

ITS Integration with CAV and MaaS

Potential Impacts to ITS/Traffic Operations from MaaS

	NEAR TERM	LONG TERM
MaaS ACTIVITIES	<ul style="list-style-type: none"> Establishing joint/single payment mechanisms across mobility services (e.g. Metro Transit, HourCar) MnDOT Managing impacts from mobility services on as-needed basis around events MnDOT Hiring a shared mobility position to bring agency focus to the subject and corresponding activities MnDOT Studying mobility services around events today to better understand potential future operational impacts MnDOT 	<ul style="list-style-type: none"> Integrate traveler information data with MaaS systems to provide real-time impacts – especially for road weather and road work MnDOT Researching how simulation and predictive algorithms could be used to assess traffic operations strategies that could mitigate potential impacts MTO Using scenario/horizon planning to understand how network may need to adapt MnDOT MTO
MaaS CHALLENGES	<ul style="list-style-type: none"> Ride-hailing resulting in more congestion at large events MnDOT Current performance measures do not reflect mobility goals for overall network MnDOT May be limited ability to make significant traffic management changes in real-time MnDOT 	<ul style="list-style-type: none"> Most of the control and immediate impacts are on the local network MnDOT Ongoing operational costs associated with any new or additional infrastructure could be a potential barrier if such costs are not planned for MnDOT Combined payment systems could impact transportation financing by changing what and how fees, taxes, etc. are charged and collected MTO (also Opportunity) Potentially less fuel tax collected from fewer, shared and electric vehicles could create a need for other forms of user tax MTO
MaaS OPPORTUNITIES	<ul style="list-style-type: none"> Data sharing agreements through negotiations with mobility service providers (sometimes via local agencies) MnDOT Review data to assess and predict potential impacts of mobility services as they evolve MnDOT 	<ul style="list-style-type: none"> Data about upcoming trips/travel patterns could benefit operations (e.g. ramp metering, travel times, signal timing) MnDOT Possible new role for traveler information and 511 brand MnDOT Permitting process could be a possible option for influencing MaaS/MOD MnDOT Combined payment systems may facilitate broader incentives to shift travel among modes MTO Combined payment systems may lead to new traffic operation strategies and relationships MTO Combined payment systems could impact transportation financing by changing what and how fees, taxes, etc. are charged and collected MTO (also Challenge)

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Potential Impacts to ITS/Traffic Operations from CAV

	NEAR TERM	LONG TERM
CAV ACTIVITIES	<ul style="list-style-type: none"> Attempt to understand quantifiable costs and benefits of CAV to make infrastructure deployment decisions MnDOT Researching available automation features (e.g. adaptive cruise control) to assess impacts on travel time and speed MTO Identify traffic operations problems that CAV could potentially solve MTO Explore options – both technical and policy – to receive data directly from CAV service providers MTO 	<ul style="list-style-type: none"> Determine what policies may be needed to support the use of CAV to solve traffic operations problems MTO Using scenario/horizon planning to understand how network may need to adapt MnDOT MTO
CAV CHALLENGES	<ul style="list-style-type: none"> Unclear what features are available, how many vehicles have features, and how much penetration is needed to be of value to operations MnDOT Ensure policies do not overly restrict research and development happening with CAV MTO Understanding implications to staffing levels and expertise as CAV expands MTO Physical infrastructure changes to support partial automation in vehicles on the road today MnDOT 	<ul style="list-style-type: none"> Staffing and workforce impacts of V2I deployments MnDOT Using approaches like exclusive dedicated lanes could create equity issues MnDOT Additional costs for redesign, higher levels of maintenance, or additional infrastructure and systems to support CAV MnDOT MTO Unclear if future costs will be capital (e.g. infrastructure oriented) or operational (e.g. software as a service) oriented MTO Rural applications are unclear and should be understood to find optimal use of CAV in both rural and urban settings MTO Potential for automation alerts/messages increasing driver distraction MTO
CAV OPPORTUNITIES	<ul style="list-style-type: none"> Study safety impacts of partial automation features available in vehicles today MnDOT Education to support both public and staff understanding of partial automation available in vehicles today MnDOT MTO Low-level automation features like lane-keeping assist, automatic emergency braking, and blind spot warnings could prevent/minimize severity of thousands of crashes MnDOT Continue studies to identify and quantify operational impacts of V2I connectivity MnDOT 	<ul style="list-style-type: none"> Additional real-time data could allow for signal timing adjustments and arterial performance improvements MnDOT Improved work zone management – especially detecting queues MnDOT Improved mobility options for more travelers MnDOT New source of data for traveler information and traffic management MnDOT Collecting and integrating more data, especially from passenger vehicles, could minimize agency dependence upon third party data vendors MTO Potential for reduced VMT or improved capacity could reduce need for roadway expansion which could further offset new costs MTO