

Autonomous Vehicles in California

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Autonomous Vehicles

- **AAMVA AV Information Sharing Group**
 - Chair: Teepu Khawja, Acting Director, Ontario Ministry of Transportation (MTO)
 - Vice-chair: Bernard Soriano, Deputy Director, California DMV
 - Open to all jurisdictions, quarterly conference calls
 - AV library on AAMVA website
- **AAMVA AV Best Practices Workgroup**
 - Chair: Bernard Soriano, Deputy Director, California DMV
 - Vice-chair: Jude Hurin, Services Manager, Nevada DMV
 - Funded by NHTSA grant with 16 jurisdictions (14 United States, 2 Canada) participating
 - Expertise in licensing, registration, and law enforcement
 - Biannual in-person meetings and conference calls as needed
 - Develop a document detailing best practices in regulating autonomous and self-driving vehicles
 - Document to be delivered to NHTSA by Fall 2016 for approval by December 31, 2016.

AAMVA AV Best Practices Workgroup participants

Alberta

British Columbia

California

Georgia

Indiana

Kansas

Maine

Michigan

AAMVA

NHTSA

Nebraska

Nevada

New York

Pennsylvania

Texas

Virginia

Washington

Washington D.C.

California Legislation – Senate Bill 1298

As soon as practicable, but no later than Jan. 1, 2015, DMV must adopt regulations setting forth requirements for:

- Manufacturers' testing of autonomous vehicles on public roadways
 - Regulations approved and adopted in May 2014
 - Effective on September 16, 2014
- Operation of autonomous vehicles on public roadways
 - Under development – coming soon!!!!

NHTSA Defines Four Levels of Autonomous Vehicles

- Level 0 – No automation (65 Mustang)
- Level 1 – Function specific automation (94 Accord with cruise control)
- Level 2 – Combined function automation (Acura MDX with adaptive cruise control and lane keeping)
- Level 3 – Limited self-driving automation (The vehicles being tested by Volvo – the XC 90)
- Level 4 – Full self-driving automation (The Google bubble car)

Society of Automotive Engineers (SAE) has similar definitions, although five levels

Autonomous Vehicles

“Autonomous Vehicle” does not include:

- Vehicles equipped with one or more driver assistance systems that enhance safety but are not capable, singularly, or collectively, of driving the vehicle without the active control or monitoring of a human.
- Not Autonomous - Blind spot + adaptive cruise control + lane keep + traffic jam assist + emergency braking.

Autonomous Vehicles



Autonomous Vehicles



Mercedes F015 – Autonomous Concept Vehicle

Autonomous Vehicles

Testing Regulations Summary

- \$5 million in insurance, bond, or self-insurance
- Test drivers: no DUI, not an at-fault driver, and no more than 1 point
- Successful completion of test driver training program
- Employee, contractor, or designee
- Seated in driver seat during testing
- Report any accident within 10 days
- Report unanticipated disengagement of autonomous technology
- Testing permit valid for one year
- Vehicles excluded from testing:
 - Commercial vehicles that are > 10,000 lbs. GVW
 - Motorcycles

Approved Testing Permits (7)

- Bosch
- Delphi Automotive
- Google
- Mercedes
- Nissan
- Tesla Motors
- Volkswagen/Audi

Testing of Autonomous Vehicles Since September 16, 2014

- Number of accidents reported – 4 (3 Google, 1 Delphi)
- Media Inquiries – Wall Street Journal and Associated Press
 - Requests for copies of the accident reports submitted to the DMV by Google and Delphi
 - Under California law accident reports required to be submitted to the department are for the confidential use of the department.
- Consumer WatchDog
 - Written two letters to DMV.
 - Posted a video depicting accidents caused by autonomous vehicles and encouraging people to contact the DMV.
 - Since May 12, 2015: Rec'd 208 e-mails titled "Please protect safety and privacy," or "Keep us safe from the robot car" – requesting that the regulations specify that cars must have a steering wheel, brake pedal, and gas pedal and protect private information.

Operation on California Public Roadways Development of Regulatory Package 2

Overriding Issues:

- Certifications That Are Required by Statute
 - Traditional self-certification vs. 3rd party certification
 - Creating standards for certification
- Operational and Deployment Restrictions
- Cybersecurity
- Avoidance of Federal Pre-emption

Operational Regulations Development

NHTSA Preliminary Statement Concerning Automated Vehicles, May 2013

“In general, we believe that states are well suited to address issues such as licensing, driver training, and conditions for operation related to specific types of vehicles.”

NHTSA letter to California DMV, April 2015

“When and if NHTSA concludes there is a need for Federal safety standards [concerning autonomous vehicles], our research will provide important support for those standards.”

The Operational Regulations development can be broken down into the general categories mentioned in the NHTSA Preliminary Statement:

- I. Permit to Deploy (Licensing)
- II. Conditions for Operation – Including Without a Driver
- III. Drive Test and Driver Education

Permit to Deploy – The License to Drive

- Proof of Insurance - \$5 million
- Must provide vehicle manufacturer, remanufacturer, or distributor license number.
- Certify compliance with FMVSS
- Identify if the vehicle is capable of operating without a driver.
- Identify the make and model of the vehicles and like models.
- Pay the appropriate fee.

Conditions for Operation

- Identify all areas where the vehicle can operate autonomously and certify it is incapable of operation outside those areas.
- Identify commonly occurring restrictions on operation (snow, fog, rain, construction zones)
- Identify what the vehicle will do if the autonomous technology fails.
- Certify that the AV technology will obey traffic laws.

Drive Test and Driver Education

- Released an RFI to determine capabilities of independent 3rd party companies to test manufacturer's autonomous vehicles.
- Consumer/End User Education plan.
 - i. Identify restrictions of the AV technology and areas of operation
 - ii. Instruction on how to engage/disengage the technology
 - iii. Plan for educating purchasers of AV's.

Trust Component

- Information Privacy
- Cyber Security
- Functional Safety and Hazard Mitigation

Look Ma, No Hands! Vehicles Without Manual Controls

- Steering wheel and brake/accelerator pedals required for testing.
- Notify Legislature if manufacturer intends to deploy a fully self-driving vehicle.
- Operator must be able to gain control and maneuver to a safe stop.

What's To Come?

- Consumer Acceptance?
- Who is out of the gate first?
- Check out the technology in the cars today!

Autonomous Vehicles



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