Preparing California for Connected and Automated Vehicles

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Agenda

- USDOT Developments
- What other States are Doing
- What California is Doing
- What California Needs to Do

In a nutshell – what's changed?

ADS 2.0

- Focus on light vehicles
- Provided voluntary guidance to industry and best practices to states
- Introduced Safety Assessment Report and self-certification approach
- Introduced Operational Design Domain (ODD)

ADS 3.0

- Multi-modal; references heavy trucks and transit buses, plus other modes
- Builds on Safety Assessment Report and ODD concepts
- Promotes risk management through different stages of ADS development
- Adds roles of state, local agencies and MPOs
- Proposes new state actions (e.g. test driver licensing and training requirements)
- No further recognition of 10 Automated Vehicle Proving Grounds

CAVita

Much increased clarity/emphasis………..

- Role of CV (V2X) is fully recognized: Cooperative Automation and Connectivity
- Best practices for state legislatures and state highway safety officials
  - Adopt terminology from standards
  - Assess state roadway readiness
- Considerations for infrastructure owners and operators
  - Support safe testing and operations of automated vehicles on public highways
  - Learn from testing and pilots to support highway system readiness
  - Build organizational capacity to prepare for automated vehicles in communities
  - Identify data needs and opportunities to exchange data
  - Support scenario development and transportation planning for automation
- Considerations for local government
  - Facilitate safe testing and operation of automated vehicles on local streets
  - Consider how land use, including curb space, will be affected
  - Consider the potential for increased congestion, and how it may be managed
  - Engage with citizens

CAVita

Connected Vehicle Deployments in 2018

States Leading in CAV Deployment

States considered: CA, CO, FL, MI, PA, VA

1. AV legislation (all 6)
2. Active learning with CV/AV (all 6)
3. Established CV/AV testbed (all 6)
4. Planning alignment (CAV in existing transportation plans) (4)
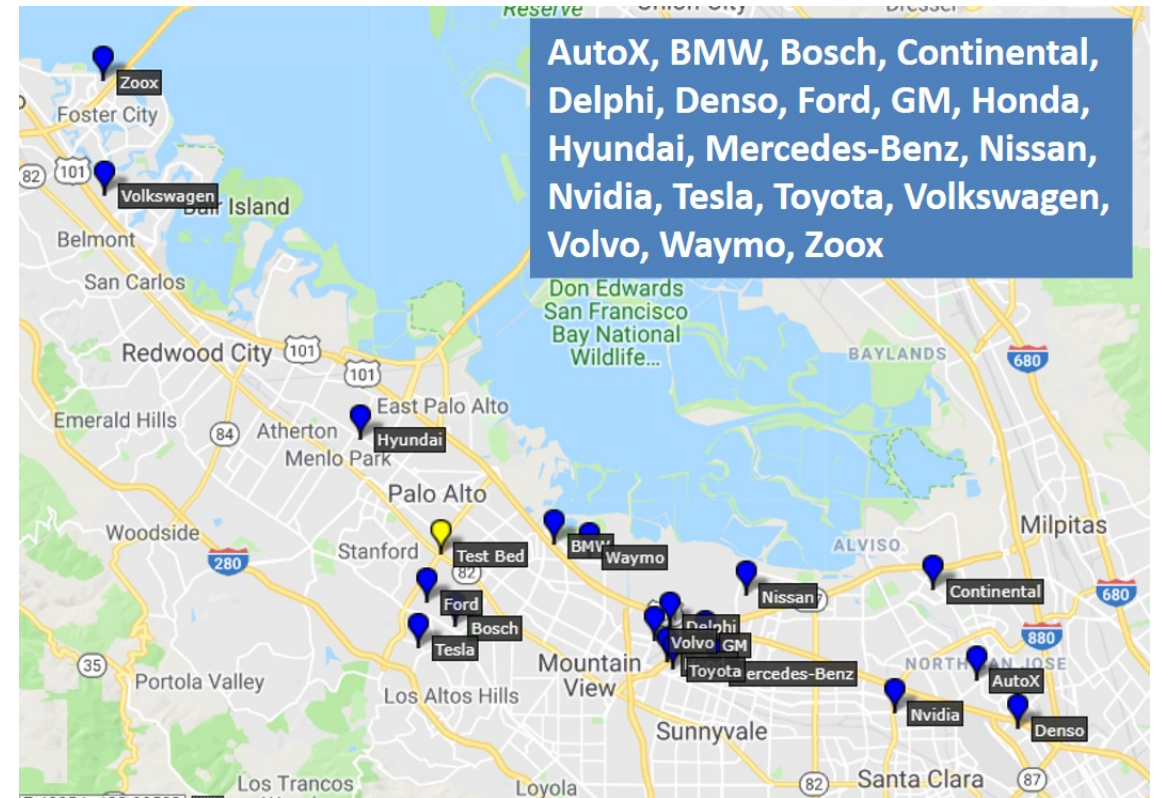5. Formal partnerships with industry (3)
6. Coordination of CAV within state DOT (3)
7. CAV Strategic Plan (3, MI, VA, PA)
8. Coordination across state agencies – Advisory Body (2)

California Connected Vehicle Test Bed
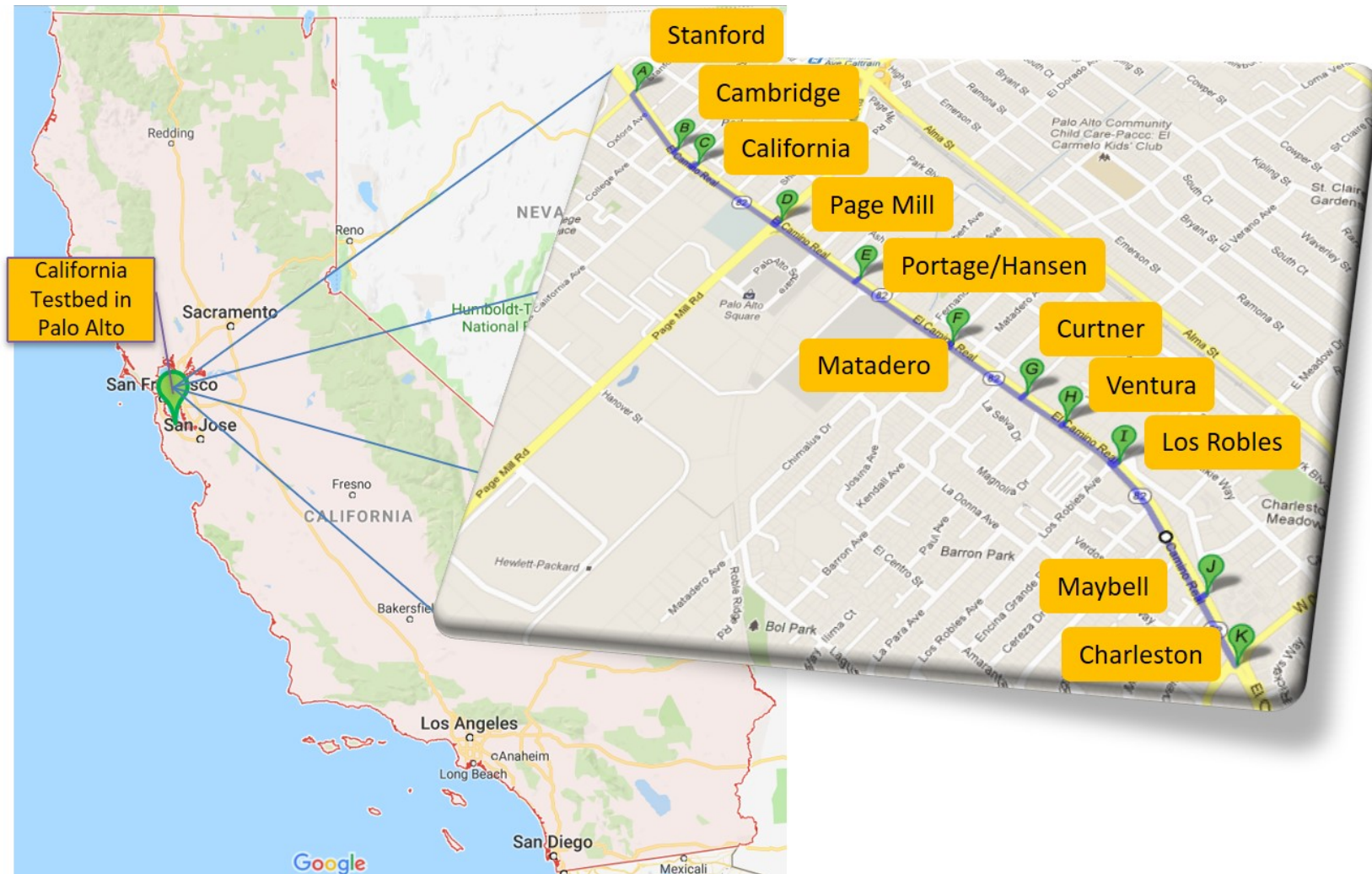
California Connected Vehicle Test Bed (Cont'd)

- First-in-the-nation (2005) facility for testing CV applications using DSRC on public roads

- Located in the heart of Silicon Valley

- Near automobile R&D centers and AV tech companies in Silicon Valley

- Major upgrades
  - V3.1 RSUs in 2013
  - V4.1 RSUs in 2018 (support SCMS)

- 4G/LTE backhaul at every intersection

AutoX, BMW, Bosch, Continental, Delphi, Denso, Ford, GM, Honda, Hyundai, Mercedes-Benz, Nissan, Nvidia, Tesla, Toyota, Volkswagen, Volvo, Waymo, Zoox

San Diego Regional AV Proving Ground

- Facilitate testing and validation of CAV technologies while ensuring public safety and security

- Inform public policy and long-range planning that guides deployment in support of the region's goals for mobility, sustainability, and economic prosperity

Figure 1
San Diego Regional Proving Grounds
December 2016

California AV Regulation Update

- As of September 1ˢᵗ, 2018
  - 60 Manufacturer Testing Permits (57 Active)
  - 597 Vehicle Permitted for operations on Public Roads
  - 1985 Test Drivers
  - 96 Collisions Reported
- AV testing regulations for testing with a driver were adopted on May 19, 2014 and became effective on September 16, 2014 (level 0-3)
- February 26, 2018, the Office of Administrative Law (OAL) approved the driverless testing and deployment regulations, and become effective on April 02, 2018 (all levels)
- Currently working on commercial vehicle regulations
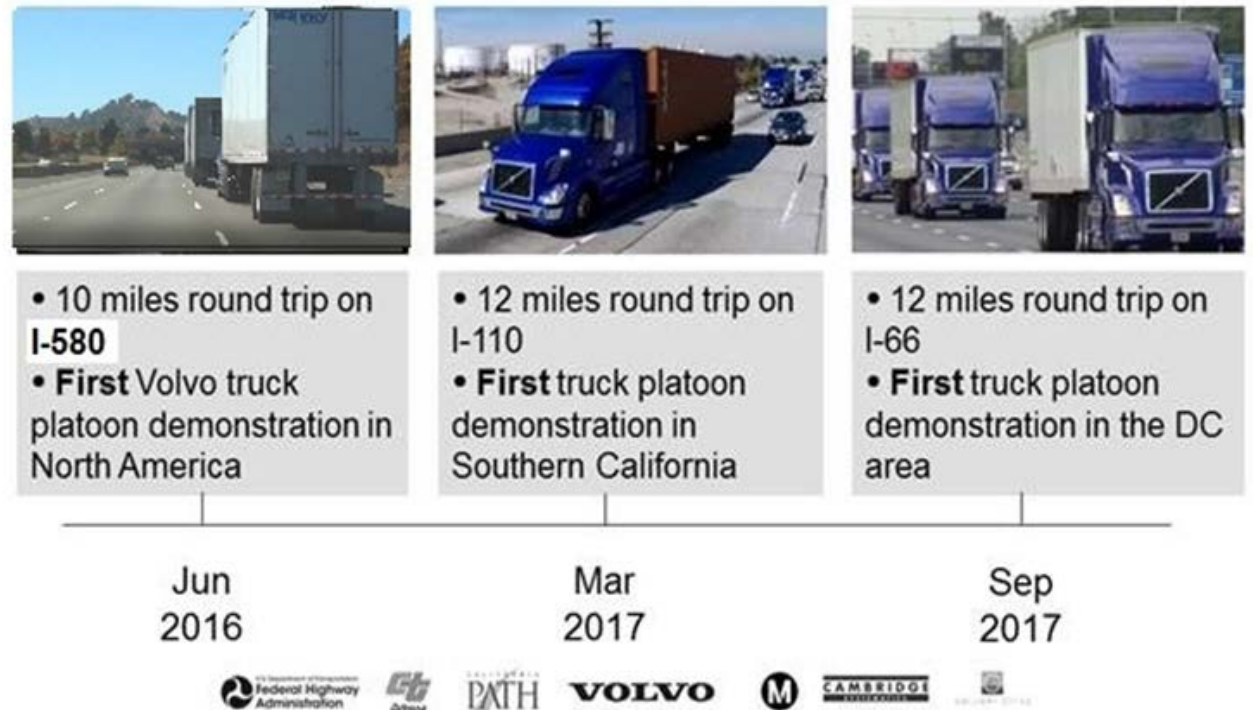
California CAV Strategic Planning Activities

- California CAV Strategic Planning Framework (ongoing)
  - Provides guidance for CAV Preparation and Deployment and a foundation for full CAV Strategic Plan
  - Being developed by PATH and CAVita
  - Internal CAV Workshop to gather input (tentative)
  - White Paper to summarize findings from other states and recommendations for near-term actions
- California CAV Strategic Plan (planned for 2019)
  - Builds on CAV Planning Framework
  - Funding has been secured for FY 2018-19
  - Currently being scoped
- AV Visioning Group
  - Meets every other month at DMV to discuss AV activities
  - Includes Caltrans, DMV, CalSTA, CHP, PUC and Governor's Office of Traffic Safety

AV Industry Survey of Infrastructure Needs

- Currently funded and planned for FY18-19

- Being conducted by PATH

- Goal is to gather input from AV Industry on infrastructure improvements and modifications that are needed to improve AV performance

- Tasks
  - Conduct survey of industry outreach efforts to date
  - Caltrans host AV Summit in early 2019 (tent.) to solicit input from industry
  - PATH conduct follow-up interviews with up to 20 AV companies (OEMs, Tier 1s, technology developers, mobility service providers, start-ups, etc.)
  - Develop report with recommendations for infrastructure improvements

Truck Platooning

- Caltrans, PATH and Volvo recently completed a FHWA-funded research project that developed and demonstrated a 3-truck platoon using CACC
- Potential benefits include fuel savings of 5-13% at gaps of 0.6 – 1.8 secs
- Caltrans and the I-10 Corridor Coalition are supporting a PATH/Volvo proposal for a new FHWA project that will deploy and assess truck platooning in an operational setting

- 10 miles round trip on I-580
- **First** Volvo truck platoon demonstration in North America

- 12 miles round trip on I-110
- **First** truck platoon demonstration in Southern California

- 12 miles round trip on I-66
- **First** truck platoon demonstration in the DC area

Jun 2016

Mar 2017

Sep 2017

Opportunities for CAV Leadership in CA - examples

- Deployment of CAV
  - Conduct pilots, collect data and form partnerships
  - Support AV testing and operations
- Interaction with AV industry
- Greater digital capability in infrastructure (V2X, mapping, etc.)
- Asses readiness of infrastructure for AV
- CAV strategic plan based on local interests and knowledge