MINNESOTA GOVERNOR'S ADVISORY COUNCIL ON CONNECTED & AUTOMATED VEHICLES

ANNUAL REPORT

FEBRUARY 2023

Passenger boards goMARTI self-driving shuttle

DESTINATIONCAV

DEPARTMENT OF TRANSPORTATION

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This report was prepared by the Minnesota Department of Transportation's Office of Connected and Automated Vehicles (CAV-X), with acknowledgment from the Governor's Advisory Council on Connected and Automated Vehicles, and with special thanks to the CAV Innovation Alliance, Interagency CAV Team, and Minnesota's CAV partners and stakeholders.

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Prepared with support from:
AECOM

MESSAGE FROM THE COUNCIL CHAIRS

This past year was filled with exciting work for connected and automated vehicles (CAV) in Minnesota. MnDOT, local government, and other key partners worked closely to move forward on new pilot demonstration projects. These projects provided opportunities to introduce CAV technology in different regions of the state where significant transportation challenges were identified.

Throughout the year, the Governor's Advisory Council on CAV discussed discretionary grant opportunities available to Minnesota through the Infrastructure Investment and Jobs Act (IIJA). The members of the Council assessed progress on CAV recommendations from 2018 and developed recommendations for the next four years. The Council also discussed CAV-related implications for communities experiencing transportation barriers; learned about Drive MN, a research project that evaluated the readiness of Minnesota roads for vehicle automation; and learned about the goMARTI on-demand shuttle service operating in Grand Rapids.

As previously mentioned, the Council and other entities continued working to introduce CAV technology to different audiences, including transportation professionals, elected officials, the public, and traditionally underserved communities. Council members, industry partners, state and local agencies, and Minnesotans supported and will continue to influence this work through several demonstration and research efforts that were initiated in 2022.

As the downtown Rochester Med City Mover shuttle demonstration concluded, the White Bear Lake Bear Tracks shuttle project launched over the summer. It is exploring a fixed-route CAV operation in a suburban setting. These demonstrations, along with goMARTI, are designed to explore CAV technology and public acceptance for transit-oriented service, particularly for communities that experience transportation barriers.

Work is also underway to explore how CAV technology may be used in heavy vehicle operations and traffic measurement. The Autonomous Truck Mounted Attenuator was tested for slow-moving roadway maintenance and Minnesota's first truck platooning plan was approved for movement of agricultural goods. Additionally, VSI Labs, AEye, and MnDOT worked together to successfully install state-of-the-art lidar sensors along the MnROAD facility. The resulting data will enable Automated Incident Detection and many other traffic metrics.

We wish to thank the Council members and ex-officio members for their contributions over the past year and throughout their terms. This collaborative work has allowed the Council and other transportation stakeholders to expand our knowledge of how CAV technology and public acceptance are evolving. That knowledge is, in turn, helping Minnesota understand how CAV can serve as a tool to address transportation challenges.

This annual report has been prepared to inform the Governor and the Minnesota Legislature of the work of the Governor's Advisory Council on Connected and Automated Vehicles in 2022.

Nancy Daubenberger and Phil Magney

Chair and Co-chair of the Governor's Advisory Council on CAV

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Passengers on board the Bear Tracks self-driving shuttle

1. COUNCIL'S VISION AND GOALS

Background

Governor Mark Dayton's Executive Order 18-04 established the Governor's Advisory Council in 2018 to understand how emerging technologies will impact Minnesota's transportation system and how to use CAV technologies to advance safer, more equitable, accessible, and sustainable transportation. In 2019, the Advisory Council was reestablished under Governor Tim Walz's Executive Order 19-18.

The 15-member Council represents a variety of sectors, including freight, transit, mobility, accessibility, research, business, industry, technology start-ups, labor, local government, cybersecurity, and insurance. State agencies, tribal governments, counties, and cities are also represented. The Council is tasked with:

- Reviewing developments in CAV and emerging technologies.
- Exploring partnership opportunities for Minnesota to be prepared for the widespread adoption of new technologies.
- Proposing policies to safely test and deploy CAVs.
- Implementing recommendations from the 2018 Council.
- Preparing an annual report to the Governor.
- Engaging communities experiencing transportation barriers.
- Advising the departments of Transportation and Public Safety on the safe testing and deployment of CAVs.

Vision, Mission, and Values

The Council's vision is to build a future transportation system that is safe, equitable, accessible, efficient, healthy, and sustainable.

The Council's mission is to collaborate with stakeholders, partner with academic institutions and private industry, and engage communities to prepare for a future with emerging transportation technologies.

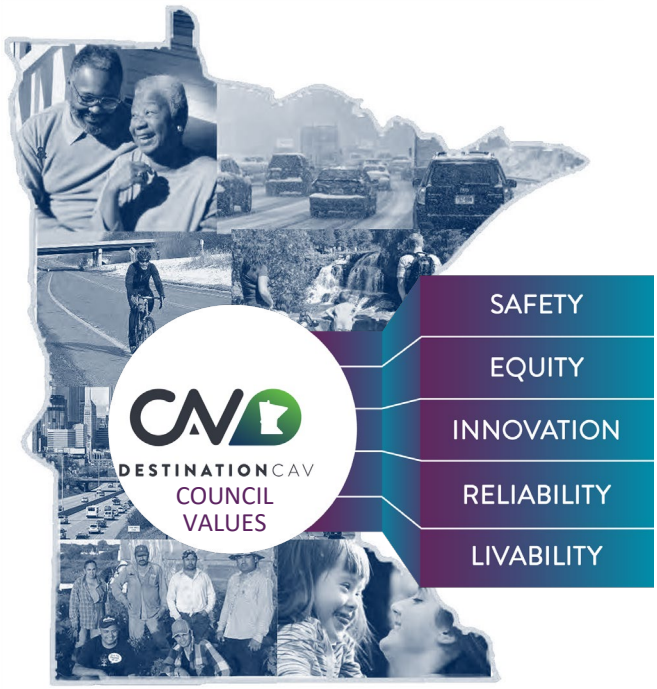


Figure 1: *The council's values: safety, equity, innovation, reliability and livability*

Minnesota's CAV Goals

Equity, Mobility and Accessibility
CAVs may reduce transportation barriers for people with disabilities, older adults, and low-income families. They could also provide better access to jobs, health care, and other transportation modes.

Economic Development and Small Business
Advancing CAV policy could grow Minnesota businesses, attract new ones, and expand opportunity for small businesses.

Jobs and Workforce Development
CAVs present opportunities to reskill and upskill workers, attract new talent to the STEM field, and develop jobs of the future while protecting the jobs of today.

Public Health and Sustainability
CAVs could help reshape the way we plan communities to maximize health and sustainable multimodal transportation. Because many CAVs are electric, they could reduce emissions to advance sustainability goals.

Safety and Efficiency
CAVs could reduce congestion and crashes, eliminating some aspects of human error that contributed to the roughly 400 lives lost on Minnesota highways in 2022.

Council Priorities and Strategies

The Council developed 10 priorities to accomplish by 2024.

1. Increase equity, mobility, accessibility, public health, and environmental sustainability.
2. Continue to advance industry and research partnerships.
3. Conduct education, outreach, engagement, demonstrations, and pilots.
4. Invest in infrastructure.
5. Assess and recommend policies and laws for safe testing and deployment.
6. Grow economic and workforce development.
7. Address data privacy and cybersecurity.
8. Review insurance and liability standards.
9. Coordinate with regional and federal government partners.
10. Conduct human factors research on the impacts of CAV on users.

Autonomous Truck Mounted Attenuator system on road

2. WHAT IS CAV?

Connected and automated vehicle technology encompasses a broad range of connectivity and automation, sometimes operating independently and sometimes cooperatively. These technologies are designed to enhance and improve the transportation experience – making it safer, more efficient, and more accessible.

Connected Vehicles

Connected vehicles use technology to communicate with each other; connect with traffic signals, signs, and other road items; and/or obtain data from the cloud. This information exchange will enhance safety and improve traffic flow.

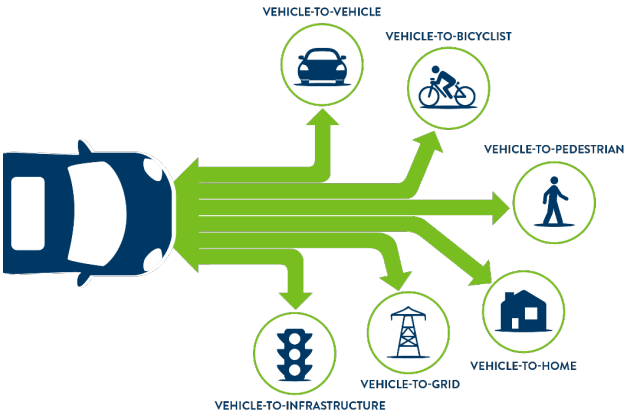


Figure 2: *Example interactions that connected vehicles can make*

Automated Vehicles

Automated vehicles use technology to do driving tasks, like steering, accelerating, and braking, with little to no human input. Some vehicles still require a human to monitor the roadway, while other vehicles require no human intervention.

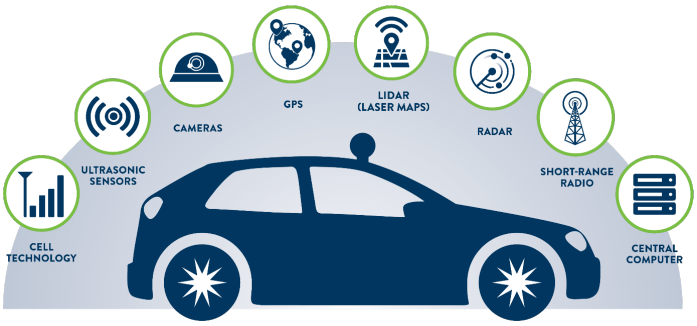


Figure 3: *Example technologies used for automated vehicles*

Med City Mover automated shuttle at community event

3. COUNCIL'S 2022 WORK

The Council is required to meet at least four times per year to review developments in CAV and emerging technologies, explore partnership opportunities for the State of Minnesota, propose policies to safely test and deploy CAVs, implement recommendations from the 2018 Council, engage communities experiencing transportation barriers, and advise on the safe testing and deployment of CAV. Below are meeting summaries that show how the Council fulfilled its duties.

	Meeting Requirement	Review Developments	Explore Partnerships	Propose Policies	Implement Recommendations	Engage Communities	Advise On Testing and Deployments
February Workshop	■		■		■		■
March Meeting	■	■			■		
June Meeting	■	■	■		■		■
September Meeting	■		■	■		■	
December Meeting	■	■			■		■

Figure 4: *Summary of 2022 council meetings*

February IIJA Workshop

In February, MnDOT hosted a workshop with the Governor's Advisory Council to share information from the Infrastructure Investment and Jobs Act (IIJA) and how it applies to CAV-related funding. It served as an opportunity to identify potential funding, areas of interest, and partnership opportunities for the state and CAV partners. Wendall Meyer, Division Administrator of the Federal Highway Administration (FHWA), provided an overview of existing and core programs and new programs with relevance to CAV. He also shared information on discretionary funding, particularly funding related to CAV. The attendees discussed which programs and potential funding opportunities interested them and considered how the state might leverage industry and partner with local government.

March Meeting

The Council focused on priority setting for 2022 at the March meeting. This began with a review of progress on the recommendations from the 2018 Executive Report. Next, the 2022 priorities were discussed. To gather information and set direction, each council member completed an exercise where they answered questions on how to prioritize recommendations in the 2018 Executive Report, as well as provide next steps for the Governor's Advisory Council. A working group of council members used the information gathered to formalize 2022 council recommendations.

June Meeting

The June meeting focused on reviewing the Governor Advisory Council's 2022 recommendations. In addition to reviewing the draft recommendations, the council discussed an upcoming federal funding opportunity — the SMART Grant program — and received updates on the Drive MN and CAV pilot projects.

Between the March and June council meetings, a working group of council members drafted policy and strategic recommendations for CAV in Minnesota. Divided into 12 categories, the recommendations provide specific guidance and next steps for the future of CAV in Minnesota. These recommendations were included in the 2022 Advisory Council Executive Report that was shared with the Governor.

September Meeting

The September meeting focused on finalizing the 2022 Advisory Council Executive Report, which included an update on the progress made on the recommendations in the Council's 2018 Executive Report and updated recommendations for ongoing CAV activities to be addressed from January 2023 through December 2026. The Council also discussed the SMART Grant program and began planning the development of its 2022 Annual Report.

Among the duties assigned to the Advisory Council in Executive Order 19-18 is, "The Council must consult with communities experiencing transportation barriers that are not represented on the Council."

To continue advancing this duty, the Council received a presentation on Advancing Transportation Equity in Minnesota and discussed outcomes desired by engaging with these communities; topics to be prioritized; and what the Council, state, industry, and academia can learn from these communities.

Highlights from the discussions included recommendations to:

- Create an institutional mechanism for consulting with communities experiencing transportation barriers. This can help prevent engagement fatigue and outlast changes in leadership/staff to build credibility.
- Identify how CAV transportation options can improve quality of life with increased accessibility and health access.
- Understand the needs of the communities and help them have ownership of services and technology.
- Design new pilots, services, and deployments with the insights gained from communities front and center and continue to engage with communities as these initiatives are developed and implemented.
- Form a community of practice to share what all partners are learning from communities and continue exchanges of information.

December Meeting

In the Council's final meeting of 2022, members reviewed draft content for the 2022 Annual Report and received overviews on the Drive MN project findings and the goMARTI project that launched in late summer of 2022. They discussed how these projects address the recommendations from the 2022 Executive Report. To close the meeting, each member shared parting thoughts on their time with the Council and expressed gratitude for the opportunity to learn about CAV and help prepare the state for future transportation technologies.

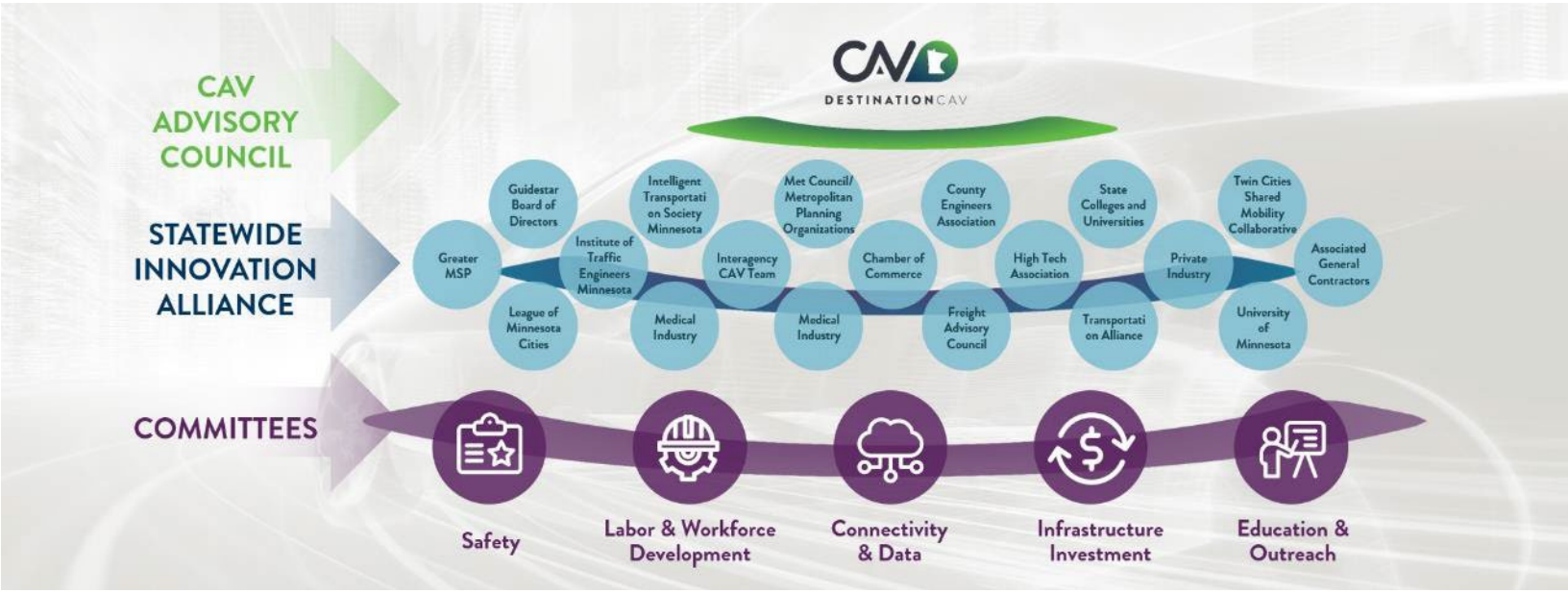
4. INTERAGENCY CAV TEAM

The Interagency CAV team was formed to ensure interagency coordination and collaboration on policies and programs across state agencies to strategically prepare Minnesota for CAV and intelligent transportation technologies.

In 2022, this group focused on assessing CAV-related risks and opportunities for Minnesota and identifying strategies to address them effectively. The group continued to share CAV updates and CAV-related topics across agencies to create consistency and alignment across the enterprise agencies.

Designees from the following agencies make up the Interagency CAV team:

- Minnesota Department of Administration
- Minnesota Department of Agriculture
- Minnesota Department of Commerce
- Minnesota Department of Employment and Economic Development
- Minnesota Department of Health
- Minnesota Department of Human Services
- Iron Range Resource and Rehabilitation Board
- Minnesota IT Services
- Minnesota Pollution Control Agency
- Minnesota Department of Public Safety
- Minnesota Department of Revenue
- Minnesota Department of Transportation
- Metropolitan Council



5. CAV INNOVATION ALLIANCE

The Council launched the CAV Innovation Alliance in 2020 with five committees focused on safety, labor and workforce development, connectivity and data, infrastructure investment, and education and outreach. The alliance is a broad, statewide network that coordinates CAV work across Minnesota. It includes representatives from universities and technical colleges, private industry, nonprofits, government, and communities.

Labor and Workforce Development

In 2022, the Labor and Workforce Development committee focused on sparking the interest of future generations through K-12 and college engagement, education, enhancement opportunities; sharing programs; strategizing how to support efforts for reskilling and upskilling; and building strategic partnerships. The committee supported the second annual CAV Career Pathways Camp for high school students and the STEAM Experience at Mall of America, which included CAV-specific activities.

In addition to these efforts with K-12 students, the committee learned about active programs that are working to reskill and upskill the workforce. Examples include Autosens Academy, an expert-led online training program with the goal of equipping the industry with the knowledge and skills to deliver world-class advanced driver assistance systems (ADAS) and AV solutions, and the Service Technician Education Program, which leverages new connected vehicle technology to rapidly scale and grow the necessary future technician labor force. The committee also investigated organizations with which to strategically collaborate, such as Partners for Automated Vehicle Education (PAVE), whose goal is to bring the conversation about automated vehicles to the public so everyone can play a role in shaping our future.

Education and Outreach

The Education and Outreach committee continued strategizing on how best to educate the public and key stakeholders on CAV technology and the potential impacts of CAV. The committee supported the development of several resources to assist with the goal of increasing awareness of CAV technology. These include:

- A CAV 101 document
- CAV Partner FAQs
- CAV Master Slide Deck for MN CAV Partners
- CAV Messaging and Talking Points Toolkit
- A new CAV website

Previous work and research have shown that CAV demonstrations are an excellent way to increase knowledge and acceptance of CAV, driving the committee to continue its support of demonstration projects such as Drive MN.

Infrastructure Investment

The Infrastructure Investment Committee focused efforts this year on discussing risks and opportunities and identifying an approach for the state. Identified risks include unknown industry needs, timeline for automation, and a lack of national standards. Opportunities include investing in infrastructure that benefits ADAS and human drivers, business and economic growth, and winter weather needs. Additionally, the committee recommended a focus on infrastructure investments that support transportation system management and operations, ADAS, and human drivers that could also support CAV in the future.

Safety

The Safety Committee focused on how CAV technology could advance the state's goals to eliminate deaths and injuries on roads (known as Toward Zero Deaths or TZD). They concluded that because the transportation system must be designed for all road users, not just CAV technologies or motor vehicles, a human-centered, multi-modal design approach was necessary to help the state identify its CAV safety principles and promote the goals in the Strategic Highway Safety Plan.

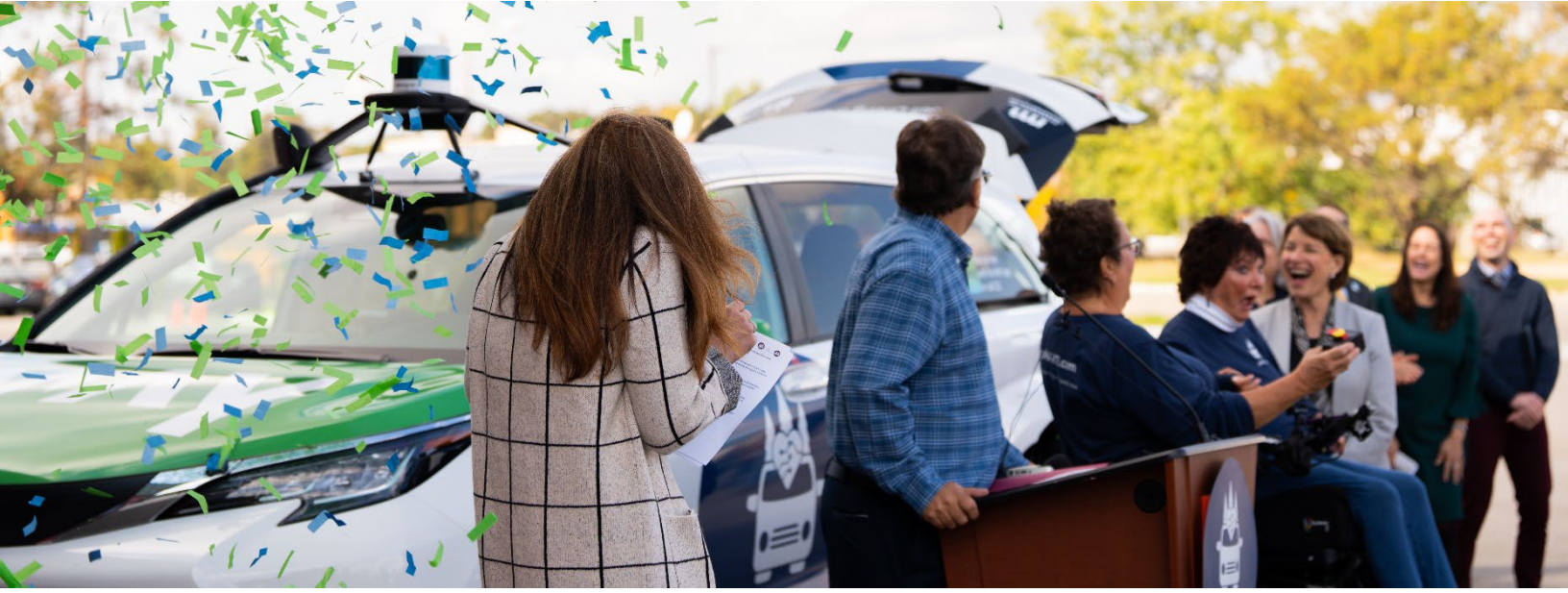
The committee continued its work on quantitative and qualitative safety, with an emphasis on educating people in Minnesota about different CAV technologies, defining CAV safety, developing CAV safety principles and best practices, and advancing CAV safety research with a multi-modal perspective and human-centered design approach. The committee tracked how private industry has presented CAV technologies and the limitations of the technologies. The committee also developed recommendations for modification to the Minnesota Driver's Manual to educate drivers on CAV technologies in vehicles today.

Data and Connectivity

The Data and Connectivity Committee helped the state better understand how Minnesota can manage CAV data responsibly. Membership includes a diverse network of local, regional, and state organizations, all of which are committed to planning and preparing for CAV and emerging technologies. The committee attracted presenters who shared local, regional, and national trends and projects.

Specific activities included:

- Reviewing and commenting on MnDOT AV shuttle projects and work zone data exchange projects.
- Learning about distance-based fees projects and policy efforts in Oregon and Utah to gain a better understanding of data privacy implications from both the state and provider viewpoints.
- Learning about current data practices of vehicle manufacturers and the wider connected vehicle ecosystem from third-party data aggregators and data brokers.
- Learning about legal trends in privacy law related to transportation technology from an equity perspective.
- Continuing to coordinate CAV activities across the state, avoid redundant research, and learn more about ITS America's policy efforts.



goMARTI project kickoff event

5. HOW MINNESOTA IS PREPARING FOR CAV

Minnesota continues to prepare for CAV and transportation technologies by observing trends and advancement in vehicle automation, connected vehicle technology, and other emerging areas. Below are some examples of work being carried out in Minnesota, both by the state and by other partners.

Testing and Research

Connected Vehicle Traveler Alert System Information

The state and researchers integrated CAV technology into snowplows to alert drivers as they approach snowplows along the highway. Providing advance notice of large maintenance vehicles ahead helps prevent crashes and makes drivers more alert to snowplows in extremely snowy conditions. The technology has been used successfully on 138 digital message signs along Minnesota highways and will continue through 2023.

Automated Shuttle Demonstration Projects

Med City Mover Automated Shuttle

Minnesota completed its first driverless shuttle project this year with the Med City Mover in Rochester, ending operations in August. The shuttle operated for one year and tested the automated vehicle technology in a multi-modal, downtown environment. This project helped the state, partners, and industry learn about continued opportunities with CAV technology, as well as its current limitations. Insights were gained from riders and others in Rochester who shared their views to help ensure that future transportation technologies address people's needs.

goMARTI Self-Driving Shuttle

MnDOT partnered with the City of Grand Rapids, Iron Range Resource and Rehabilitation Board, Itasca County, Arrowhead Transit, Mobility Mania, the University of Minnesota, May Mobility, The Plum Catalyst, and Via to launch an 18-month demonstration project known as Minnesota's Autonomous Rural Transit Initiative (goMARTI).

The deployment covers nearly 17 square miles in Grand Rapids and includes approximately 70 pick-up and drop-off locations using five May Mobility autonomous vehicles, including three that are wheelchair accessible. The project aims to advance and inform the operation of automated vehicle technology in rural, winter conditions; engage and educate the local community by providing real-world automated vehicle experiences; provide safe, accessible mobility for residents, especially those with transportation challenges; and advance the partners' understanding of the economic development potential this innovative pilot offers while attracting future talent and technology to the Iron Range.

Bear Tracks Self-Driving Shuttle

The state's second automated shuttle pilot started in summer 2022 in White Bear Lake. The goal of the project is to learn how to provide a safe automated transportation option to the White Bear Lake community, particularly those who may not be able to drive independently or travel easily. The project will familiarize the public with CAV technology, gather lessons learned for CAV operations in all weather conditions, and provide innovative mobility options for persons with disabilities and seniors who are near the route.

Assessment of Pedestrian Safety and Driver Behavior Near an Automated Vehicle

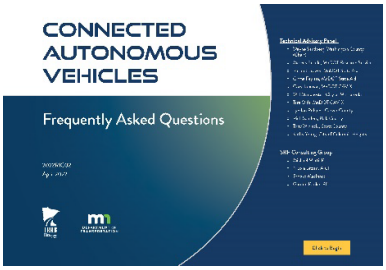
Dr. Nichole Morris of the University of Minnesota is leading a research project that will assess the relative impact of a low-speed automated vehicle shuttle demonstration, specifically the Med City Mover. The research focuses on driver behavior from surrounding human-driven vehicles and secondary crash risks. The study uses a mixed-methods observational approach, including roadside field observations, on-board observations, and simulations. It will bolster the general understanding of how drivers interact with automated vehicles, particularly large, slower-moving shuttles, thus benefitting the safety of drivers, pedestrians, and shuttle passengers.

Planning

Drive MN

This effort assessed the readiness of Minnesota roads for vehicle automation by traveling over 1,000 miles around the state collecting data using CAV research vehicles. The information gathered on this drive will help transportation agencies better understand infrastructure changes that may be needed for vehicle automation. During the drive, events were held at eight locations throughout the state to share information about vehicle automation, observations made along the drive, and Minnesota's CAV work.

Autonomous Vehicles: What Should Local Agencies Expect?



As CAV technology continues to advance, local agencies are seeking guidance on how to prepare and answer questions from elected officials and the public. The Local Road Research Board developed a "Frequently Asked Questions" interactive resource guide to help local agencies prepare for and respond to CAV technology.

https://www.dot.state.mn.us/research/reports/2022/2022RIC02.pdf

CAV Education and Planning in Burnsville

This city-led project included education around the evolution of CAV technology and the city's role and level of readiness to support CAV. To this end, Burnsville held internal workshops to introduce and discuss CAV across departments – including the state of practice of CAV, potential future scenarios, and benefits related to smart city advancement, transportation, and technology. The result of the workshops was an action plan for the next 5 to 10 years that will be used to guide sound investments and leverage ongoing resources and activities. Potential actions include working with partner agencies, updating policy needs, and developing potential technology solutions at key locations around Burnsville.

Engagement

CAV Website

The state undertook efforts to update the Minnesota CAV web presence to reflect messaging and brand guidance, provide a web presence focused on both partners and the industry, support resource sharing and collaboration, and expose different audiences to CAV technologies and activities. The website follows recommendations from the Minnesota CAV

Messaging and Engagement Strategic Recommendations document.

CAV Messaging Materials

In coordination with the CAV Innovation Alliance Outreach and Education Committee, CAV-X published CAV messaging and engagement guidance materials to share with partners throughout the state to create consistent and trusted language for the public. Guidance materials include a high-level guidance document, a toolkit, talking tips, a case study, and strategic recommendations for the state.

Community Events

The Council and CAV partners continued to educate and engage the public by participating in community events throughout the state. Highlights include the STEAM Experience at Mall of America, with CAV-specific activities; a variety of events in Rochester to help educate the community on the Med City Mover, such as Thursdays Downtown and the Rochester Transportation Fair; showcasing the Bear Tracks shuttle during the White Bear Lake Manitou Days Parade; and spreading the word on the goMARTI shuttle in Grand Rapids through events like Itasca County Community Connect — a gathering of more than 60 service providers from the area.

CAV Career Pathways Camp

For the second year, the University of Minnesota Center for Transportation Studies hosted the CAV Career Pathways Camp through the MnCAV Ecosystem. Eighteen high school students attended the week-long camp to learn about CAV technology and a range of career opportunities related to CAV. Campers had hands-on exposure to technology in Minnesota and were some of the first riders of the Bear Tracks automated shuttle.

Partnerships

CAV Challenge

MnDOT continues to administer the CAV Challenge program that allows partners to propose innovative solutions to address transportation challenges of today and of tomorrow in our state. The program continues to bring new partners to the state. In 2022, MnDOT partnered with self-driving technology companies Navya and May Mobility on demonstration projects.

PAVE Public Sector Advisory Council

MnDOT participates on the Public Sector Advisory Council of Partners for Automated Vehicle Education (PAVE), providing input and guidance on messaging and engagement tactics to help the public and policymakers understand driverless technology. MnDOT has been invited to participate in PAVE's virtual panels to share insights and ideas with a broad audience.

ITS Minnesota

MnDOT participates in ITS Minnesota, a coalition of organizations interested in the development of the state's Intelligent Transportation Systems (ITS) industry. In this capacity, MnDOT gives presentations and advances committee work to help inform the public and organizations and support the use of ITS technology to improve safety, equity, and mobility for all Minnesotans.

VSI and AEye Lidar Sensor Testing at MnROAD

VSI Labs, AEye, and MnDOT worked together to successfully install state-of-the art lidar sensors along the MnROAD facility. The resulting data will enable Automated Incident Detection (AID) and many other traffic metrics.

IIJA SMART Grant Applications

Autonomous Truck-Mounted Attenuator (ATMA)

This grant application is a for multi-state project, led by Colorado DOT in partnership with MnDOT and the Oklahoma and Wisconsin Departments of Transportation. The project will allow MnDOT to further develop and initiate deployment of automated driving systems to remove workers from dangerous working conditions. The multi-state nature of this project enables the partner agencies to learn from others in our community that have already overcome challenges and barriers, while also jointly navigating deployment from a community perspective.

Bear Tracks self-driving shuttle on route in the winter

Kinetic Ranger

Led by the Iron Range Resources and Rehabilitation Board (IRRR), this grant would fund a project to demonstrate fully electric and connected vehicle technologies that would be applied to parks and the neighboring rural communities in the Iron Range and St. Louis County. The demonstration will leverage on- and off-road vehicle technologies such as those found in the new Polaris Ranger XP Kinetic and apply those technologies to make data on vehicle usage and infrastructure monitoring easily available to local and state governments for planning and community engagement.

In addition to showcasing the technology demonstration in one of the nation's largest on-/off-road test beds, the project will also study safety considerations and benefits from connected technologies. The study will also examine public engagement and acceptance of EV technologies when starting with the EV application in an off-road and recreational setting.

Airport Mobility System

Led by the Metropolitan Airports Commission, this application uses a community-centered approach that includes meaningful, continuous, and accessible engagement with a diverse group of public and private stakeholders to inform implementation of an electric, automated vehicle mobility system that would allow for connected, efficient travel within Minneapolis-St. Paul International Airport.

An Open Data Approach to Curbside Management

Led by the City of Minneapolis Department of Public Works, in partnership with the Open Mobility Foundation (OMF) and other US cities, this grant would build digital tools and a common data language to communicate demand and availability of curbside parking. All participating cities would work to gather and analyze digital curb information and test jointly developed tools that would reduce congestion and increase equity while improving safety and enhancing livability. The city work would focus on curbside data systems integration, from parking payments to asset management, to further refine the City's previous curb mapping efforts and work towards developing a digital twin of curb assets, that could be utilized by CAV in the future.

IIJA ATTAIN Grant Application

goMARTI

Led by the Iron Range Resources and Rehabilitation Board (IRRR), this project will provide valuable community engagement and technical experience to help advance and inform an on-demand autonomous shuttle pilot for year-round operations in a cold weather environment in three rural Minnesota communities. It will also provide a base for future career pathways and economic development for the Iron Range region while bringing innovative, accessible transportation to the rural communities of Grand Rapids, Cohasset, and La Prairie.

Service Technician Education Program (STEP)

Polaris, Inc., in partnership with Central Lakes College in Brainerd and Power Lodge, received a Minnesota Job Skills Partnership Grant from the Minnesota Department of Employment and Economic Development. The grant funds the development of an innovative on-the-job training curriculum for upskilling and training technicians for future needs in powersport vehicle technology. The STEP program is being developed to help solve the challenge of technician shortages by connecting student technicians to hands-on, paid experience at a Power Lodge dealership while they complete their educational training at Clear Lakes College.

6. COUNCIL'S PLANS FOR 2023

As the currently appointed members of the Council conclude their terms, work will continue in 2023 to carry out their recommendations and to shape the future of CAV in Minnesota, as follows:

Identify lessons learned across the urban, suburban, and rural shuttle projects, emphasizing technology performance in winter weather and public acceptance, particularly among communities experiencing transportation barriers.

Monitor heavy vehicle CAV applications, such as truck platooning, and respond to interest from the agricultural community as experience is gained with technology being tested by CHS Inc., and by the state, for construction work zone operations.

Share findings from the vehicle automation assessment of Minnesota roads for consideration in the development of the latest edition of the Minnesota Manual on Uniform Traffic Control Devices, following release of the updated federal manual in summer 2023.

Develop new partnerships to continue exploring CAV technology through the CAV Challenge and Innovative Idea solicitations administered by the state.

Continue partnerships among agencies, academia, and industry to further develop Minnesota's workforce for CAV.

Explore opportunities to test how CAV data can be gathered and applied in transportation operations to enhance road weather, work zones, emergency response, traveler information and traffic management, while preserving consumer privacy.

Launch the Minnesota CAV website and leverage CAV messaging and engagement to continue educating the public, transportation professionals, industry, and other stakeholders about CAV.

Encourage the pursuit of federal discretionary grant opportunities to support Minnesota's ongoing CAV demonstration and partnering efforts.

As CAV technology continues to evolve, so will Minnesota's work to define how CAV can best serve future transportation needs in the state. With support from the Interagency CAV Team and Innovation Alliance Committees, the Governor's Advisory Council on CAV led critical conversations in 2022 about the future of CAV in Minnesota. The leadership and guidance provided through the Council's recommendations will continue shaping CAV in Minnesota in 2023 and beyond.

7. CAV ADVISORY COUNCIL MEMBERSHIP AND LEADERSHIP

CO-CHAIRS	ORGANIZATION
Commissioner Nancy Daubenberger	Minnesota Department of Transportation
Phil Magney	VSI Labs

ADVISORY COUNCIL MEMBERS	ORGANIZATION
Amber Backhaus	Automobile Dealers Association
Dan Chen	3M
Ryan Daniel	St. Cloud Metropolitan Transit Commission
Danielle Elkins (proxy for Mayor Jacob Frey)	City of Minneapolis
Michael Gorman	Split Rock Partners
John Hausladen	Minnesota Trucking Association
Myrna Peterson	Mobility Mania
Damien Riehl	Fastcase
Vicky Rizzolo	American Family Insurance
Kyle Shelton	University of Minnesota Center for Transportation Studies
Bret Weiss	WSB
Patrick Weldon	Polaris Inc.

EX-OFFICIO MEMBERS	ORGANIZATION
Councilmember Tina Folch	League of Minnesota Cities
Commissioner Alice Roberts-Davis	Minnesota Department of Administration
Commissioner Thom Peterson	Minnesota Department of Agriculture
Commissioner Grace Arnold	Minnesota Department of Commerce
Commissioner Steve Grove	Minnesota Department of Employment and Economic Development
Emily Smoak (proxy for Commissioner Jan Malcolm)	Minnesota Department of Health
Commissioner Jodi Harpstead	Minnesota Department of Human Services
Jason Metsa (proxy for Commissioner Mark Phillips)	Iron Range Resources and Rehabilitation Board
Tim Lynaugh (proxy for Commissioner John Harrington)	Minnesota Department of Public Safety
Commissioner Robert Doty	Minnesota Department of Revenue
Commissioner Tarek Tomes	Minnesota IT Services (MNIT)
Todd Biewen (proxy for Commissioner Katrina Kessler)	Minnesota Pollution Control Agency
Wayne Sandberg	County Representative, Association of Minnesota Counties
David Dively	Minnesota Council on Disability, Executive Director
Rep. Connie Bernardy	Minnesota House of Representatives, Majority Party Representative
Sen. Scott Newman	Minnesota Senate, Majority Party Representative
Sen. Jim Carlson	Minnesota Senate, Minority Party Representative
Chairwoman Cathy Chavers	Minnesota Indian Affairs Council
Chairman Charlie Zelle	Metropolitan Council

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