

MEETING NOTES

Iowa Advisory Council on Automated Transportation (ATC) Public Safety & Enforcement (PS&E) Subcommittee Meeting

Wednesday, June 9, 2021

10:00-11:00 am CT

Action Items:

- Colonel Fulk to work with Gary McCarthy and TuSimple to have Iowa representation in TuSimple's stakeholder discussions, advancing Law Enforcement Interaction Plans (LEIP) and best practices in automated vehicle crash data and crash reconstruction.
- Adam Shell and Dan McGehee to connect with Gary McCarthy on TuSimple's safety driver training processes

1. Welcome and introductions – Col. Nathan Fulk, Public Safety & Enforcement Subcommittee Chair

a. Attendees – 30 attendees

- Colonel Nathan Fulk – Iowa State Patrol (Public Safety & Enforcement Chair)
- Gary McCarthy - TuSimple
- Stephan Bayans – Iowa Department of Public Safety
- Chuck McNally, Mark Stine – Iowa State Patrol
- Bruce Anderson – Iowa Automobile Dealers Association
- Carl Lingen – Iowa Public Transit Association
- Mark Wyatt – Iowa Bicycle Coalition
- Shirley McGuire – Federal Motor Carrier Safety Administration
- Meredith Mitts – AAA The Auto Club Group - Minnesota/Iowa
- Neal Hawkins, Skylar Knickerbocker, Theresa Litteral, Zach Hans – Iowa State University
- Dan McGehee, Omar Ahmad, Jacob Heiden – University of Iowa, National Advanced Driving Simulator
- Adam Shell, Dave Lorenzen, Andy Lewis, Peggi Knight, Sam Sturtz, Steve Stonehocker, Dennis Kleen, Alex Jansen, Ashley Hochberger, Josh Halterman, Susan Fenton, Clayton Burke, Tom Bruun – Iowa DOT

b. New membership

- Mark Wyatt (Executive Director, Iowa Bicycle Coalition)
- Chief Ryan Ridout (Motor Vehicle Enforcement, Iowa DOT)
- Ashley Hochberger (Safety Planner, Traffic & Safety Bureau – Iowa DOT)

2. A Better Path Forward - Gary McCarthy, Senior Manager of Fleet Safety and Law Enforcement Interaction at TuSimple

- a. TuSimple is a global autonomous driving technology company headquartered in San Diego, with operations in several states and countries. They are developing commercial-ready automated driving solutions for long-haul heavy-duty trucks, and they were the first autonomous trucking company to go public on the stock market.
- b. TuSimple is planning expansion across the US. TuSimple teamed with Navistar to produce trucks that will operate on an autonomous freight network. The terminals in the freight network are strategically placed so their trucks can stop there instead of traditional truck stops. Current plans have expansion reaching Jacksonville, Florida in 2022-2023 and then more cities the following year, including cities in the northern part of the country. This northern part of the country, including Iowa, will be the final phase of expansion because TuSimple trucks still have difficulties in snow and ice, and this additional time allows proper testing and development before deployment.
- c. Automated trucks will be bigger, longer, and heavier than traditional cars, and they will need to rely on systems and sensors for safe commercial operations. Some current SAE Level 2 automated cars use

systems that can see objects 250 meters away. Automated commercial trucks will need more range, and TuSimple has developed a system that can see up to 1000 meters on flat roads under certain conditions, allowing the system to diligently see more, process more, react faster, and maintain efficiency.

- d. TuSimple's solution relies on a system of radar & lidar sensors and cameras providing 360 degrees of awareness. The automated trucking system processes these data allowing the virtual driver to know exact location and how to respond quickly and effectively. TuSimple's truck has the potential to operate safely in nearly any market and on any street or highway while following regulations and blending with traffic flows.
- e. TuSimple is still researching and evaluating how their trucks operate in adverse weather conditions. The truck encountered high wind speeds (50-60 mph) during initial tests in Arizona, and it was able to maintain autonomy. They also test on an eight-mile testing track before moving to on-road testing.
- f. 10% of the nation's trade corridors account for moving nearly 80% of all goods. TuSimple's trucks will need good roads with good lane markings. TuSimple has digitally mapped the roads they'll be operating on so there won't be a need for state DOTs to install new sensors or hardware. TuSimple's advisory board includes former politicians and executives of other companies. This collaborative approach will help them advance best practices to find a solution for middle-mile deliveries while closing the gap on a driver shortage.
- g. Today TuSimple ships freight on autonomous trucks for customers like UPS, USPS, McLane, and U.S. Xpress in three states. Safety standards for these companies are exceptional, and TuSimple has proven to meet these standards. TuSimple values their communication with state DOTs and law enforcement officers across the country to share information and establish best practices. This is a proactive safety approach instead of a reactive approach. TuSimple is also working with other vendors and associations on how to best incorporate other automotive technologies (Drivewise, Prepass, etc.) into their system and with law enforcement.
- h. TuSimple's safety driver is in the cab of the vehicle for on-road testing, and they will take control in unforeseen situations like weather, crashes, work zones, and even when law enforcement officers are directing traffic. TuSimple's safety driver training processes aren't public at this point, but there is a possibility to discuss details. Drivers are hired based on strict safety standards. Most TuSimple testing has been surface streets like interstates, highways, and main arterials. These trucks won't operate on all roads and will only operate in certain areas that they have mapped.
- i. Current commercial driver behaviors when passing other trucks can create mobility and safety issues due to governed speeds. TuSimple's truck can adjust speed based on the vehicles around it to create ideal gaps. TuSimple has had two collisions where their video has helped law enforcement facilitate the investigation. Gary is happy to work with Iowa on crash data forms and accident reconstruction.

3. Legislation and Technology Update - Adam Shell

- a. Automated Driving Systems (ADS) rulemaking has been published as an intended action. The next step is presenting the rules to the administrative rules committee: [Public Notice of Proposed Rules for a Motor Vehicle Operated by an ADS](#)
- b. Iowa has adopted Personal Delivery Devices (PDD) legislation this session: [House File 304](#). The bill was signed by the Governor on May 20, 2021. The bill states PDDs can operate at no more than 550 pounds, the PDD can operate in pedestrian areas and on roads less than 40 mph, and local cities and counties can limit the use of PDDs in jurisdictions. PDDs are excluded from the definition of a vehicle, and they aren't subject to registration and other vehicle-specific laws. Iowa DOT formed an internal PDD working group including Traffic Operations, Traffic & Safety, and System Planning bureaus. Intelligent Transportation Society of America ([ITS America](#)) created a PDD task force. American Association of Motor Vehicle Administrators (AAMVA) released the [Automated Delivery Vehicles and Devices Whitepaper](#).
- c. Iowa has had roadway maintenance & operations challenges involving Advanced Driver Assistance Systems (ADAS). Recent incidents include a crash on I-35 & I-80 involving an officer in the Des Moines metro, a Cedar Rapids metro crash involving a maintenance vehicle equipped with a crash attenuator,

and another crash in Jasper County on I-80. Many times, drivers involved in a crash involving ADAS will say they were over-reliant with the technology. There are opportunities for stakeholder alignment & coordination as well as driver education involving ADAS. Iowa worked with VSI Labs's automated vehicle to drive in a work zone on I-80. The vehicle was able to capture initial automated vehicle data in the work zone that will help inform AV development and deployment in the future.

4. PS&E Subcommittee Work Plan & Tactical Actions

- a. Various changes have happened in the work plan based on new people joining and others leaving roles. The leads for the tactical actions are based on specific agencies and expertise, and these individuals will lead work and collaborations in these efforts moving forward. The work plan is a living document that will be updated and adjusted as needed and as tactical priorities shift.
- b. Iowa formed an Automated Vehicle Crash Data and Incident Reporting working group to define best practices for capturing crash data and to align with the forthcoming Model Minimum Uniform Crash Criteria (MMUCC) update process. The working groups consists of Col. Nathan Fulk & Trooper Chuck McNally of the Iowa State Patrol and Dennis Kleen, Josh Halterman, and Adam Shell of Iowa DOT.
- c. Iowa is working on Law Enforcement Interaction Plan (LEIP) and Law Enforcement Protocols (LEP). LEIPs are plans by industry for law enforcement to describe how to interact with the automated vehicle and how to contact the company. LEPs are by law enforcement and for law enforcement with specific guidelines and policy for law enforcement and first responders. Iowa is aligning with both National Highway Traffic Safety Administration (NHTSA) [Voluntary Safety Self-Assessment](#) (VSSA) and [AAMVA ADS Guidelines](#). Iowa has also used Arizona's LEP as a resource.

5. Open Discussion – All subcommittee members

- a. Iowa DOT has seen a few instances of drivers using the ADAS beyond the systems of their limit. [Partners for Automated Vehicle Education \(PAVE\)](#) and [MyCarDoesWhat](#) are good resources to educate public, industry, and academia. Surveys show drivers are getting more familiar with the technology, but there is still a likelihood that drivers may use the technology as an excuse when a crash occurs even if it's due to their own inattentiveness.
- b. NHTSA is looking ahead and discussing how to regulate remote drivers of automated vehicles. Remote drivers should still have similar standards of a traditional driver as it relates to being overworked, being impaired, etc. AV remote drivers will have regulations to ensure these standards are being met.

6. Information and key upcoming dates

- a. Iowa AT Council Meeting - Late Summer or Early Fall 2021
- b. International Association of Chiefs of Police (IACP) - September 2021

ATC SUBCOMMITTEE MEETING

Public Safety &
Enforcement
June 9, 2021



Automated drive

Destination: 50° 43' 50.34" N - 6° 10' 55.294" E
Arrival: 08:55 pm - Distance 783 miles

TCP/IP: 192.56.327.684.1
SYNC: **enabled** | Sensors: **active** | Cameras: **active**

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MEETING AGENDA

1. Welcome – Col. Nathan Fulk, Iowa State Patrol (PS&E Subcommittee Chair)
 - a. New Membership
 - i. Mark Wyatt (Executive Director, Iowa Bicycle Coalition)
 - ii. Chief Ryan Ridout (Motor Vehicle Enforcement, Iowa DOT)
 - iii. Ashley Hochberger (Safety Planner, Traffic & Safety Bureau – Iowa DOT)
2. A Better Path Forward – Gary McCarthy, Senior Manager – Fleet Safety and Law Enforcement Interaction at TuSimple (30 minutes)
3. Legislation and Technology Update - Adam Shell (10 minutes)
 1. Iowa ADS Rulemaking
 2. Personal Delivery Devices (PDDs) – Legislation & Technology Overview
 3. Roadway Maintenance & Operations Challenges involving ADAS
4. PS&E Subcommittee Work Plan & Tactical Actions – (15 minutes)
 - a. Work Plan Updates - Adam Shell
 - b. AV Crash Data and Incident Reporting (AV Crash Data Working Group) - Col. Nathan Fulk
 - c. Law Enforcement Interaction Plan (LEIP) & Law Enforcement Protocol (LEP) Update - Col. Nathan Fulk
5. Open Discussion – All subcommittee members (5 minutes)
6. Information and key upcoming dates
 - a. Iowa AT Council Meeting - Late Summer or Early Fall 2021
 - b. International Association of Chiefs of Police (IACP) - September 2021

WELCOME AND INTRODUCTIONS

Col. Nathan Fulk –
Public Safety & Enforcement
Subcommittee Chair





A BETTER PATH FORWARD

Gary McCarthy

Senior Manager – Fleet Safety
and Law Enforcement
Interaction at TuSimple



TuSimple Inc.

Iowa Advisory Council on Automated Transportation Meeting

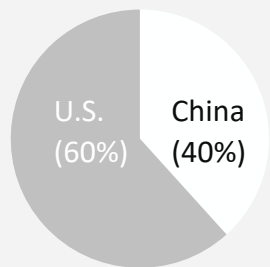
A Better Path Forward

Gary McCarthy

June 9, 2021

Who We Are

Employee Distribution



In the U.S. **569**

In China **316**

Source Date: March 01, 2021



Global Operations for a Global Solution



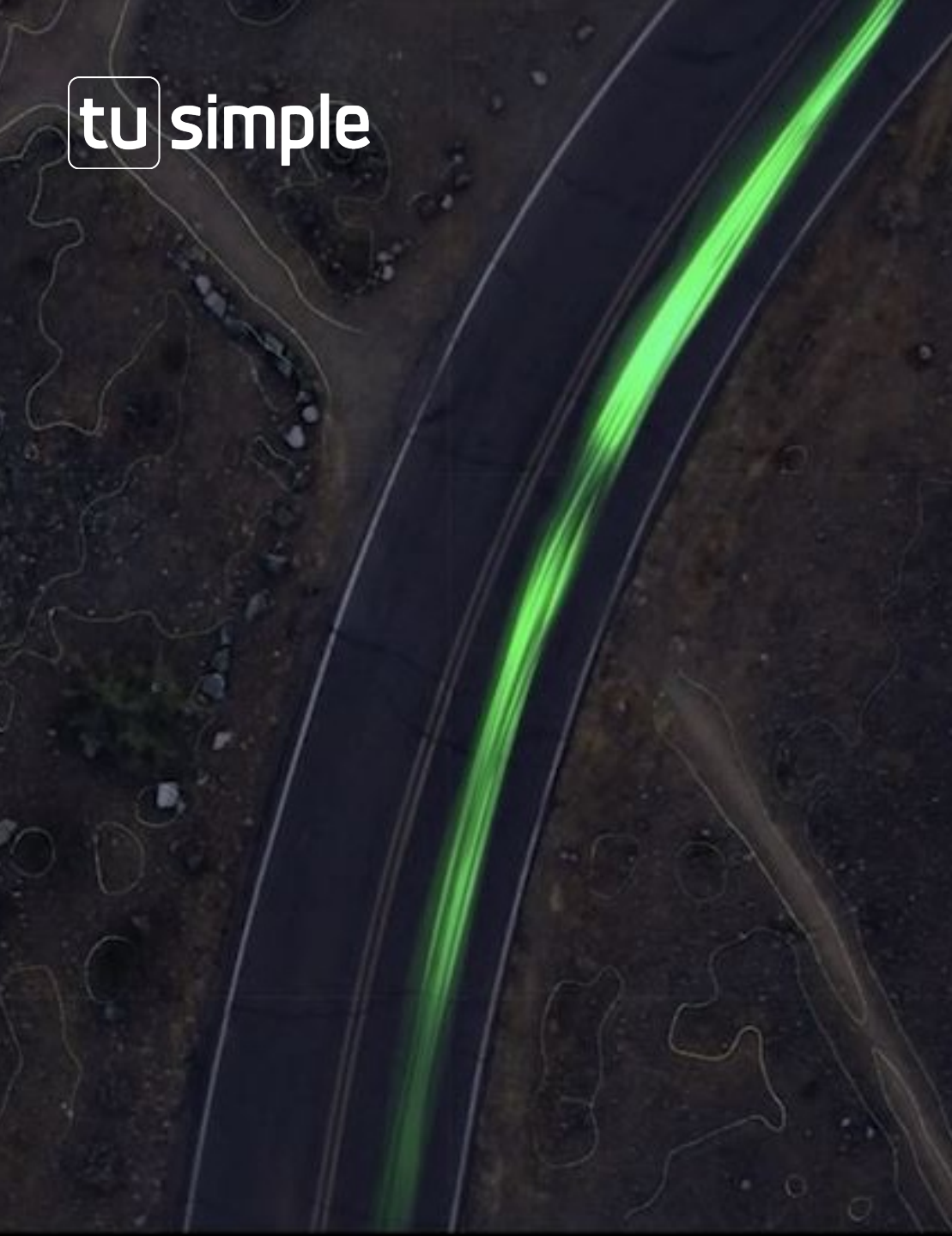
Introduction

TuSimple is a global autonomous driving technology company, headquartered in San Diego, California with operations in Arizona, Texas, China, Japan, and Europe. Founded in 2015, TuSimple is developing a commercial-ready Level 4 (SAE) fully autonomous driving solution for long-haul heavy-duty trucks. TuSimple aims to transform the \$4.0 trillion global truck freight industry through the company's proprietary leading autonomous vehicle technology which makes it possible for trucks to see 1,000 meters away, operate nearly continuously while using 10% less fuel than trucks on the road today. For more information, please visit www.tusimple.com

Shipping Partners

Today we ship freight on autonomous trucks across three states for customers like **UPS**, **USPS**, **McLane** and **U.S. XPRESS**





Law Enforcement and DOT Overview



Law Enforcement & DOT Stakeholders

- California Highway Patrol and MVD
- Arizona DPS and ADOT
- New Mexico State Police and NMDOT
- Texas DPS and TXDOT
- Alabama Highway Patrol and Trucking Association
- Florida Highway Patrol and FLDOT
- Nevada Highway Patrol
- North Dakota Highway Patrol
- Michigan State Police
- Minnesota Highway Patrol
- Oklahoma DOT and Highway Patrol
- Tennessee Highway Patrol

Sharing information with stakeholders & law enforcement creates conversations and establishes best practices moving forward.

Thank You

TuSimple, A Better Path Forward



LEGISLATION & TECHNOLOGY UPDATE

Adam Shell

LEGISLATION & TECHNOLOGY UPDATE

Automated Driving Systems (ADS) Rulemaking

- Public Notice of Proposed Rules for a Motor Vehicle Operated by an ADS: <https://www.legis.iowa.gov/docs/aco/arc/5621C.pdf>

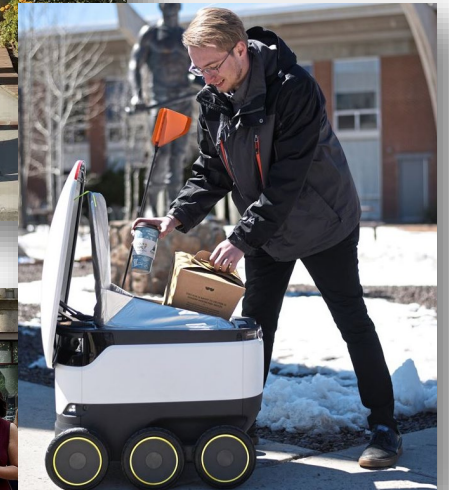
Personal Delivery Devices (PDD) Legislation

- House File 304 - <https://www.legis.iowa.gov/legislation/BillBook?ga=89&ba=HF304>
- Signed May 20th, 2021
- State & National Coordination & Related Resources
 - Iowa DOT Internal PDD Working Group
 - [ITS America](#) PDD Task Force
 - AAMVA Automated Delivery Vehicles and Devices Whitepaper - <https://www.aamva.org/AutomatedDeliveryVehiclesAndDevicesWhitepaper-May2021/>

Amazon Scout



Starship Robot



ROADWAY MAINTENANCE & OPERATIONS CHALLENGES INVOLVING ADAS

Advanced Driver Assistance Systems (ADAS)

Recent incidents

- I-35 & I-80 crash involving an officer in the Des Moines metro
- Cedar Rapids metro crash involving a maintenance vehicle equipped with a crash attenuator
- I-80 Jasper County (near Colfax, IA – MM 153) crashes

Opportunities & Next Steps

- VSI Labs, work zone automated drive
- Stakeholder Alignment & Coordination
- Driver Education involving ADAS

VSI Labs Vehicle Fleet



Lane Algorithm Tracking overlaid on video (screenshot)



PUBLIC SAFETY & ENFORCEMENT WORK PLAN & TACTICAL ACTIONS

Work Plan Updates- Adam
Shell

AV Crash Data and Incident
Reporting (AV Crash Data
Working Group)- Col. Nathan
Fulk

Law Enforcement Interaction
Plan (LEIP) & Law
Enforcement Protocol (LEP)
Update - Col. Nathan Fulk



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PS&E SUBCOMMITTEE WORK PLAN UPDATES

1.2 Tactics Summary Table

	Deliverables	Lead(s)	Resources	Scenarios	Timeline
Capture AV Crash Data	Revised TraCS form and DB Coordinate with the MMUCC update and align with NLETS	AV Crash Data Working Group	Stakeholder engagement, technical staff to revise the TraCS database	TBD (dependent on resources and priorities)	TBD (recurrent agenda item)
Explore Vehicle Automation Indicators	List of potential AV indicators Reconnaissance and recommendations	Dan McGehee	Analysis of existing guidance	Compromise on indicators	TBD
Develop Following Distance Guidelines	Best practice synthesis Guidelines for enforcement	Captain Mark Stine & Asst. Chief Tom Bruun	Stakeholder engagement w/ law enforcement, analysis of existing guidance	Dependent on experience with changed law	TBD
Address VRU Safety	Align with the bike and ped community Addressed in SHSP update and other modal plans	Ashley Hochberger & Mark Wyatt	Staff time and dedication to updating SHSP	N/A	On-going
Inform TIM and Safety Community	Presentation	DOT & DPS	Outreach to the Statewide TIM Committee	N/A unless major AV incident occurs	On-going
ODD Compliance	(in development)	DOT	TBD	TBD	TBD
Pursue AAMVA Recommendations	Assess / adopt PS&E-specific recommendations	Col. Nathan Fulk	Staff Time and coordination with industry	TBD	TBD

PUBLIC SAFETY & ENFORCEMENT WORK PLAN & TACTICAL ACTIONS

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AV CRASH DATA AND INCIDENT REPORTING

- Purpose: Define best practices for capturing AV crash data and incident reporting
- Align with forthcoming Model Minimum Uniform Crash Criteria (MMUCC) update process
- AV Crash Data Working Group
 - Col. Nathan Fulk (Iowa State Patrol) (Lead)
 - Trooper Chuck McNally (Iowa State Patrol)
 - Dennis Kleen (Systems Admin. Bureau, Motor Vehicle Division, Iowa DOT)
 - Josh Halterman (TraCS, Systems Operations Division, Iowa DOT)
 - Adam Shell (Traffic Operations Bureau, Systems Operations Division, Iowa DOT)

PUBLIC SAFETY & ENFORCEMENT WORK PLAN & TACTICAL ACTIONS

Work Plan Updates- Adam
Shell

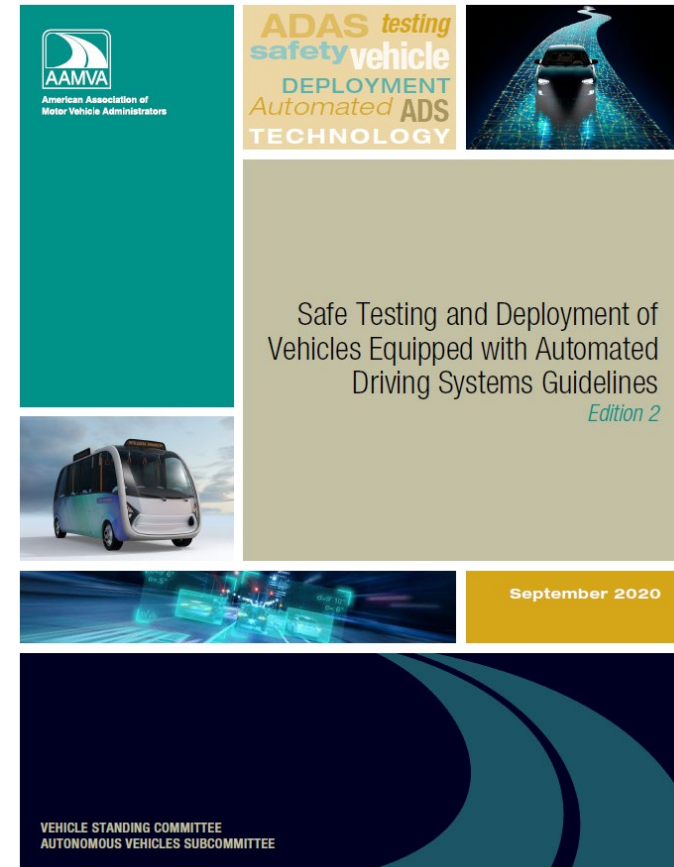
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**Law Enforcement Interaction
Plan (LEIP) & Law
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LAW ENFORCEMENT INTERACTION PLAN (LEIP) & LAW ENFORCEMENT PROTOCOL (LEP) UPDATE

- Differences
 - LEIP (by Industry for LE)
 - LEP (by LE for LE)
- Align with VSSAs ([NHTSA](#))
- AAMVA Guidance ([link](#))
- Arizona LEP



OPEN DISCUSSION



INFORMATION AND KEY UPCOMING DATES

Next ATC Meeting

- Iowa AT Council Meeting - Late Summer or Early Fall 2021
- International Association of Chiefs of Police (IACP) - September 2021



THANK YOU