

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

FHWA Traffic Incident Management Webinar

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Disclaimer

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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 https://www.getcruise.com/firstresponders |
| Nuro | Law Enforcement Interaction Plan https://www.nuro.ai/first-responders |
| Waymo | Emergency Response Guide and Law Enforcement Interaction Protocol https://waymo.com/firstresponders/ |
| AVSC | Automated Vehicle Safety Consortium (AVSC) Best Practice for First Responder Interactions with Fleet-Managed Automated Driving System-Dedicated Vehicles https://avsc.sae-itc.org/principle-5-5471WV-45187C7.html |

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

Source: <https://waymo.com/firstresponders/>

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: <https://www.getcruise.com/firstresponders>



Source: Volpe Center

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 <https://www.nhtsa.gov/automated-vehicle-test-tracking-tool>

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: [sae.org/standards/content/j3016_202104](https://www.sae.org/standards/content/j3016_202104)

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| What does the human in the driver's seat have to do? | SAE LEVEL 0™ | SAE LEVEL 1™ | SAE LEVEL 2™ | SAE LEVEL 3™ | SAE LEVEL 4™ | SAE LEVEL 5™ |
|--|---|--------------|--------------|--|--|--------------|
| | 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 <u>are not</u> driving when these automated driving features are engaged – even if you are seated in “the driver’s seat” | | |
| | 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 | These automated driving features will not require you to take over driving | |

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These are driver support features

| | | |
|---|--|---|
| These features are limited to providing warnings and momentary assistance | These features provide steering OR brake/acceleration support to | These features provide steering AND brake/acceleration support to |
|---|--|---|

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?