

Autonomous Vehicles

The Future is Now: Laws/Regulations Must Keep Pace with Technology

As of this year, 29 states and Washington D.C. have enacted legislation relating to autonomous vehicles (AV). Since promulgation of California's regulations in 2012 and 2014, more than 50 entities have applied to the California Department of Motor Vehicles (DMV) to test AV technology on California roadways. In the meantime, cars have grown increasingly reliant on AV technology to become "smarter" with each model, incorporating additional sensors, brake assist, and other semi-autonomous features to help people drive more safely and efficiently.

AV technology already is everywhere. Our floors are cleaned by robot vacuums that sense and maneuver around furniture and drive our pets crazy (and make for cute internet cat videos). Autonomous technology in jet planes controls the flights we take around the world. And we send autonomously controlled rockets to explore space. AV technology is being developed, not just for commuters, but for commercial transit as well. Encouraging the development will be essential to continue California's place as a technological leader.

THE BASICS

- **Autonomous Means Many Things to Many People.**

California defines an AV as a vehicle that is equipped with autonomous technology which has the capability to operate the vehicle without the active physical control of or monitoring by a human operator. There are six levels of AV technology, which derive from the Society of Automotive Engineers (SAE) International and are set forth in the figure on the next page. Different regulations apply to each level of automation.

Many states are using SAE International's *Taxonomy and*

Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, standard J3016 (SEP2016) as the basis for their regulations. Use of a standard set of regulations is imperative to avoid conflicting regulations that would impede travel between states. The National Conference of State Legislatures maintains a searchable database of AV bills at <http://www.ncsl.org/research/transportation/autonomous-vehicles-legislative-database.aspx> in an attempt to keep states on a consistent path and pave the way for streamlined deployment across the United States. Division 16.6, Section 38750 of the California Vehicle Code requires the DMV to develop regulations for testing and public use of autonomous vehicles.

- **DMV Finalizes AV Testing and Deployment Regulations.**

The California DMV AV testing regulations were first developed in September 2014. Since then, at least 50 manufacturers have applied to the DMV for approval. Updated regulations were finalized on February 26, 2018. These regulations incorporate by reference the SAE International J3016 standard, and contain training, notice, and annual reporting requirements for testing, including the requirement that a human be behind the wheel for testing even in fully autonomous vehicles.

Recognizing the rapid advancement in technology, the DMV also promulgated regulations for the post-testing deployment of AVs in California, including completion and certification of completion of safety testing, significant insurance coverage requirements, a law enforcement interaction plan, and, for Level 5 AVs, communication link between the vehicle and a remote operator, as well as the ability to transmit collision data. Although this regulation does not allow for testing of commercial or freight AV technology, the DMV indicates that it is evaluating the unique safety and economic impacts of commercial AV through further study.

THE POLICY ISSUES

- **Funding for AV Infrastructure.** The 2017 transportation funding bill SB 1 (Beall; D-San Jose), in addition to providing much-needed repairs for California roadways, also allows for transportation dollars to be used for infrastructure improvements

California Promise: Opportunity for All

2019 Business Issues and Legislative Guide

See the entire CalChamber 2019 Business Issues and Legislative Guide at
www.calchamber.com/businessissues
Free PDF or epub available to download.

Special Thanks to the Sponsors
Of the 2019 Business Issues and Legislative Guide

Premier



Silver



Bronze



Iron



SAE Level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)
Human driver monitors the driving environment						
0	No Automation	The full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human Driver	Human Driver	Human Driver	n/a
1	Driver Assistance	The <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human Driver and System	Human Driver	Human Driver	Some driving modes
2	Partial Automation	The <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	System	Human Driver	Human Driver	Some Driving Modes
Automated driving system ("system") monitors the driving environment						
3	Conditional Automation	The <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human Driver	Some Driving Modes
4	High Automation	The <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some Driving Modes
5	Full Automation	The full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes

Source: Society of Automotive Engineers (SAE) International

to support AV deployment. SB 1 states that “[t]o the extent possible and cost effective, and where feasible, the department and cities and counties receiving funds under the program shall use advanced technologies and communications systems in transportation infrastructure that recognize and accommodate advanced automotive technologies that may include, but are not necessarily limited to, charging or fueling opportunities for zero-emission vehicles, and provision of infrastructure-to-vehicle communications for transitional or full autonomous vehicle systems.”

- **Safety.** We humans have an outsized notion of our ability to navigate the roadways safely. Test it by trying to merge onto any highway onramp at rush hour. The perception of the safety of AVs has been hampered by some high-profile accidents, with a recent study conducted by research firm J.D. Power and Associates and the National Association of Mutual Insurance Companies (NAMIC) finding that 4 out of 10 Americans “would never ride” in a fully automated vehicle.

Despite these fears, experts predict that AVs will end up

much safer than human-controlled ones. According to the California Office of Transportation Safety, traffic fatalities increased 7% from 3,387 in 2015 to 3,623 in 2016, and the 2015 Mileage Death Rate (MDR)—fatalities per 100 million miles traveled—was 1.01. According to National Highway Transportation Safety Administration (NHTSA) data, which was collected from all 50 states and the District of Columbia, 37,461 lives were lost on U.S. roads in 2016, an increase of 5.6% from calendar year 2015. NHTSA found that distracted driving and drowsy driving fatalities declined, while deaths related to other reckless behaviors—including speeding, alcohol impairment and not wearing seat belts—continued to increase.

AVs use a variety of technology, most of which is not dependent upon attention spans, number of cocktail decisions, or whether your newborn kept you up all night. Computers do not listen to music, and they ignore (or can simultaneously respond to) texts while navigating roadways. Various technology is being tested by some or all of the manufacturers.

Many automakers have advocated skipping straight to Level 5 automation for added safety. They argue, perhaps rightly, that humans are not capable of resuming control quickly enough to make human backups useful, and that skipping to Level 5 would allow regulators to adapt to technology more quickly. Experts project, depending upon which level of AV is used, a reduction in collisions by as much as 90%, with the ensuing preservation of life.

Currently, the final regulations from the California DMV require that a human backup be used during all testing. In enacting future legislation on AVs, policymakers must balance safety, avoid conflicting regulations with other states and the federal government, and avoid overly prescriptive and burdensome regulations that impede the continued safe testing and deployment of AV technology.

LEGISLATIVE AND REGULATORY ACTION IN 2019

• **AVs and Ride Sharing.** A study by the Boston Consulting Group estimated that by the end of the next decade, fully 20% to 25% of U.S. rides will be logged by Level 5 AVs operated by ride-sharing services such as Waymo, Uber, Lyft and GM's Maven. In May 2018, the California Public Utilities Commission (PUC) authorized two pilot programs—one with a driver and one driverless—with quarterly data reporting requirements

and a plan to conduct workshops on carrier and passenger experiences within the pilot. The expectation is that a deployment pilot will follow.

• **Commercial Testing and Deployment.** The DMV anticipates continued exploration of testing and deployment of trucks and commercial vehicles in the coming years. Several California companies are developing vehicles for commercial use.

CALCHAMBER POSITION

California should encourage the development of AV technology for transit and commercial operations. It should ensure that laws and regulations keep pace with advancing technology, are not duplicative, do not conflict with federal or other state laws, and that regulation is not overly burdensome, all while maintaining consumer safety. With such a balance, California can remain at the technological forefront of AV development.



Staff Contact
Leah Silverthorn
Policy Advocate

leah.silverthorn@calchamber.com

January 2019