# Overview of Law Enforcement and First Responder Interaction Plans for Automated Driving Systems (ADS)

FHWA Traffic Incident Management Webinar January 26, 2022

Anita Kim
Technology Policy and Innovation
U.S. DOT Volpe Center



#### **Disclaimer**

Statements made during this presentation are opinions of the speaker and do not represent official positions or policies of the U.S. Department of Transportation.



# **U.S. DOT Volpe Center**

- Part of the U.S. Department of Transportation
- Over 500 transportation experts
- Multimodal and cross-disciplinary expertise
- Work across the U.S. DOT and with other Federal agencies, and the broader transportation community



Source: Volpe Center

### **Overview**

- Companies continue to test and operate their ADS-equipped vehicles on public roads
- Several have developed law enforcement and first responder interaction plans
- Some states require submission of plans prior to testing
- Variability in plans/approach
- Some common elements across plans



# **Examples of Industry Developed ADS Interaction Plans for First Responders and Law Enforcement**

Company	Documents and Links
Cruise	Driverless Deployment Program Guidance for First Responders Quick Reference Guide and Video <a href="https://www.getcruise.com/firstresponders">https://www.getcruise.com/firstresponders</a>
Nuro	Law Enforcement Interaction Plan <a href="https://www.nuro.ai/first-responders">https://www.nuro.ai/first-responders</a>
Waymo	Emergency Response Guide and Law Enforcement Interaction Protocol <a href="https://waymo.com/firstresponders/">https://waymo.com/firstresponders/</a>
AVSC	Automated Vehicle Safety Consortium (AVSC) Best Practice for First Responder Interactions with Fleet-Managed Automated Driving System-Dedicated Vehicles <a href="https://avsc.sae-itc.org/principle-5-5471WV-45187C7.html">https://avsc.sae-itc.org/principle-5-5471WV-45187C7.html</a>



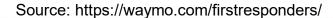
# Waymo Emergency Response Guide and Law Enforcement Interaction Protocol

#### **Sample of Characteristics**

- 24/7 Hotline for First Responders
- Information on vehicle capabilities and Operational Design Domain
- Instructions on:
  - Identifying its vehicle
  - How to disable the vehicle and the ADS
  - Towing, fire suppression, extrication
  - Disabling electric power and location or power sources
  - Ensuring vehicle does not drive autonomously
  - Post-incident handling



Source: Volpe Center



### **Nuro Law Enforcement Interaction Plan**

#### **Sample of Characteristics**

- Dedicated Emergency Hotline
- Remote Operations Specialist
- Instructions on:
  - Identifying both of its vehicle (R2 and Prius)
  - How to pull over the vehicle
  - Towing and fire suppression
  - Disabling electric power
- Crash response instructions vary by vehicle type
  - E.g., For Prius, Safety Operator will disengage system and manually pilot car to safe stop
  - For R2, call Hotline, chock wheels, wait for Nuro Team Member assistance



Source: https://www.nuro.ai/media-kit

Source: https://www.nuro.ai/first-responders

### **Cruise Law Enforcement Interaction Plan**

#### **Sample of Characteristics**

- Critical Response Line and Incident Expert Team
- 24/7 OnStar functionality
- Information on vehicle capabilities
- Information on Operational Design Domain (ODD)
- Instructions on:
  - Identifying its vehicle
  - Determining if vehicle is in autonomous mode
  - Towing
  - Disconnecting high voltage battery and airbags
  - Cut points and extrication
  - How to approach vehicle when safety operator present/not present



Source: Volpe Center

Source: https://www.getcruise.com/firstresponders



#### **Related Efforts**

- Automated Vehicle Safety Consortium (AVSC) members are testing and developing ADS technologies. Developed best practices for first responder interactions with ADS, including discussion of:
  - Definitions of roles associated with emergency situations/processes
  - Descriptions of expected interactions (use cases)
  - Recommendations to address first responder and ADS interactions
  - Suggested elements for a First Responder Interaction Plan
- States: Pennsylvania Automated Vehicle Incident Response Plan
- NHTSA AV TEST Initiative tracking ADS testing, company information and law enforcement interaction plans <a href="https://www.nhtsa.gov/automated-vehicle-test-tracking-tool">https://www.nhtsa.gov/automated-vehicle-test-tracking-tool</a>



## **Discussion Starters for a Future Conversation**

- What are the information needs for first responders, law enforcement, and public safety communities?
- With thousands of public safety agencies, how do you scale the training and education?
- What are challenges with having multiple resources specific to each ADS technology?
- How can we better coordinate the various efforts on this topic?



# **Appendix**





#### SAE J3016™ LEVELS OF DRIVING AUTOMATION™

**Learn more here:** <a href="mailto:sae.org/standards/content/j3016\_202104">sae.org/standards/content/j3016\_202104</a>

Copyright © 2021 SAE International. The summary table may be freely copied and distributed AS-IS provided that SAE International is acknowledged as the source of the content.



SAE **LEVEL 1**™ SAE **LEVEL 2**™ SAE **LEVEL 3**™ SAE **LEVEL 4**™ SAE **LEVEL 5**™

What does the human in the driver's seat have to do?

You <u>are</u> driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering

You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety

When the feature requests,

you must drive

You <u>are not</u> driving when these automated driving features are engaged – even if you are seated in "the driver's seat"

These automated driving features will not require you to take over driving

Copyright © 2021 SAE International.

#### These are driver support features

These features are limited to providing warnings and momentary

These features
provide
steering
OR brake/
acceleration

These features
 provide
 steering
 AND brake/
 acceleration

#### These are automated driving features

These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met

This feature can drive the vehicle under all conditions

What do these features do?

