Delaware Connected and Autonomous Vehicles

November 16, 2017
Department Wide Look

- Nearly every DelDOT division will be effected and has a role in the developing CAV conversation
  - Passenger vs. Driver
  - Narrower lanes
  - More capacity
  - ITMS

- DelDOT formed an internal committee with every division represented
  - Held first meeting in December 2016
  - 1/4ly meetings
  - Purpose, begin the discussion and understand everyone’s role within the Department
    - Understand what each division has been working on toward CAV
    - CAV is too big to develop in a silo
    - Identify any barriers to CAV in Delaware

- Ensure we create an environment in DE that opens the door for this quickly evolving...life-changing technology
How is DelDOT Unique?

- Owns 90% + of roads
- Owns most traffic signals
- Operates the transit system
- Operates the tolls
- Truly multimodal
- Integration of planning and operations
What is an Autonomous Vehicle?

SAE AUTOMATION LEVELS

0  No Automation
   Zero autonomy, the driver performs all driving tasks.

1  Driver Assistance
   Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.

2  Partial Automation
   Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.

3  Conditional Automation
   Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.

4  High Automation
   The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.

5  Full Automation
   The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Automated Driving Systems 2.0: A Vision For Safety
Integrated Transportation Management System
Three Critical Functions of ITMS

**Monitoring**
- Did the tow truck arrive?
- Have conditions changed?

**Control**
- Adjust traffic signals to manage the detour route
- Staff on scene to control traffic

**Information**
- Is the public informed?
- Have conditions changed?
Integration of Operations and Planning
DeIDOT ITMS Strategic Plan

- 2017 update to the ITMS Strategic plan
- Addresses Connected and Autonomous Vehicles
Smart Delaware: The Next Phase of ITMS
Ongoing Projects

- Connected Vehicle Enabled Weather Responsive Traffic Management (CV-WRTM)
- US 13 Technology Proving Ground
- Signal Phasing and Timing (SPaT) Challenge
- Machine Learning/Artificial Intelligence – Automating TMC Operations
- Dilemma Zone
DMV’s Role

- Currently no law or regulation to prevent or enable the operation of a CAV in Delaware
  - As we progress through this process, that will be an area of focus
- The CAV conversation is rightfully a vehicle centered conversation
  - Historically the federal government has taken the lead a responsibility for regulating vehicle safety at the manufacturer level
  - States focus on the operation of those vehicles and ensuring they continue to operate safely
- Can’t lose sight of the driver impact of CAVs
  - Will we need new levels of graduated driver licenses?
  - Specialized training?
DMV’s Role

- The transition from now to a world where CAVs are common place will be the most challenging
  - Driver skills needs will vary depending on the level of automation
  - Driver trust of CAVs sharing the road will require time and education
  - DMV’s regulatory responsibilities will evolve

- We remain engaged in the national conversation
  - Active members of AAMVA
  - Chief of Vehicle Services is a sitting member of the Autonomous Vehicles Information Sharing Group