ANNUAL REPORT 2018

MICHIGAN COUNCIL on FUTURE MOBILITY

Adopted 02/16/18

"The Michigan Council on Future Mobility is created within the state transportation department. The council shall provide to the governor, legislature, department, state transportation department, department of insurance and financial services, department of technology, management and budget, and department of state police recommendations for changes in state policy to ensure that this state continues to be the world leader in autonomous, driverless, and connected vehicle technology." Section 665(6) of Public Act No. 332 of 2016

SECOND ANNUAL REPORT

"The council created under subsection (6) shall submit recommendations for statewide policy changes and updates no later than March 31, 2017, and shall continue to make recommendations annually thereafter, or more frequently in the council's discretion."
Section 665(8) of Public Act No. 332 of 2016.

THE BACKGROUND

In March 2017, the outlook for automated motor vehicles in Michigan was characterized by the following:

- Strategic activity from in-state vehicle manufacturers, automotive component parts suppliers, software developers and other public and private entities.
- Interest from out-of-state domestic and international market participants and developers in considering Michigan as a site for research and development.
- Prominent location along an international trade corridor and vital relations with units of government at all levels and businesses in Canada.
- Strong competition from other states in the USA and other nations seeking to be a focal point for such research and development.
- Creation of leading sites of research such as Mcity at the University of Michigan and the American Center for Mobility.
- Strong research presence at state institutions of higher learning independently and in partnership with key private sector entities.
- Active involvement of state and academic officials in national forums and organizations on highly automated and connected vehicle technology.
- Leading state in vehicle-to-infrastructure research and development.
- Favorable state policy framework to promote the development of technologies associated with autonomous/highly automated/connected vehicles.

The American Center for Mobility completed its first construction phase and opened for testing in late 2017.

- Good partnerships among the state, private sector participants, and key local agencies.
- Strong support from state legislative and executive branches.
- Awaiting federal direction on a range of key surface transportation issues.
- Competing with other public and private entities for federal funding for testing and development.
- Challenges identified by the recent 21st Century Infrastructure Commission report prepared for Governor Snyder.

THE CURRENT ENVIRONMENT

As of 2018, many of the factors mentioned above remain. New developments in 2018 include:

- Opening of phase one of American Center for Mobility providing high-speed vehicle testing and setting the stage for a wide range of further testing scenarios.
- Successful submittal of first vehicle platoon plan in Michigan by Peloton followed by a live demonstration on I-96.

The Mcity Test Facility is the first purpose-built proving ground for testing connected and automated vehicles and technologies (including University of Michigan tech) in simulated urban and suburban driving environments.

- Successful automated vehicle trip-crossing of an international border in conjunction with the Center for Automotive Research Management briefing seminars in Traverse City.
- Launch of PlanetM to provide leadership in coordination of public and private business attraction and technical collaborations in Michigan. Opening of PlanetM office in Silicon Valley.
- Introduction and consideration of federal legislation on testing automated vehicles with one bill passing the U.S. House of Representatives and another being approved by the U.S. Senate Committee on Commerce, Science and Transportation.
- Opening of significant research and development facilities such as the expansion of the Toyota Research Institute and the establishment of a Waymo facility in Michigan. Continued investment and upgrade of existing Michigan-based proving ground facilities of Fiat Chrysler Automobiles, Ford Motor Company, and General Motors to support automated vehicle development. In addition, Ford Motor Company announced establishing a new engineering facility in Detroit for automated vehicle development.
- High-profile demonstrations setting the stage for deployments such as the Navya automated shuttle at Mcity, the Cadillac Super eCruise demonstration between Michigan and Florida, and the successful low speed shuttle demonstration in Detroit by May Mobility for its client, Bedrock.
- Announcements and reassertions of predicted deployments such as a level four automated vehicle by 2021 by Ford and automated fleets in 2019 by General Motors.
- MDOT and 3M partnership on nation's first connected work zone using barrels, signs and even worker vests embedded with 2-D bar codes to demonstrate vehicle to infrastructure communications on a major active work zone on I-75.
- National and international attention for Michigan efforts through high-level participation at events such as the ITS World Congress in Montreal in October/November, 2017 and the upcoming ITS America Annual Meeting in Detroit in June 2018.
- Reports from other state entities such as the 21st Century Economy Commission and the 21st Century Education Commission.
- The National Highway Traffic Safety Administration (NHTSA) announced that it would begin the process of examining and removing regulatory references that create barriers for highly automated vehicles.
- General Motors and Waymo published their voluntary safety reports about their autonomous vehicle programs; GM submitted a petition to NHTSA to allow deployment on public roadways of its fully self-driving automated vehicles.
- Numerous vehicle manufacturers announced plans to develop and sell a wide range of electric vehicle models in the future.

VISION STATEMENT

The Michigan Council on Future Mobility adopted the following vision statement:

> The Michigan Council on Future Mobility is a public/private partnership that facilitates cooperation among influential leaders in government, transportation, education, commerce, and insurance and professional services. The council shapes the future of mobility for people and products in Michigan through recommendations to the governor, legislature and state agencies. The council ensures that Michigan is at the national forefront of mobility policymaking and thought leadership.

MISSION STATEMENT AND STRATEGIC GOALS AND OBJECTIVES

The Michigan Council on Future Mobility adopted the following mission statement and strategic goals and objectives:

Mission

The Michigan Council on Future Mobility fosters a cohesive and collaborative environment with recommendations to promote the development of technologies associated

with autonomous, automated, and connected vehicles, and enhancing personal mobility transformation across all modes of transportation in the state.

Strategic Goals and Objectives

The council seeks to realize its vision and fulfill its mission by embracing the following strategic goals and objectives:

- Educating itself and policymakers on future mobility, from needs to solutions for all modes of transportation;
- Connecting public and private sector entities that will foster innovation and practical advances in mobility;
- Creating an educational, professional and personal environment that attracts and retains desirable talent to serve and strengthen the transportation industry;
- Engaging local communities and partners to promote and advance personal mobility;
- Promoting equitable access to future mobility options, especially for those who are economically disadvantaged, persons with disabilities, and seniors;
- Identifying opportunities to develop and brand Michigan as the epicenter of mobility technology and policy development;
- Ensuring effective cybersecurity standards for safe and efficient transportation;
- Addressing and evaluating implications for risk management, insurance and product liability laws;
- Assessing the need for structural improvements to public and private infrastructure to facilitate deployment of new technologies that enhance personal mobility across all modes of transportation; and,

Ann Arbor's May Mobility tested its driverless shuttles on public streets in downtown Detroit running from the first National Building to Bricktown Garage to test services for Bedrock LLC.

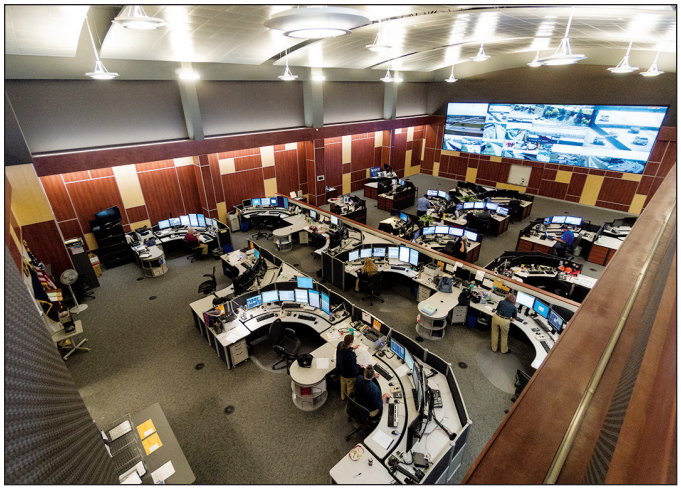
- Displaying national thought leadership by analyzing the impact of autonomous/highly automated vehicles and potential, required changes to the Michigan vehicle and insurance codes and the practical impact of such changes on law enforcement.

PRINCIPLES FOR RECOMMENDATIONS

"Planting the flag" for Michigan to be a national and global thought leader in mobility and transportation advances, especially in fora [plural in Latin] in which participants represent other states and countries such as the Uniform Law Commission.

The Michigan Council on Future Mobility in its role of making policy recommendations adopts the following key guiding principles:

- State policies should be focused on traditional roles for individual states regarding regulation of drivers and the use of vehicles but should not stray into areas preempted by the federal government.
- Michigan should adopt policies that promote the development of related technologies responsibly and avoid policies which seek to address a parochial interest or need and have the effect of making this state a regulatory island.
- Michigan should actively advise the National Highway Traffic Safety Administration of the Michigan perspective on relevant national rule-making and seek to bring the expertise and insights of state experts to that federal policy level.
- Policy recommendations should respect collaboration with local officials, agencies and units of government and support the vertical relationships among levels of government.
- Policy recommendations should always promote the goals of improving traffic safety, advancing vehicle connectivity, environmental sustainability, use of clean energy and enhancing personal mobility for all Michigan residents.
- Make Michigan the "hub" for autonomous/highly automated/connected vehicle cybersecurity research and development and leverage the use of the Michigan Cyber Range.
- Promote deployment of standards for local communities that create functional environments for autonomous, highly automated, and connected vehicles.
- Promote collaboration among public and private sector participants with respect to intellectual property protection for the product of research, especially of trade secrets.



MDOT's Southeast Michigan Transportation Operations Center (SEMTOC) is a state-of-the-art traffic monitoring system.

SPECIFIC COUNCIL ACTIONS

Specific steps were proposed in 2017 in advance of advising the enactment of new legislation:

- Review current provisions of the Michigan Vehicle Code and Insurance Code with the goal of determining whether they need to be amended to address a traffic environment in which vehicles equipped with a range of automated driving feature sets and connectivity operate. The project will specifically examine terms like "operator" and "driver." This project will also identify sections of law that need revision in light of autonomous/highly automated vehicle operations.
- Develop a strategy for educating law enforcement and first responders on practical issues associated with enforcing laws which will accommodate the testing and deployment of automated and connected motor vehicles.
- Review current laws regarding transit and shared ride services to reduce conflicts with development and testing of new, automated mobility services.
- Consider recommending practical actions for state agencies to facilitate the development and testing of automated driving system(s) and automated motor vehicle(s) as defined in Public Act 332 of 2016. Because virtually all vehicle manufacturers and component part suppliers believe that autonomous and highly automated vehicles will require hyper-accurate/high definition maps of roadways and road feature sets to operate safely, the council has arranged a private/public collaboration to accomplish this for a significant area in southeastern Michigan. Public vehicles equipped with sensors provided by the private sector will compile road data during routine operations for the creation of a map database open for the use of public or private entities engaged in research and development of autonomous/highly automated vehicle technologies. The various entities involved are working on a formal agreement to begin this project. When completed, Michigan will have the only such map database for this purpose in the United States.
- Support implementation of the 21st Century Infrastructure Commission recommendations for establishing a regional infrastructure pilot and a Michigan Infrastructure Council as first steps.

SPECIFIC FUTURE RECOMMENDATIONS

The Michigan Council on Future Mobility will apply the principles and be informed by the actions noted above as it examines the following topics with a view toward specific, future recommendations.

CYBERSECURITY

Awareness of the growing potential of automated motor vehicle travel comes at the same time as awareness of threats, acts of terror, and crimes involving the Internet, computers, and personal identity theft. In the mind of the general public, development of the new technology must be accompanied by strong protections for public safety and privacy and strong sanctions against misdeeds and mayhem. The most effective efforts will be taken at the national and international levels. Even so, Michigan political leaders can consider specific policies to obviate cybersecurity threats at the state level.

The Council on Future Mobility recommends the following regarding cybersecurity:

- Developing a data sharing framework for best practices by collaborating with AUTO-ISAC, the Auto Alliance and other relevant organizations on U.S. federal and global industry efforts;
- Protecting information from unauthorized disclosure;
- Facilitate secured data sharing and secure the value of trade secret protected intellectual property for rightful owners;
- Increasing penalties for unauthorized or malicious sharing of data but weigh carefully the objective of mitigating threats with the need to facilitate cybersecurity research, including but not limited to vulnerability, mitigation, and detection, etc.; and,
- Monitor federal legislation for areas of federal preemption and areas where state regulation is helpful.

LIABILITY AND INSURANCE

The 2016 Michigan legislation provides useful guidance in at least two specific instances. MCL 257.665(5) states: "(5) When engaged, an automated driving system allowing for operation without a human operator shall be considered the driver or operator of a vehicle for purposes of determining conformance to any applicable traffic or motor vehicle laws and shall be deemed to satisfy electronically all physical acts required by a driver or operator of the vehicle."

MCL 600.2949b says in part that a manufacturer is not liable and must be dismissed from any action for alleged damages from installations or conversions of automated motor vehicle equipment by other persons. Likewise, a mechanic or repair facility that repairs an automated motor vehicle according to the manufacturer specifications is not liable in a product liability action for damages resulting from the repairs.

These provisions stake out important ground on the question of liability involving automated motor vehicles. There are, however, practical questions remaining as basic as "who gets the traffic ticket?" and how the other state laws impact litigation involving this new technology.

An overarching goal of developing this technology is to reduce accidents and injuries. Such a trend would presumably reduce or transfer insurance costs. To manage risk and liability, there are practical issues that need to be reviewed and changes made to state insurance laws to ensure consumers, agents, and underwriters alike can be fully prepared to welcome these vehicles and their advances.

The Council on Future Mobility recommends the following regarding legal matters:

- Commissioning a study of the Michigan Vehicle Code and the Michigan Insurance Code to determine where terms such as "operate" and "drive" need to be amended to reflect highly automated vehicles and the operation or use of such vehicles. An agreement has been signed and approved by the Michigan State University College of Law to undertake such a project.
- Establishing a digital mobility law journal. Discussions are actively continuing with the University of Michigan Law School to create such a journal, which will involve collaboration with other laws schools in the state and address future legal challenges as new mobility concepts are deployed.

At Michigan State University, sensing, networking, and mobility research are drawn together in CANVAS, blending active safety, security and privacy, and mobile/transportation services for connected and autonomous vehicles—and their passengers.

Whenever the legislature finds it appropriate to address changes to Public Act No. 332 of 2016, it may want to consider the following:

- In order to recognize that autonomous and highly automated vehicles will occupy a new position in the world of surface transportation and interface differently with other modes of transportation, amend Section 665(6) of 2016 Public Act 332 (the "SAVE Act") by deleting the second sentence in its entirety and inserting the following language:
  "The council shall provide to the governor, legislature, department, state transportation department, Department of Insurance and Financial Services, Department of Technology, Management and Budget, and Department of State Police recommendations for changes in state policy to ensure that this state continues to be the world leader in development of technologies associated with autonomous, driverless, highly automated and connected vehicles and with the enhancement of personal mobility across all modes of transportation."
- Amend Section 665(8) of 2016 Public Act 332 to delete the word "commission's" and insert the word "council's" to correct a drafting error.

ONGOING AND FUTURE AREAS OF INTEREST

Talent: Education of new and emerging talent and retention of key talent are both vital for long-term leadership in autonomous and connected technology. The council received

several presentations on the importance of talent for the mobility field, and on specific measures to attract and retain such talent in Michigan. In particular, the council was made aware of the pressing need for a range of talent, training and expertise from technicians servicing new vehicles and technology to production workers to university and private researchers. The council is interested in the findings of experts, groups and entities such as the 21st Century Education Commission and its emphasis on post-secondary education and competency-based learning. The talent and education area invite collaboration between public and private sectors which the council could encourage and help develop. Also, the council recognizes opportunities to engage with and complement the governor's "Marshall Plan for Talent" in Michigan to promote the development of autonomous and connected technologies.

Access and equity: Advances in mobility technology offer an opportunity for bringing marginalized groups and individuals into the mainstream of mobility and community. Deliberate efforts are necessary to realize this potential. The council is interested in using technology to enhance personal mobility for persons with disabilities and to improve existing services such as paratransit options. It is also interested in using technology and partnerships to extend the reach of current services to remote populations, underserved citizens and neighbors who are challenged in using conventional transportation modes.

In October 2017, the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) demonstrated advancements in platooning technology by taking a four-vehicle convoy from Port Huron to Sarnia, Ontario, and back across the Blue Water Bridge.

Impact: Deployment of these technologies will have wide-ranging consequences for society beyond a particular industry. Socioeconomic changes in society, such as the impact on certain occupations or practices, should be examined carefully to determine how state government could assist people whose employment may be negatively affected. Also, because many autonomous/highly automated vehicles are likely to be electrified, modifications to the means of generation, transmission and distribution of electricity should be considered.

Data: Deployment of these technologies will also generate an enormous amount of data with applications far beyond research and development, and this will require a balance between the promotion of innovation and the protection of privacy.

Mobility as a service: As autonomous/highly automated/connected vehicles are deployed, there will emerge new business models that will focus on providing mobility as a service as opposed to traditional vehicle ownership. In turn, it is likely that these will enable new interfaces with other modes of transportation such as public transit. It is also likely that these will involve attendant products and services, including charging of electric vehicles.

THE COUNCIL ON FUTURE MOBILITY

Stephen Buckley, Senior Technical Fellow/Senior Manager, Electrical Engineering FCA US LLC

David Bulkowski, Executive Director, Disability Advocates of Kent County

Mark Davidoff, Michigan Managing Partner, Deloitte LLP

Eric DeLong, Deputy City Manager, City of Grand Rapids

Ryan Eustice, Vice President, Autonomous Driving, Toyota Research Institute

Emily Frascaroli, Counsel, Ford Motor Company; Lecturer, University of Michigan Law School

Amy Mass, Vice President & Counsel, The Hanover Insurance Group/Citizens Insurance

Jeremy McClain, Director, Systems & Technology, Continental Automotive Systems Inc.

John Peracchio, Council Co-chairman & Managing Member, Peracchio & Company LLC

Gary Smyth, Executive Director, Global R&D Laboratories for General Motors Company, Global Research & Development

Satish Udpa, Executive Vice President for Administrative Services, Michigan State University

Other Voting Members:

David DeVries, Director, Michigan Department of Technology, Management & Budget

Col. Kriste Etue, Director, Michigan State Police

Representative Kevin Hertel, appointed by the Michigan Speaker of the House

Representative Michele Hoitenga, appointed by the Michigan Speaker of the House

Senator Mike Kowall, appointed by the Michigan Senate Majority Leader

Pat McPharlin, Director, Michigan Department of Insurance & Financial Services

Michael Senyko, Designee of Michigan Secretary of State Ruth Johnson

Kirk Steudle, Council Co-chairman & Director, Michigan Department of Transportation

Senator Rebekah Warren, appointed by the Michigan Senate Majority Leader

Prior members:

Steve Arwood, Michigan Economic Development Corporation
David Behen, Michigan Department of Technology Management and Budget
John James, President, Renaissance Global Logistics & James Group International