Maryland Accomplishments
in Connected and Automated Vehicle (CAV) Technology
2024

Maryland CAV Strategic Framework sets out five (5) key focus areas to inform, guide, and empower stakeholders to build their own plans for CAV across the State. These updates demonstrate continuing intention to realize the many benefits for safety, efficiency, and equity through collaboration and with partners interested in researching, testing, and implementing CAVs in Maryland.

Public Outreach and Education

- MDOT developed a new **CAV flyer** as a concise educational document to help define CAV, the potential benefits of CAV, and current CAV activities in Maryland. This flyer is available for use by all CAV partners and interested entities on the CAV website.

- The Maryland Department of Planning continues to collaborate on CAV by publishing in their Maryland Planning Blog, including "**Incorporating Technology Tools in CAV Planning in 2023: A Year in Review**".

- Maryland participated in *National Autonomous Vehicle Day* on May 31, focusing on educating users of advanced driver assistance systems. MDOT developed a **social media toolkit** with suggested verbiage for posts and ready-to-use high-resolution graphics.

- The National Transportation Center welcomed dignitaries from USDOT and Maryland Lieutenant Governor Aruna Miller to the **SMARTER Center** at Morgan State University. The leaders attended a full-day showcase of CAV research and implementation, including a demonstration of the SMART Intersections on campus.

- **STEER Tech**, along with MDOT and the District Department of Transportation (DDOT) sponsored a high school essay contest and scholarship program with Partners for Automated Vehicle Education (PAVE). High school juniors and seniors in the region were encouraged to contemplate a future with automated vehicles. In this 2nd annual contest, applications doubled with the help of MD CAV partners, and a **Maryland student** was one of the top three scholarship winners!

- MD CAV Subgroup leaders discussed CAV and its implications for Maryland at the Maryland Chapter for the Institute of Transportation Engineers.

- In partnership with MDOT, Morgan State University developed an **ADAS 101 video** focusing on next-level consumer education to know your vehicle!

Early Deployment and Testing

- MDOT developed a **video** to educate law enforcement officers who may encounter CAVs on the roads.

- **May Mobility** held a live demonstration of their automated vehicle / Toyota Sienna and provided rides to 150 participants at a MD CAV Working Group meeting.

- **Starship** fully launched operations at Bowie State University in the fall semester after several demonstrations of the delivery robot through events and speaking engagements to acclimate the campus community.

- **The University of Maryland's Transportation Research & Artificial Intelligence Laboratory (M-TRAIL)** is collaborating with Morgan State University on a CAV project to enhance the detection of vulnerable road users, such as pedestrians, by fusing data from roadside infrastructure with onboard vehicle sensors.

- The Johns Hopkins University S4 Vehicle-to-Everything (V2X) Communications Laboratory acquired space near the Homewood campus in Baltimore to modify and test its Olli low-speed automated shuttles.

- Morgan State University continued developing an AV Wheelchair pilot project at Baltimore Washington International Thurgood Marshall Airport.

- Morgan State University continued developing a mixed-traffic CAV testbed adjacent to the campus; working with the University's **National Transportation Center** to investigate vehicle-pedestrian and jaywalking conflicts at signalized intersections.

- **Kiwibot** continues to operate at two universities in Maryland, completed an Urban Mapping project for DDOT, and provided a demonstration for MD CAV.

- The Johns Hopkins University Applied Physics Laboratory's Institute for Assured Autonomy (IAA) continued working with autonomous vehicles while teaming with community and State leadership to implement safety and policy best practices.

- Seven more companies submitted **expressions of interest** (EOI) in 2024 to state formally they are interested in CAV technology testing, research, and implementation in Maryland. This makes a total of 60 submittals since inception of the EOI process in mid-2017. The first group of Maryland CAV Partners were added to the **CAV webpage** for awareness and connections.

MARYLAND DEPARTMENT OF TRANSPORTATION

Beyond the CAV Working Group Meetings: Subgroups have engaged with Maryland trucking companies to understand CAV expectations, usage and needs as well as updated recommendations for emergency response considerations with CAV testing and deployment. They have also worked on producing a security management credentialing system compatible with federal guidance for CAV V2X devices, as well as engaged with industry, researchers, and other agencies to foster innovation and ensure Maryland is a hub for CAV.

Planning and Policy

- The Maryland Department of Planning continues encouraging and advising local governments to prepare their built environment to include CAVs through planning policies in local comprehensive plans. At least **16** local jurisdictions now include CAV-related information and policies in their plans.

- The Baltimore Metropolitan Council held two meetings with local and State CAV stakeholders to continue the regional discussion on preparing for CAVs initiated by their earlier regional CAV project to develop **CAV Recommendations** and a **User Guide**.

- The Maryland Insurance Administration continues to monitor and maintain an awareness regarding liability, physical damage cost implications, and potential definition changes with Advanced Driver Assistance Systems (ADAS) and CAV. The Administration is coordinating with the National Association of Insurance Commissioners (NAIC) as best practices and policies develop.

Infrastructure

- The State Highway Administration (SHA) continues to coordinate with local agencies and partners on the need for and deployment of a statewide security certificate health monitoring dashboard for Connected Vehicle (CV) equipment. This aims to ensure that all CV Roadside Units (RSUs) and Onboard Units (OBUs) have valid certificates for secure message delivery and receipt.

- Maryland was awarded three Strengthening Mobility and Revolutionizing Transportation (SMART) grants from USDOT. Grants were awarded to:
  - Maryland Transit Administration (MTA) for transit signal priority.
  - Maryland Department of Planning for Eastern Shore drone medical delivery.
  - SHA to study work zone speed data using innovative drone technologies.

- SHA now monitors major arterial corridors and more than 1,000 signalized intersections statewide using third-party CV data. This application allows SHA personnel to identify and address operational and maintenance issues on the fly. It also gives staff an opportunity to schedule prioritized equipment repairs when necessary.

- Maryland is partnered with other state DOTs as part of an Automated Vehicle Pooled Fund Study, led by the Ohio Department of Transportation, to research issues that will affect the deployment of automated vehicles by state transportation agencies.

Workforce

- MDOT hosted many internal workforce development *Lunch and Learn* webinars – both MDOT-wide and for specific modes.

- MDOT facilitated a Maryland Foundational V2X Training by USDOT, in partnership with Morgan State University and the Intelligent Transportation Society of Maryland to introduce key components that enable a V2X ecosystem, potential benefits of the technology, example use cases, and the messages and standards that support them while ensuring safety and privacy. More than 75 participated, including many State and local government infrastructure owner-operators who control potential deployment of this technology.

- Maryland continues to be recognized for its CAV collaborative efforts as several other state DOTs, including North Carolina, Louisiana, and Michigan and a National Cooperative Highway Research Program (NCHRP) research scan all invited MD CAV to share expertise and experience.

The Maryland CAV Working Group continues to be the central point of coordination for the development and deployment of emerging CAV technologies in Maryland.

2024 Meetings:

April
Held at Morgan State University
Demonstrations and Presentations from:
- Connected Vehicle technology vendors
- Morgan State University
- Mobileye
- Kiwibot
- University of Maryland Build America Center

August
Held at the National Federation of the Blind
Demonstrations and Presentations from:
Next generation of the Manual on Uniform Traffic Control Devices (MUTCD): Preparing for Automated Vehicles
- Waymo: Working with state and local government leaders
- National Federation of the Blind
- Glydways
- Spirent Communications
- Nuro

December
Held at the Cruise Maryland Terminal
Demonstrations and Presentations from:
- C-V2X from the Auto Manufacturer Perspective (Audi)
- Kiwibot
- Starship
- Partnership Project from University of Maryland and Morgan State University

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FOR MORE INFORMATION

Visit **cav.mdot.maryland.gov** or send an email to **CAVMaryland@mdot.maryland.gov**.