Maximum Operating Speeds

4) Situational Constraints

- a. Construction and Active Work or School Zones (Including Traffic Officers)
- b. Signalized Intersections
- c. Unprotected Left Turns
- d. Unsignalized Crosswalks
- e. Rotaries and Roundabouts
- f. Other Situational Constraints

Detail # 3: Summary of Training and Operations Protocol

Attach a summary of the type(s) of training required of employees, contractors and/or other persons designated by the Applicant as Test Drivers, and related operational protocols for testing on public ways. Such summary should include but is not limited to:

- 1) A general description of the training and instruction provided on private facilities and public ways, including how a test driver is made aware of the limitations of the ADS and the safe operating parameter(s) for a given ODD
- 2) Evaluation of test drivers' experience and qualifications, basic driving skills, knowledge of ADS and controls, and operational protocols
- 3) General steps or checklist items which must be completed prior to a new test driver beginning public ways testing
- 4) The approximate number of hours or time involved in training a test driver
- 5) A description of the test driver's role and responsibilities when the ADS is engaged, including the extent to which the test driver may be responsible for monitoring the driving environment, vehicle performance, and/or driving automation system performance
- 6) If a safety associate will be situated in the vehicle in addition to the test driver, a description of their role and responsibilities during testing
- 7) If conducting testing without a safety associate, a description of any additional training and instruction provided to test drivers, and summary of how the test driver, driving environment, vehicle performance, and driving automation system performance will be monitored
- 8) A description of the Applicant's processes, protocols, and/or physical systems for monitoring the test driver, including but not limited to:
 - a) Eliminating or reducing potential sources of distraction, such as the ADS human-machine interface, mobile phones or other electronic devices, and other possible sources of distraction
 - b) Proactively and reactively maintaining the test driver's awareness and active monitoring of the driving environment, vehicle performance, and/or driving automation system performance as necessary

Detail # 4: First Responders Interaction Plan

A First Responders Interaction Plan will be made available to the law enforcement agencies and other first responders (including fire departments and emergency medical personnel) which operate in the permitted testing areas in the Testing Locations Menu. The First Responder Interaction Plan should instruct those agencies on how to interact with the vehicle in emergency and traffic enforcement situations, including but not limited to:

- 1) Identifying the vehicle (make, model, color(s) and appearance, identifying decals or indicators)
- 2) How to:
 - a) Recognize whether the ADS is engaged, safely disengage the ADS, and detect and ensure that the ADS has actually been deactivated
 - b) Immobilize or otherwise disable the vehicle to prevent movement or subsequent ignition of the vehicle
 - c) Safely interact with electric, hybrid, or alternative fuel vehicles, when applicable
 - d) Safely remove the vehicle from the roadway
- 3) Any additional information as deemed necessary regarding hazardous conditions or public safety risks associated with the operation of the test vehicle
- 4) Applicant's primary and secondary emergency contact information (including phone numbers)

The First Responder Interaction Plan shall be reviewed on a regular basis by the Applicant and revised and resubmitted at least annually, or as changes are needed.

The First Responder Interaction Plan will be made available by MassDOT to law enforcement agencies and other first responders, including fire department and emergency medical personnel.

A copy of the First Responder Interaction Plan must be carried in the approved test vehicle(s) at all times in the glove box or another conspicuous location.

Detail # 5: Applicant's Voluntary Safety Self-Assessment

Attach a copy of the voluntary safety self-assessment in accordance with NHTSA's Automated Driving Systems 2.0 guidance, or similar documentation which addresses the safety issues contained therein.

Note: Applicants should not disclose any confidential information or other material considered to be trade secrets, as the applications are considered to be public records. The Massachusetts Public Records Law applies to records created by or in the custody of a state or local agency, board or other government entity. Every record that is made or received by a government entity or employee is presumed to be a public record unless a specific statutory exemption permits or requires it to be withheld in whole or in part. The exemptions are strictly and narrowly construed. More information on the Commonwealth's Public Records Law can be found on the [Secretary of the Commonwealth's website](#).

Detail # 6: Motor Vehicles in Testing Program

Attach a photocopy of the vehicle registration form for each Test Vehicle. If the Title number for the motor vehicle is not displayed on the registration itself, provide a photocopy of the Title or Certificate of Origin. Please note any exemptions by USDOT, EPA, or any other such exemptions for each vehicle, and provide a copy of such exemption, if available.

Additional vehicles may be added at any time after initial approval by sending the necessary information to: AVs@dot.state.ma.us.

Detail # 7: Drivers in Testing Program

Attach a photocopy of the current driver's license of each human operator who will be designated as a Test Driver to operate a test vehicle in Massachusetts by the Applicant. If the Applicant uses a driver who has been licensed in another state within the past year, it shall provide a copy of the license and a certified copy of the driving record (no more than 30 days old) of the driver.

Personal information will be protected from disclosure in accordance with the Driver's Privacy Protection Act and 18 U.S.C. § 2725.

Additional Test Drivers may be added at any time after initial approval by sending the necessary information to: AVs@dot.state.ma.us.

Detail # 8: Insurance Requirements

Provide any insurance certificates and statements evidencing all insurance requirements listed in the Memorandum of Agreement.

Detail # 9: Additional Questions

Please provide answers to the following questions where possible. Responses will assist in the development of local and State policies pertaining to ADS. Please do not disclose any confidential business information or other sensitive proprietary content.

- 1) Please explain why the organization is applying to test in Massachusetts.
- 2) Will the organizations' efforts create temporary or permanent employment in the Commonwealth?
- 3) Does the organization have a long-term vision of automated mobility? If so, what does that look like?
- 4) Please explain how your organization attempts to address the priorities identified in the Regional Memorandum of Agreement for AV testing, with particular attention to the societal benefits enumerated.