

Governor's Advisory Council on Connected and Automated Vehicles

December 13, 2019

Minnesota Department of Transportation, TEC Center

9:00 am – 12:00 p.m.

Council members present: Margaret Anderson Kelliher, Phil Magney, Damien Riehl, John Hauslauden, Vicky Rizzolo, Patrick Weldon, Michael Gorman, Dan Chen, Amber Backhaus, Lori McGinnis, Robin Hutchinson (on behalf of Mayor Jacob Frey). **Council members not present:** Ryan Daniel, Charlie Zelle, Myrna Petersen, Ed Reynoso. **Ex officio members:** Todd Biewen, Tina Folch, Connie Bernardy, Emily Smoak, Dan Hoff, Joann Wilshire, Mark Phillips, Scott Dibble, Alice Roberts-Davis, Anne O'Connor, Steve Grove, Tarek Tomes, Wayne Sandberg

Others present: Kristin White, Ben Lowndes, Mark Kulda, Skip Foster, Chris Hadfield, Sarah Psick, Josh Root, Mike Kronzer, Kevin Chan, Dan Rowe, Brad Hamilton, Keith Mensah, Patrick Hynes, Kevin Walli, John Kelly, Ashley Hudson, Bryan Nemeth, Beth Bussian, Tara Olds, Scott Peterson, Judell Anderson, Mel Reeder, Erik Rudeen, Joel Carlson, Randy Sanford, Bentley Graves, Frank Douma.

I. Welcome, Introductions and Members Vision for CAV

Minnesota Department of Transportation (MnDOT) Commissioner Chair Margaret Anderson Kelliher and co-chair Phil Magney, CEO of VSI Labs, welcomed members and attendees. Members of the Advisory Council and the public introduced themselves and shared their vision for connected and automated vehicles (CAV) in Minnesota. Members want the Council to:

- Prepare for what's coming
- Develop a vision for economic health and prosperity
- Make Minnesota a place people want to live
- Create accessible transportation and opportunity
- Develop options for insurance and ensure Minnesotans are protected
- Support public infrastructure and tourism in greater Minnesota
- Advance transportation policy that supports social cohesion, social capital, livability and communities
- Focus on safety and be a technology leader through demonstrations
- Research in the sciences, policy, design and developing the workforce of the future
- Address energy and climate change
- Agricultural innovation
- Make Minnesota an innovation economy and a national leader in workforce excellence
- Develop urban environment that meets economic inclusion, safety for all, climate change and equity goals

II. Overview of Council Structure

Kristin White, Executive Director of the state's Connected and Automated Vehicles Office, discussed the previous Council's structure, Interagency CAV Team, and policy subcommittees that developed the 2018 CAV Executive Report.

- MnDOT developed a CAV strategic plan to supplement and implement recommendations from the Executive Report.
- The CAV Advisory Council was developed to address all policy areas around CAV.

- The Interagency CAV team (I-CAV) meets quarterly, next meeting is January 9th.
- The Council structure is open to change throughout the changes in CAV over the next few years.
- Other groups throughout the state exist to support these activities, including Minnesota Guidestar, which was developed 20 years ago, and ITS Minnesota.

III. Purpose of the Council and Executive Report

The facilitator Ben Lowndes discussed the different roles and responsibilities of the Council and addressed that the CAV-X Office role is to support the Council. The purpose of the Council in the Executive Report includes 8 priorities including quarterly meetings and an annual report.

IV. National CAV Trends

Phil Magney, CEO and Founder of VSI Labs, discussed national CAV trends, addressing that there are two types of automated vehicles (AVs) where either human or computer is responsible. Mr. Magney described technologies like radar, lidar, cameras, and connected technology (wifi and radio) is in vehicles currently. He also discussed:

- Driverless taxis (“robo taxis”) are coming soon in limited areas. Robo taxis are a level 4 automated vehicle. There is a lot of money going into this because of ride sharing models, such as Uber, in large metropolitan areas. These use many cameras such as radar and lidar. All the vehicles use pre-determined maps.
- Developers of AVs are not waiting for infrastructure; they are doing what they can today.
- Level 2 AVs use camera and radar and are very common today. They react based on these sensors. The driver must supervisor the vehicle at all times.
- Automated shuttles are Level 4 low speed vehicles that are "people movers" used on campuses, airports, etc. They operate on a “virtual rail” where the vehicle tires only move millimeters from side-to-side. Lidar is used, which is a ranging technology that uses laser beams to detect the location of an object. Lidar is very expensive technology, which is why we do not see this in production cars yet.
- Limitations of AVs in Minnesota - Sensors fail quickly because frozen matter covers the sensors and lane lines are covered. It takes communications between the vehicle and infrastructure (known as “V2I”) and high definition maps to get through these challenges.

Chair Anderson Kelliher noted that a glossary of definitions and acronyms list is needed for the Council to address the various technical terms.

V. Minnesota CAV Programs and Previous Council’s Work

Ms. White overviewed the previous council’s work and ongoing CAV activities. The previous council focused on safety benefits of CAV. There is 1 fatality on the road every day and a 40% increase in pedestrian accidents this past year. CAV includes more than cars, it also impacts freight, transit, bicyclists, pedestrians and other multi-modal needs and users. The state is seeing these automated vehicles; state patrol has pulled over automated vehicles and last year an AV crashed into a MnDOT fleet vehicle. The state is coordinating on regional and national efforts to develop a Midwestern and national strategy for AV. Minnesota has passed a truck platooning bill which allows connected vehicles to convoy closer together on the roads. MnDOT developed a CAV Strategic plan with 65 recommendations.

VI. County CAV Work

Wayne Sandberg, from the Association of Minnesota Counties and Chair of the Minnesota County Engineers Association discussed county CAV activities. Counties have 4x many more roadways than the cities and state. Minnesota is one of the 5th largest road networks in the country. Communication with MnDOT CAV office is one of their key focus areas. Invest in items that are good for human drivers and CAV.

VII. City CAV Work

Robin Hutcheson, Director of Public Works for the City of Minneapolis, gave an overview of their shared mobility work. Transit is the largest shared mobility form of transportation. It costs approximately \$8,600 a year to own and operate a vehicle. The pathway to economic prosperity is to not have to own a vehicle. Minneapolis is working on developing hubs that are areas that can give people many forms of transportation in one location. The city is measuring the effectiveness of modal choices (bike, scooter, etc.) to understand why users choose different modes. Ms. Hutchinson discussed the city's work digitizing curb space because many of these vehicles will be stopping at the curb and they didn't know freight loading zones previously. They are focusing on regulation of curb space. This is a mapping-based exercise using geographic information systems (GIS). Minneapolis's work is transferable to other cities. A council member mentioned that this is the first time he heard of any city/state doing this and applauded the city.

VIII. University CAV Research

Laurie McGinnis, Director of the University of Minnesota Center for Transportation Studies, discussed university activities, including automated vehicle research at MnDOT's MnROAD facility, several projects with CAV vehicles at Interstate 94 and 35 West because this is the location with the largest amount of rear-end accidents. Ms. McGinnis also shared the University has a team looking at CAV areas of: policy, legal, and regulation, land use and design, funding and finance, which needs to be researched more. The University is focusing on workforce development; training engineers to broaden their skillsets for the future.

IX. MnDOT's CAV Work

Ms. White shared an overview of MnDOT's CAV program, including fiber optic partnerships to understand where the telecommunication industry is going to advance CAV and connectivity, The Connected Corridor project, snow plow priority to move plows more efficiently through intersections, MnROAD testing, the Minnesota CAV challenge open solicitation for CAV ideas, and automated truck-mounted attenuator testing, automated bus and shuttle demonstrations, autonomous commercial trucks. Ms. White discussed the importance of outreach & engagement to work with communities to provide feedback on our program, help advise on policy and host demonstrations of the technology. In Minnesota, statistics show that people are more comfortable with AVs after seeing the technology.

X. Vision, Mission and Goal Setting

Ms. White provided an overview of the previous Council's vision, mission, and goals. Mr. Lowndes facilitated an online Mentimeter exercise to identify the new Council's vision, mission and goals.

What are goals for CAV in MN?

- Safety is common across all questions. There is no point in having the technology without proper safety.
- The Council noted safety is different for the freight industry because most truck-related incidents are due to cars running into the back of trucks. The common truck/trailer costs \$150,000 without technology installed. There are 400 vendors for data loggers for working time, which used to be pencil and paper. Jon is more concerned with flow through all jurisdictions. He does not want to get slowed down during his trip in one state that does something different than 49 other states.

How do we accomplish these goals?

- Standards and operability is important for data and federal uniformity.

What priorities do you want the Council to focus on?

- The Council discussed why economic and workforce development was lower in priority than industry partnerships, outreach and engagement, and equity/mobility/public health/sustainability. The Council discussed that there are opportunities to bring more partners to the table to discuss economic and workforce development. The Council could share this information with the Governor's office to update the Council membership.
- Chair Anderson Kelliher noted that the Council should re-prioritize its desire to pass a law for safe testing and deployment in 2020-2021. A majority of Minnesotans fear the technology and we need to do more engagement and education. The chair recommended we wait and do more engagement and discuss a policy in 1-2 years' time. Chair Anderson Kelliher pulled the previous 2019 bill because no law is better than bad law.

What other priorities should the Council work on?

- The Council discussed the importance of educating local elected officials so they can make informed and confident decisions.

What do you want the Council to focus on in the next year?

- MnIT noted that we should focus on data privacy and cybersecurity and several Council Members were in agreement.
- Ex Officio members noted that all these priorities should be addressed. The Council noted that we should avoid having too many priorities and subcommittees or we will get less involvement and not be as focused. Rather, we should create goals for what MnDOT can do, what others can do and so on.

XI. Public Comment

Chris Hadfield, Director of the Minnesota State Transportation Center of Excellence, noted that workforce development is a high priority for Minnesota. When we prioritize it, we address equity, access, economic development and outreach.

XII. Wrap-Up and next steps

The future Council meetings are on January 22nd, February 18th and May 26th from 9:00 am to 12:00 pm. Calendar notices will be sent out alongside the materials and resources discussed at the meeting. Mr. Lowndes asked the members how they felt about the meeting and they felt optimistic, energized and positive. The meeting was adjourned at 12:10 pm.