

Wisconsin Automated Vehicle External (WAVE) Advisory Committee

Meeting Minutes

May 21, 2025, 9:00 am – 3:10 pm

Hill Farms State Office Building, Madison, WI

Room - South 149

Attendance

WAVE Members Present: Arthur Harrington, Christopher Hiebert, Debby Jackson, Luke Junk, Neal Kedzie, Jeff Lewandowski, Raymond Mandli, David Noyce, Sandi Pendleton, Tyler Tkachuk, Evan Umpir, Patrick Vander Sanden

WAVE Member Organization Proxies Present: Brian Scharles (TAPCO), Tom Shi (UW-Milwaukee Institute for Physical Infrastructure and Transportation), Kurt Walker (Federal Highway Administration, Wisconsin Division)

UW - Madison College of Engineering automated shuttle demonstration: Sikai Chen, Vito Liang (Connected & Autonomous Transportation Systems (CATS) Laboratory)

Wisconsin Department of Transportation (WisDOT) Staff Present: Scott Lawry, Lea Collins-Worachek, June Coleman, Brad Basten, Maryne Taute, Johanna Schmidt, Matt Glowacki, Tracy Drager, Kyle Hemp, Chloe Kurkjian, Reed McGinn, Sarah Simonson, Todd Szymkowski, Matt Umhoefer, Kaleb Vander Wiele

Meeting discussion

Welcome and Opening Remarks - WisDOT Deputy Secretary Scott Lawry welcomed everyone and thanked them for taking the time to join the spring WAVE meeting. Deputy Secretary Lawry noted that WisDOT's goal is to stay innovative and improve safety. Wisconsin averages around one fatality per day – it is very important to bring down these numbers. There are emerging technologies that can make us safer drivers and this meeting will explore how some of these new technologies can be applied to our communities. The agenda today will be brainstorming heavy, and the goal is to create a plan to help guide our work and our partners to move forward into what comes next.

Meeting Overview – WisDOT Division of Budget & Strategic Initiatives (DBSI) Administrator Lea Collins-Worachek noted that this meeting continues the work from the fall WAVE meeting to create a resource guide with the objective of making technological innovations more realistic and approachable, as well as helping communities explore how Connected and Automated Vehicle (CAV) technology could benefit them. Ultimately, this guide will be shared throughout the state. At this meeting Brad Basten will begin by reminding participants of the previous WAVE discussions before presenting some informational videos and starting the workshops. At the conclusion of the meeting, participants will also have the opportunity to view and ride in UW-Madison's new automated shuttle. We sincerely appreciate the time and dedication of everyone on the WAVE Committee as we work together on this important initiative.

Purpose of the CAV Transportation Resource Guide – WisDOT's CAV lead Brad Basten described how the goal of the resource guide is to help entities (cities, healthcare facilities, etc.) understand how CAVs can address transportation challenges in their geographic focus area and/or economic focus area.

Review CAV Transportation Resource Guide Discussion - Brad Basten reviewed how our last discussion focused on the transportation challenges communities face and explored potential solutions related to

CAVs, highlighting important considerations for decision-makers. In a hypothetical discussion with community leaders, we would emphasize the need to understand not only the benefits and challenges of these emerging technologies but also the steps that should be taken to prepare for their eventual implementation. While CAV technologies may be rolled out over the long term, it is crucial for city leaders to begin planning and thinking about considerations such as potential partnerships, funding strategies, and community engagement.

Summary findings from the previous WAVE meetings: in **urban areas**, key issues identified included safety and operations, technology deployment, data utilization, and equity; **rural areas**, on the other hand, face challenges related to access to services, safety, education, and commercial applications; in the **healthcare sector**, concerns center around access to care, both urgent and preventative, as well as regulatory and funding issues; **entertainment districts** must address transportation management for both large and regular events, ensuring access and efficient movement; **suburban areas** need to focus on public transit systems, vulnerable road users, and the impact of commuting habits; while **commercial districts** face challenges related to roadway safety, pedestrian access, and the layout of commercial zones.

He highlighted several general takeaways from the fall meeting. One key point was the importance of scaling connected infrastructure, such as Vehicle-to-Everything (V2X) technology, gradually, starting with small projects (like during road resurfacing) and building up over time to improve safety and efficiency. Funding remains a challenge, with a need to explore alternatives to the gas tax and to develop better subsidy models to encourage the adoption of Automated Vehicles (AV) and Advanced Driver Assistance Systems (ADAS) technologies. Education and outreach were identified as essential, requiring collaboration between the public and private sectors to foster technology adoption and community acceptance. By considering these factors now, city leaders can better position their communities to benefit from the transportation innovations of the future.

Video Demonstrations of Applications of AV Technology - Brad Basten showed videos of new CAV technologies currently being tested or commercially deployed:

- UW-Madison's automated research shuttle.
- GATIK short haul delivery: a B2B product for local 24-hour delivery, operating in Bentonville, AK; Dallas-Fort Worth, TX; and Toronto, Ontario.
- John Deere automated tractor: remotely operated 24/7 with performance monitoring; 20 units mostly in the Midwest; cost \$500,000-\$600,000; retrofit available; developed with EasyMile.
- Starship food delivery at UW-Madison: 35 robots deployed, the most on any campus, delivering food and supplies.
- Nuro delivery operates on urban streets under 35 MPH, delivering groceries, food, prescriptions; temperature controlled; active in CA, TX, AZ; first NHTSA vehicle exemption.
- Embark trucking: ceased operations; trucks could recognize law enforcement and pull over; lacked required highway flares.
- Waymo One Robotaxi: operates commercially in SF, Phoenix, LA, Austin; not yet on highways but testing; 10 million rides, 30 million miles.
- Kratos Automated Truck Mount Crash Attenuator (ATMA) with Dane County: AV version uses GPS-guided follower vehicle; max 20 MPH, 1200 ft max distance; could be used for snowplowing; retrofit cost \$500,000.

Workshop sessions

As a follow-up to the first meeting where the groups answered questions regarding *considerations* and *strategies* for CAV technologies when planning to address transportation issues, today's groups expanded on those discussions to include *impact and preparations*; *promising solutions*; and *resources for success*.

Groups worked through the following questions with WisDOT facilitators - table top discussion

Workshop Question 1:

Impact and preparation for CV or AV technology - considerations

- Infrastructure upgrades needed?
- Freight or transportation operational impact?
- Testing or pilots recommended?
- Partners?
- Measuring success?

Workshop Question 2:

Discuss the most promising CAV transportation solutions - investigations

- Infrastructure and community readiness?
- Research needed?
- Maturity of technology?
- Cost and benefits?

Workshop Question 3:

Resources for success - recommendations

- Useful resources for a community considering a CV or AV deployment project?
- Top ways to use the CAV Transportation Resource Guide?

Workshop sessions – Summaries of report-out discussions

The following are highlights from the group discussions framed by the questions above. These are the top considerations and preparations a community should review when considering a CV or AV project.

Healthcare facilities

- Infrastructure needs for CAVs
- Painted lines, labeled pickup/drop-off zones (must be safe locations)
- Well-maintained roads for safety and AV function
- Surge capacity planning for emergencies
- Fleet ownership/responsibility (hospital, city?), scheduling, data privacy, coordination, and sharing protocols
- Reliable communication, especially for rural first responders
- Prescription/test/device delivery and emergency transport for accessible patient care

Urban neighborhood / Large urban city downtown

- Vehicle data is valuable
 - Abundant live/historic data (e.g., near misses, pavement)
 - Improved data access aids safety (e.g., snow/ice, maintenance)
 - Data helps proactively address intersection safety

- Challenges: data selection, cybersecurity, funding (public-private partnerships)
 - Enhance data collection in road projects (e.g., fiber installation)
- Coordination
 - Urban-wide collaboration improves efficiency and budgeting
- Resources
 - Existing resources need better integration and accessibility
- Deliveries
 - Coordinated neighborhood deliveries could reduce road use
- Trucking
 - Industry incentives needed to offset high initial costs

Suburban areas

- Public transit systems
 - Need to improve connections to regional transit (Amtrak, Metra)
 - Potential for greater federal involvement
- Attainment area
 - Innovative funding (e.g., monetizing carbon credits for AVs)
- Autonomous stoplights & pedestrians
 - Pedestrian-detecting stoplights eliminate need for buttons
- Train alerts
 - Advance warnings for large freight trains
- Business opportunities
 - High-capacity events ideal for AV pilot projects due to congestion avoidance
- Sensors
 - Existing infrastructure sensors integration, with potential partnerships (e.g., gas stations, advertising)

Rural county / rural small town

- Pilot projects are valuable
 - Education via town meetings, multimedia, social media is needed
- Communication with Connected Vehicles
 - Essential for all connections; should be integrated into infrastructure
- Healthcare facility connection
 - Resource pooling needed as rural hospitals close; improve appointment access
- Economic Status
 - Enhanced connections/coordination reduce travel for jobs
- Buy-in
 - State-level support and funding information needed for small communities
- Professional Engagement
 - Public service role; community events (e.g., potlucks, town halls) for education

Entertainment district / Industrial Commercial district

- Infrastructure Upgrades
 - Integrate AVs while preserving urban quality and prioritizing vulnerable road users (VRUs)
 - Use national guidelines (e.g., NATCO) for pro-urbanist AV use
 - Complete Streets: plan for AVs, prioritize pedestrian/VRU safety
 - Government coordination on connected vehicle technology

- Consider revising laws restricting automated technology (e.g., speed enforcement)
- Promising Technology
 - Industrial areas may adapt via market forces
 - Phone apps streamline event parking/ticketing, inform travelers
 - Solutions scalable for event size; AV shuttles likely for select locations (airports, universities), not widespread soon
- Useful Resources
 - University projects (e.g., Wisconsin Idea) should inform and support communities
 - Expand research impact beyond academia; involve private sector and market

Meeting discussion

Closing Remarks & Adjourn - Scott Lawry noted that in the new technology areas WisDOT is working to incorporate more information into applications (for example, notifying people when there are vehicles pulled over to indicate that folks should pull over). WisDOT is working with other units of government and partner entities to incorporate these technologies. He thanked the WAVE Committee for their efforts today.

Demonstration and Rides in UW-Madison's Automated Shuttle

- Participants were able to ride on UW-Madison's Automated Shuttle with a safety driver and shown how the sensor suites perceive the environment and help guide the shuttle.