

Autonomous Vehicles aka Self-Driving Cars

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California DMV at a glance

- Approximately 9,000 employees
- Over 250 field locations throughout the state
- Approximately 25 million driver licenses and identification cards
- Approximately 32 million actively registered vehicles
- Revenue collections of approximately \$7 billion annually

- NHTSA defines 4 levels of autonomous vehicles
 - Level 0 – No automation
 - Level 1 – Function specific automation
 - Level 2 – Combined function automation
 - Level 3 – Limited self-driving automation
 - Level 4 – Full self driving automation

[Google's self driving car](#) example

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
- Operation of autonomous vehicles by the public on public roadways

Manufacturers' Testing Requirements

SB 1298 authorizes an autonomous vehicle to be operated on public roads for **testing purposes** by a driver who possesses the proper class of license, if the following are met:

- Manufacturer must provide evidence of having obtained insurance, surety bond, or proof of self-insurance in the amount of \$5M.
- The autonomous vehicle is operated on roads solely by employees, contractors, or persons designated by the manufacturer.
- Driver must be seated in the driver's seat and must be capable of taking over immediate manual control.

Operation By The Public

An autonomous vehicle is prohibited to be operated on public roads by the public until the manufacturer submits to DMV their application certifying they meet all testing requirements and safety standards and until DMV approves the application.

The manufacturer must certify that they:

- Meet the specified safety standards
- Maintain insurance, bond or self-insurance of \$5M
- Tested the autonomous technology on public roads
- Complied with specified testing standards

Regulations Development Strategy

- Two regulatory packages
- Statewide steering committee
- Working groups
- Consulting services
- Public hearings

Regulatory Package 1

- Submission of evidence of insurance
- Marking of vehicle on DMV's database
- Other feasible regulations
- Adoption by December 2013

Regulatory Package 2

- Testing requirements
- Safety standards
- Operator license requirements
- Vehicle registration requirements
- Other feasible regulations
- Adoption by December 2014

Statewide Steering Committee

To provide guidance on the impact of autonomous technology to traffic safety, law enforcement, insurance, privacy, and other issues.

- California DMV
- California Highway Patrol
- California Department of Insurance
- California Department of Transportation
- California Business, Transportation, & Housing Agency
- California Office of Traffic Safety
- National Highway Traffic Safety Administration

Working Groups

- Subject matter experts to provide guidance on policy issues for each regulatory package

Consulting Services

- DMV will consult with UC Berkeley's Institute of Transportation Studies (ITS)

Public Hearings

- Pre-notice workshops
- Formal public hearing for each regulatory package

- Autonomous vehicle technology advancing quickly
- Adoption by the public will not be dependent on technology
 - Human factors (HMI)
 - Societal benefits (safety)
 - Generational norms
- Potential traffic safety improvements are immense
 - Over 30,000 traffic fatalities per year
 - Almost all (95%) of traffic fatalities were the result of human error
 - In over 35% of traffic fatalities, the brakes were not applied
 - 20% of traffic accidents involve a distracted driver
- Government and industry need to work collaboratively
 - Regulations
 - Communication

- Autonomous vehicles available [now](#)
 - 2014 Mercedes [S Class](#)
 - 2014 BMW i3, 5-Series
 - 2014 Cadillac [XTS](#)
- NHTSA Level 3 autonomous vehicles being tested now
 - Private test tracks
 - Human reaction testing
- Variety of technology being developed
 - V to V
 - V to X, sometimes called V to I
 - Road train concept
 - Self contained processing
 - Cloud computing
 - Mapping dependency

- Volvo
 - No fatalities in a Volvo vehicle by the year 2020
 - [Collision avoidance systems](#)
 - [Road train or platooning](#)
 - [Commercial trucking industry](#)
- Humans are not the best in emergency situations
- Digital natives more accepting than digital immigrants

Questions