



## WISCONSIN LEGISLATIVE COUNCIL

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TO: SENATOR FRANK G. LASEE

FROM: David Moore, Senior Staff Attorney

RE: Statutory Changes to Facilitate Operation of Autonomous Vehicles

DATE: October 10, 2017

You asked for a summary of legislative changes that may be necessary or advisable to facilitate the use and operation of autonomous and connected vehicles in Wisconsin. Very generally, while legislative changes would likely be beneficial to provide clarity regarding the operation of certain automated vehicles on Wisconsin highways, there is no specific prohibition in Wisconsin law against operating an autonomous vehicle. Because autonomous vehicle operation may present different issues than conventionally operated vehicles, however, there may be certain aspects of the laws pertaining to motor vehicle operation that the Legislature might wish to consider modifying. This memorandum identifies and discusses some of these issues.

At the outset, it is important to note the extent of modifications the Legislature might wish to make may depend on the degree of automation envisioned. Fully automated vehicles in which a driver need not be in the vehicle present somewhat different issues than vehicles in which many of the driving functions are automated but a driver is still present and may perform some of these functions. This memorandum does not provide recommendations with respect to the extent of modifications the Legislature might wish to make. Nor should this memorandum be construed as an exhaustive discussion of the ways in which Wisconsin law might need to adapt to automated vehicle technology. Instead, it is intended to provide a general overview of the types of issues the Legislature might consider when determining how best to accommodate technological advances that will increasingly reduce the driving functions a person present in a vehicle must perform.

## **BACKGROUND**

This memorandum uses the term “autonomous vehicle” to describe a vehicle in which aspects of the vehicle’s operation are automated to varying degrees. The Society of Automotive Engineers has described six levels of automation. These levels are as follows:

- SAE Level 0: The human driver does everything.
- SAE Level 1: An automated system on the vehicle can sometimes assist the human driver to conduct some parts of the driving task.
- SAE Level 2: An automated system on the vehicle can actually conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving task.
- SAE Level 3: An automated system can both actually conduct some parts of the driving task and monitor the driving environment in some instances, but the human driver must be ready to take back control when the automated system requests.
- SAE Level 4: An automated system can conduct the driving task and monitor the driving environment, and the human need not take back control, but the automated system can operate only in certain environments and under certain conditions.
- SAE Level 5: An automated system can perform all driving tasks, under all conditions that a human driver could perform them.

This memorandum also refers to “connected vehicles.” Very generally, a connected vehicle is a vehicle that is equipped with technology that allows it to communicate with nearby infrastructure and other vehicles.

## **DISCUSSION**

Chapters 340 through 349 of the statutes are commonly referred as the Motor Vehicle Code. This memorandum highlights selected issues relevant to autonomous vehicle operation in the following chapters of the Motor Vehicle Code:

- Definitions, ch. 340.
- Vehicle registration, ch. 341.
- Operators’ licenses, ch. 343.
- Financial responsibility, ch. 344.
- Rules of the road, ch. 346.
- Powers of state and local authorities, ch. 349.

As will be discussed in greater detail below, at a minimum, the Legislature might consider modifying the definitions of “operate,” “operator,” and “drive” to clarify their

application to vehicles with automated technology. In addition, the Legislature might wish to consider whether any exemptions from certain requirements, such as the general requirement that vehicles meet federal motor vehicle safety standards, may be necessary or beneficial for entities conducting research on autonomous vehicles. There may also be some specific aspects of the rules of the road that the Legislature may wish to consider modifying to reflect the operation of autonomous vehicles.

### **Definitions, ch. 340**

If the Legislature would like to clarify any requirements to facilitate the operation of autonomous or connected vehicles, it may be necessary to provide definitions of any terms that may be specific to the operation of these vehicles. In addition, the Legislature might also consider modifying the definitions of “operate,” “operator,” and “drive.”

Under current law, “operate,” is defined as “the physical manipulation or activation of any of the controls of a motor vehicle necessary to put it in motion.” [s. 343.305 (1) (b), Stats.] “Operator” is defined as “a person who drives or is in actual physical control of a vehicle.” [s. 340.01 (41), Stats.]

The current statutory definitions for “operate” and “operator” would appear to be adequate for vehicles with some autonomous functions but that require an operator to perform certain driving functions. These definitions may also be technically compatible with vehicles that have a high degree of automation; however, because the Motor Vehicle Code generally contemplates a person performing most of the functions that may be assumed by the automated system, it may be beneficial to modify the definitions of “operate” and “operator” to specifically include autonomous or connected vehicle operation.

“Drive” is generally defined to mean the “exercise of physical control over the speed and direction of a motor vehicle while it is in motion.” [s. 343.305 (1) (c), Stats.] The current statutory definition of “drive” may generally be sufficient for vehicles with more limited automated systems in which a person in the vehicle is monitoring the driving environment and performing certain of the driving functions. As the automation levels increase, the vehicle operator will perform fewer driving functions. Accordingly, it may be beneficial to provide a definition of “drive” that specifically includes an explanation of what this term means with respect to autonomous and connected vehicles.

### **Vehicle Registration, ch. 341**

A vehicle must generally comply with federal motor vehicle safety standards to be eligible for registration. Presumably, commercially available autonomous vehicles will comply with federal motor vehicle safety standards.

There may, however, be instances in which an exemption from these requirements may be beneficial for entities conducting research on autonomous and connected vehicles. If that is the case, the Legislature could consider authorizing the registration of autonomous and

connected vehicles that do not meet federal motor vehicle safety standards for certain research purposes.

### **Operators' License, ch. 343**

Section 343.05, Stats., generally requires a vehicle operator to be licensed, and the license must authorize the operation of the class of vehicle being operated and contain any applicable endorsements. A commercial motor vehicle (CMV) license is required to operate CMVs.

It would appear that changes to the operators' license requirements would not necessarily be required for automated vehicles in which an operator is in the vehicle. The Legislature might, however, wish to consider what, if any, license or endorsement should be required to operate a vehicle that does not require a person in the car to operate the car or perform any of the driving functions. The Legislature might also consider whether any issues related to autonomous vehicles should be required components of driver's education courses.

### **Financial Responsibility, ch. 344**

Under current law, no person may operate a motor vehicle upon a highway in this state unless the owner or operator of the vehicle has in effect a motor vehicle liability policy with respect to the vehicle being operated. [s. 344.62 (1), Stats.] This requirement appears to be compatible with the concept of automated vehicles. Although the expanding automation of driving functions may, over time, change the focus of many crashes from negligence principles to product liability law, the nature of the claim would not necessarily change the public policy underlying the requirement that an individual who owns or operates a motor vehicle generally accept financial responsibility for the motor vehicle's operation.

If there are uses of autonomous vehicles that the Legislature determines are not adequately covered by the current motor vehicle liability requirements, though, the Legislature could develop liability requirements specific to these uses. For example, the Legislature might wish to establish separate liability requirements that apply to operators of autonomous vehicle fleets.

### **Rules of the Road, ch. 346**

As noted above, the Motor Vehicle Code generally uses the terms "operate" and "drive" to describe how a vehicle is put into motion and controlled. These terms generally incorporate the concept that vehicles perform under the direction of a person, but do not necessarily require any specific division of the driving functions between the vehicle and the person. Because autonomous vehicles may present some different issues than conventionally operated vehicles, though, there may be specific aspects of the rules of the road that the Legislature might wish to modify. These areas include the following:

- **Applicability of the rules of the road, s. 346.02.** Section 346.02, Stats., clarifies the applicability of the rules of the road to various highway users. The Legislature could clarify that ch. 346 applies to vehicles operated with automated technology. In

addition, the automation of driving functions may raise some issues regarding who is responsible in the event of a violation of the rules of the road by an automated system. The Legislature could clarify who is responsible for ensuring the rules of the road are obeyed.

- **Distance between vehicles, s. 346.14.** Current law generally requires heavy trucks to maintain a following distance of at least 500 feet. Connected vehicle technology provides the capability for truck platooning, which requires substantially less space between the platooning vehicles. The Legislature could consider exempting connected vehicle truck platoons from the 500 feet following distance requirement.
- **Construction zones and school zones.** Current law provides for the designation of certain “zones,” in which specific requirements apply. For example, current law prohibits the use of cell phones in construction zones and provides enhanced penalties for traffic violations that occur in construction zones. Current law also contains various requirements, including reduced speed restrictions in school zones. The Legislature could consider whether a vehicle operator should be required to exercise direct control over a vehicle’s driving functions in construction and school zones.
- **Approaching or yielding to emergency vehicles.** Current law requires a vehicle passing a stopped emergency vehicle to either operate at a reduced speed until past the vehicle or move the vehicle into the lane that is not nearest the stopped vehicle. [s. 346.072, Stats.] Likewise, current law requires a vehicle, upon the approach of an emergency vehicle giving audible signal by siren, to yield the right-of-way and immediately drive the vehicle to a position as near as possible and parallel to the right curb or right-hand edge of the shoulder of the roadway. [s. 346.19, Stats.] The Legislature could consider whether a vehicle should be required to exercise direct control over a vehicle’s driving functions when approaching, or upon the approach of, emergency vehicles.
- **Conditions requiring reduced speed, s. 346.57 (3).** Current law requires the operator of a vehicle to drive at an appropriate reduced speed in a variety of conditions, including: when approaching and going around a curve, when approaching a hillcrest, when traveling upon any narrow or winding roadway, when passing school children, highway construction or maintenance workers, or other pedestrians, and when a special hazard exists with regard to other traffic or by reason of weather or highway conditions. The Legislature could consider whether any of the conditions requiring reduced speed might also be conditions under which a vehicle operator should be required to exercise active control over a vehicle’s driving functions.
- **Duties with respect to pedestrians and bicyclists.** Current law prescribes a motor vehicle operator’s obligations when overtaking and passing bicycles, electric personal assistive mobility devices, and motor buses. [s. 346.075, Stats.] Current law also describes the respective rights and duties of drivers and other highway users. [ss. 346.23 to 346.30, Stats.] The compatibility of autonomous vehicles with bicyclists and

other pedestrians may present unique issues the Legislature might also wish to consider.

- **Operating while intoxicated, s. 346.61.** While the definitions of “operate” and “drive” would prohibit operating or driving a vehicle with automated technology while intoxicated, the Legislature might wish to explicitly specify this type of operation is prohibited.
- **Inattentive driving, s. 346.89, Stats.** Current law provides that no person, while driving a motor vehicle, may be engaged or occupied with an activity, other than driving the vehicle, that interferes or reasonably appears to interfere with the person’s ability to drive the vehicle safely. In addition, current law proscribes certain specific activities, such as composing or sending an electronic text message or electronic mail message, within the inattentive driving statute. Wisconsin’s current inattentive driving statute is not incompatible with autonomous vehicle technology; however, technology that automates many of the functions drivers must perform now may, in the future, prompt reconsideration of what degree of attention is required to operate or drive a motor vehicle.

#### **Powers of State and Local Authorities, ch. 349**

Under current law, local units of government may enact and enforce traffic regulations in strict conformity with state law. [s. 349.06, Stats.] If the Legislature wished to encourage local units of government to allow pilot autonomous vehicle projects, the Legislature could consider giving local units of government flexibility to enact and enforce traffic regulations not in strict conformity with state law to the extent necessary to facilitate the pilot project.

If you have any questions, please feel free to contact me directly at the Legislative Council staff offices.

DM:jal