



# Autonomous Vehicles in California

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# California at a glance

- Population approximately 38 million people
- Over 172 thousand public road miles
- 23 million Class C (non-commercial) driver's licenses
- 73% commute to work alone
- 22.5 million registered automobiles
- Over 323 billion vehicle miles travelled per year

# The Potential of Automated Vehicles

- Potential traffic safety improvements are immense
  - Over 2,700 traffic fatalities in California in 2010; 791 involving alcohol and 336 involving drivers under the age of 20.
  - 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
  - Independence for senior citizen and disabled drivers

## California Legislation – Senate Bill 1298

Enacted Vehicle Code sec. 38750. 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
- **Deployment** of autonomous vehicles on public roadways

# Vehicle Code Sec. 38750 requirements for testing on public roads

- Manufacturer must provide evidence of financial responsibility of \$5 million
- Driver must possess the proper class of license
- Driver must be an employee, contractor or designee of the manufacturer
- Driver must be in the driver seat and capable of taking control of the vehicle

# Vehicle Code Sec. 39750 requirements for deployment on public roads

## Application to DMV certifying:

- Mechanism to engage/disengage
- Visual indicator when engaged
- Alert to operator of technology failure:
  - operator take control, or
  - come to complete stop
- Mechanisms to allow operator to take control
- Autonomous technology meets FMVSS
- Technology does not make inoperative any FMVSS
- EDR to store sensor data before a crash
- Prior testing on public roads
- Maintain financial responsibility at \$5 million
- Whatever DMV + CHP determines is necessary for safety.

## Approach to developing regulations:

- Statewide Steering Committee
  - California State Transportation Agency
  - California Department of Insurance
  - California Highway Patrol
  - California Office of Traffic Safety
  - California Department of Transportation
  - California Department of Motor Vehicles
  - National Highway Traffic Safety Administration
- 2 regulations packages – 1. Testing - 2. Deployment
- 3 Public Workshops
- Consultations with Manufacturers

# Regulatory Package 1

## Requirements for an Application to Test on Public Roads

- a. Submission of evidence of insurance
- b. Identification of trained test drivers
- c. Test driver qualifications
- d. Identification of test vehicles
- e. Data collection requirements
  - unplanned or unexpected disengagements;
  - collisions
- f. No commercial vehicle testing
- g. Restrictions on disposal of former test vehicles
- h. Approved on May 20, 2014 – effective September 16, 2014



# Regulatory Package 2

## Issues we have to address

- Manufacturers that tested outside of California
- Certification of the Autonomous technology
- Self certification vs. 3<sup>rd</sup> party certification
- Will there be “operator” license requirements
- Vehicle registration requirements
- Responsibility for traffic violations
- Privacy
- FR – for manufacturers and end users
- Additional requirements for driverless vehicles
- Targeting public Comments mid summer

# Lessons Learned (So Far)

1. Autonomous vehicle technology advancing quickly
2. Government and industry need to work collaboratively
  - Regulations
  - Communication
  - Vehicle demonstrations provide valuable insight for regulation development
3. Adoption by the public will not be dependent on technology
  - Human factors (HMI)\*
  - Generational norms



# Questions