2019 Connected Vehicle and Automated Vehicle (CV/AV) Survey

1. Is your agency currently deploying Connected Vehicle technology? (Select one)
   1. Yes
   2. No, but plan to deploy in the future
   3. No plans to deploy [SKIP TO Q6]
   4. Don't know/Not sure [SKIP TO Q6]

2. *[IF Q1= OPTION 2]* **When do you expect to deploy connected vehicle technology? (Select one)**
   1. Within the next 3 years
   2. In 3 to 6 years
   3. In 7 or more years
   4. Don't know/Not sure

3a. *[IF Q1= OPTION 1]* **Is your agency partnering with other entities to deploy connected vehicle technology? (Select all that apply)**
   Yes, public sector partner(s)
   Yes, private sector partner(s)
   Yes, college/university partner(s)
   Other partner(s) (please specify): _____
   No, not partnering *[EXCLUSIVE]*
   Don't know/Not sure *[EXCLUSIVE]*

3b. *[IF Q1=OPTION 2]* **Does your agency plan to partner with other entities to deploy connected vehicle technology? (Select all that apply)**
   Yes, public sector partner(s)
   Yes, private sector partner(s)
   Yes, college/university partner(s)
   Other partner(s) (please specify): _____
   No, not partnering *[EXCLUSIVE]*
   Don't know/Not sure *[EXCLUSIVE]*

[SHOW BASED ON RESPONSE TO Q1] In the next section, you are asked about whether your agency is [currently deploying or planning to deploy/planning to deploy] connected vehicle (CV) applications. You will see a selection of applications currently being tested in the field. For a complete listing of connected vehicle (CV) applications (including a brief description of each) visit the website: https://www.its.dot.gov/pilots/cv_pilot_apps.htm

4. CONNECTED VEHICLE APPLICATIONS

4a. *[IF Q1= OPTION 1 OR 2]* **For each of the following Vehicle to Infrastructure (V2I) Safety Applications, please indicate your agency's deployment status. (Select one response in each row)**

Red Light Violation Warning (RLVW)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Curve Speed Warning (CSW)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Stop Sign Gap Assist (SSGA)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Reduced Speed/Work Zone Warning (RSWZ)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Pedestrian in Signalized Crosswalk Warning (Transit)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Other V2I Safety Application (please specify): _____
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

4b. *[IF Q1= OPTION 1 OR 2]* **For each of the following Vehicle to Vehicle (V2V) Safety Applications, please indicate your agency's deployment status. (Select one response in each row)**

Emergency Electronic Brake Lights (EEBL)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Forward Collision Warning (FCW)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Intersection Movement Assist (IMA)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Left Turn Assist (LTA)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Blind Spot/Lane Change Warning (BSW/LCW)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Do Not Pass Warning (DNPW)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2*]
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Vehicle Turning Right in Front of Bus Warning (Transit)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Other V2V Safety Application (please specify): _____
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

4c. *[IF Q1= OPTION 1 OR 2]* **For each of the following Environment-focused CV Applications, please indicate your agency's deployment status. (Select one response in each row)**

Eco-Approach and Departure at Signalized Intersections
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Dynamic Eco Routing (light vehicle, transit, freight)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Other Environment-focused Application (please specify): _____
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

4d. *[IF Q1= OPTION 1 OR OPTION 2]* **For each of the following Mobility-related CV Applications, please indicate your agency's deployment status. (Select one response in each row)**

Intelligent Traffic Signal System (I-SIG)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Transit Signal Priority
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Freight Signal Priority
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Emergency Vehicle Preemption (PREEMPT)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Dynamic Speed Harmonization (SPD-HARM)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Queue Warning (Q-WARN)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Cooperative Adaptive Cruise Control (CACC)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Response, Emergency Staging, Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.) (e.g., Incident Scene Staging Guidance for Emergency Responders (RESP-STG), Incident Scene Work Zone Alerts (INC-ZONE), Emergency Communications and Evacuation (EVAC))
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Integrated Dynamic Transit Operations (IDTO) (e.g. Connection Protection (T-CONNECT), Dynamic Transit Operations (T-DISP), and Dynamic Ridesharing (D-RIDE))
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Freight-Specific Dynamic Travel Planning and Performance
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Other Mobility Application (please specify):_____
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

4e. *[IF Q1= OPTION 1 OR 2]* **For each of the following Other CV Applications, please indicate your agency's deployment status. (Select one response in each row)**

Agency Data Applications (e.g. probe data collection, CV-enabled data collection etc.)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Road Weather Warnings (e.g., Motorist Advisories and Warnings (MAW) and Motorist Advisories and Warnings (MAW) Enhanced Maintenance Decision Support System (MDSS))
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Smart Roadside (e.g. Wireless Inspection and Smart Truck Parking)
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

Other CV Applications (please specify): _____
1. Currently Deploying *[SHOW ONLY IF Q1= OPTION1]*
2. Planning to Deploy *[ASK IF Q1= OPTION 1 OR 2]*
3. NOT planning to deploy
4. Don't Know
5. Not Applicable

5a. *[IF Q1=OPTION 1 DEPLOY]* **Which of the following transportation objectives is your agency trying to achieve with the deployment of connected vehicle technology? (Select all that apply)**

Safety
    Decrease vehicle crashes
    Decrease pedestrian crashes
    Decrease bicycle crashes

Mobility
    Reduce travel time
    Reduce congestion
    Improve on-time performance of transit vehicles
    Improve travel time reliability
    Increase throughput

Environment
    Reduce emissions
    Reduce fuel use

Service
    Improve customer experience
    Improve accessibility
    Improve agency operations
    Reduce costs
    Increase ridership

    Other (please specify): _____
    Don't know/Not sure *[EXCLUSIVE]*
    None *[EXCLUSIVE]*

5b. *[IF Q1=OPTION 2 PLAN]* **Which of the following transportation issues objectives will your agency be trying to achieve with the deployment of connected vehicle technology? (Select all that apply)**

Safety
    Decrease vehicle crashes
    Decrease pedestrian crashes
    Decrease bicycle crashes

Mobility
    Reduce travel time
    Reduce congestion
    Improve on-time performance of transit vehicles
    Improve travel time reliability
    Increase throughput

Environment
    Reduce emissions
    Reduce fuel use

Service

    Improve customer experience

    Improve accessibility

    Improve agency operations

    Reduce costs

    Increase ridership

    Other (please specify): _____

    Don't know/Not sure *[EXCLUSIVE]*

    None *[EXCLUSIVE]*

6a. *[IF Q1=OPTION 1 or 2]* **Does your agency face any of the following major challenges in planning or deploying connected vehicle technology? (Select all that apply)**

Cost

    Cost of connected vehicle technology

    Cost of required updates to communications and/or physical infrastructure (e.g. communications networks, traffic signal controllers, etc.)

    Cost to operate and maintain connected vehicle technology

Technology

    Lack of information about connected vehicle technology

    Uncertainty about the information/communications technologies needed (e.g. DSRC vs. cellular)

    Too much technical risk; want to wait until technology and standards mature

    Uncertainty about the benefits of connected vehicles

    Data privacy issues (e.g. protection of Personally Identifiable Information)

    Cybersecurity issues

Institutional

    Partnership issues

    Procurement issues

    Limited funding (e.g., due to competition for funds with other transportation projects)

    Lack of support from leadership and decision-makers

Policy

    Lack of a regulatory framework

    Legal/policy/regulatory issues at the Federal level)

    Legal/policy/regulatory issues at the state or local level

Operations

    Lack of public acceptance of connected vehicles

    Worker acceptance issues (e.g., apprehension, confusion, or annoyance with technology; union issues, etc.)

    Lack of staff with the right qualifications/expertise

    Lack of support for long term operations and maintenance

    Integrating new technology with current systems

Data

    Data access issues

    Data storage issues

    Data governance concerns

    Other (please specify): _____

    Don't know/Not sure *[EXCLUSIVE]*

    None/No current challenges *[EXCLUSIVE]*

6b. *[IF Q1=OPTION 3 or 4]* **Does your agency see any of the following as major barriers to planning or deploying connected vehicle technology? (Select all that apply)**

Cost

    Cost of connected vehicle technology

    Cost of required updates to communications and/or physical infrastructure (e.g. communications networks, traffic signal controllers, etc.)

    Cost to operate and maintain connected vehicle technology

Technology

    Lack of information about connected vehicle technology

    Uncertainty about the information/communications technologies needed (e.g. DSRC vs. cellular)

    Too much technical risk; want to wait until technology and standards mature

    Uncertainty about the benefits of connected vehicles

    Data privacy issues (e.g. protection of Personally Identifiable Information)

    Cybersecurity issues

Institutional

    Partnership issues

    Procurement issues

    Limited funding (e.g., due to competition for funds with other transportation projects)

    Lack of support from leadership and decision-makers

Policy

    Lack of a regulatory framework

    Legal/policy/regulatory issues at the Federal level)

    Legal/policy/regulatory issues at the state or local level

Operations

    Lack of public acceptance of connected vehicles

    Worker acceptance issues (e.g., apprehension, confusion, or annoyance with technology; union issues, etc.)

    Lack of staff with the right qualifications/expertise

    Lack of support for long term operations and maintenance

    Integrating new technology with current systems

Data

    Data access issues

    Data storage issues

    Data governance concerns

Other (please specify): _____
Don't know/Not sure *[EXCLUSIVE]*
None/No current challenges *[EXCLUSIVE]*

7. *[ASK ALL]* **The US Department of Transportation is trying to understand agencies' readiness to deploy connected vehicle technology. For each of the following activities, please indicate your agency's current status. (Select one response per row)**

Planning
Conducted a connected vehicle planning study
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Included connected vehicle technologies and/or applications in agency planning documents (e.g., long range transportation plan, Strategic Highway Safety Plan, Transportation Improvement Program, etc.)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Instituted Memorandums of Understanding (MOUs) with potential partners regarding roles and resource commitments
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Developed Concept of Operations or initial Systems Engineering documents
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Demonstrations and Deployment
Updated your Regional ITS Architecture to include connected vehicle applications and interfaces
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Applied for a Federal grant to fund connected vehicle deployment (even if grant was not awarded)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Infrastructure

Secured CV test bed/testing facilities
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Engaged with USDOT's Equipment Loan and Help Desk program
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Built or upgraded your communications network (e.g. fiber optic network, wireless communications network
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Upgraded physical infrastructure (e.g., traffic signal controllers) for connected vehicles
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Updated lane markings and infrastructure to support accurate MAP message generation
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Implemented a security credential management system (SCMS)
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Applied for an FCC License to use 5.9 GHz frequency spectrum (Dedicated Short-Range Communication)
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Staffing/Organizational

Procured contractor support for connected vehicles technologies
   1. Underway or complete
   2. Not underway, but plan to
   3. No plans to
   4. Don't Know

Hired new staff with knowledge about connected vehicles
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

<u>Data Management</u>
Created a data management plan for collecting, storing, analyzing, reporting and protecting privacy of CV data
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

Created a data repository for storing CV data (e.g., cloud service, new data servers, etc.)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't Know

8a. *[ASK IF Q1=1 OR 2]* **What types of communication technologies does your agency currently use (or plan to use in the future) to support connected vehicle applications (vehicle-to-vehicle or vehicle-to-infrastructure)? (Select all that apply)**

Dedicated Short Range Communications (DSRC)
Cellular (5G or cellular V2X (CV2X))
Satellite
Other (please specify): _____
Don't know/Not sure *[EXCLUSIVE]*

8b. *[ASK IF Q1=1 OR 2]* **What types of communication technologies does your agency currently use (or plan to use in the future) to provide backhaul communications in support of connected vehicle infrastructure (e.g., Roadside unit to Transportation Management Center)? (Select all that apply)**

Fiber
Twisted Copper Pair
Cellular
Mobile or Fixed Satellite Services
Data Over Cable Modem
Digital Subscriber Line (DSL)
Microwave
Other (please specify): _____
Don't know/Not sure *[EXCLUSIVE]*

9. *[ASK ALL]* **Which of the response categories best describes your agency's usage and familiarity with each of the following? (Select one response per row)**

   Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT), encompasses former National ITS Architecture and Connected Vehicle Reference Implementation Architecture (CVRIA)
   1. Use
   2. Don't use, but familiar
   3. Not familiar

   Systems Engineering Tool for Intelligent Transportation (SET-IT)
   1. Use
   2. Don't use, but familiar
   3. Not familiar

   Regional Architecture Development for Intelligent Transportation (RAD-IT), formerly TurboArchitecture
   1. Use
   2. Don't use, but familiar
   3. Not familiar

   US and International Standards associated with CV and AV deployment (e.g. – SAE J2735, SAE J2945 Family, ISO 19091)
   1. Use
   2. Don't use, but familiar
   3. Not familiar

10. *[ASK ALL]* **What types of assistance or resources does your agency need to support a connected vehicle deployment? (Select all that apply)**

    Funding/Procurement
    Competitive grant funds
    Technology procurement information

    Evaluation Resources
    Best practices on connected vehicle deployments
    Evaluation methods and strategies
    Information on the benefits/return on investment
    Information/data on costs of connected vehicle technologies

    Training/Technical Assistance
    Training
    Education for decision-makers
    Education for the general public
    Technical assistance
    Information on institutional arrangements and agreements

    Legal/Regulatory/Policy
    Legal/regulatory/policy support at the Federal level
    Legal/regulatory/policy support at the State/local level

Other (please specify): _____

Don't know/Not sure *[EXCLUSIVE]*

None *[EXCLUSIVE]*

10a. *[IF YES TO ANY TRAINING/TECHNICAL ASSISTANCE]* **Please provide more detail on the type of training or technical assistance that would be most useful to you (be as specific as possible)**

_____

AUTOMATED VEHICLES/Automated Driving Systems

Automated Driving Systems (ADS) are a set of vehicle features that, when engaged, do not require a human to drive the vehicle. ADS refers to the Society of Automotive Engineers (SAE) International Automation Levels 3, 4, or 5, which are described as Automated Vehicles (AV) in this survey. Most of the ADS/AV testing done to date would be categorized as Level 3 or Level 4. For more information on SAE Levels of Automation, see:
https://www.sae.org/news/press-room/2018/12/sae-international-releases-updated-visual-chart-for-its-%E2%80%9Clevels-of-driving-automation%E2%80%9D-standard-for-self-driving-vehicles

11. Are there any automated vehicle tests or deployments that are being conducted or have been conducted in your region/state? (Please select one)

    1.   Yes (completed or in progress)

    2.   No *[SKIP TO 15]*

    3.   Don't know/Not sure *[SKIP TO 15]*

12. *[ASK IF Q11=OPTION 1]* **What is your agency's primary role in the automated vehicle testing or deployment? (Please select one)**

    1.   Agency is/was leading the automated vehicle testing

    2.   Agency is/was supporting the planning or execution of the automated vehicle testing

    3.   Agency is not involved in the automated vehicle testing

    4.   Other (please specify)

12a. *[IF Q12=OPTION 1 OR 2]* **Please describe your agency's activities with respect to automated vehicle testing:**

_____

13a. *[Q12 = OPTION 2]*: **What entity(ies) are/were leading the automated vehicle testing or deployment in your region/state? (Select all that apply)**

> Automakers or Original Equipment Manufacturers (OEMs)
> Automated Driving Systems (ADS) Developers
> Transportation Network Companies (TNCs) (e.g. Uber or Lyft)
> State agencies
> Metropolitan Planning Organizations (MPOs)
> Universities
> Transit agencies
> Other local agencies
> Consultants (please specify):_____
> Other (please specify):_____
> Don't know/Not sure *[EXCLUSIVE]*

13b. *[Q12 = OPTION 1]* **What other entity(ies) are/were you partnering with for the automated vehicle testing or deployment in your region/state? (Select all that apply)**

> Automakers or Original Equipment Manufacturers (OEMs)
> Automated Driving Systems (ADS) Developers
> Transportation Network Companies (TNCs) (e.g. Uber or Lyft)
> State agencies
> Metropolitan Planning Organizations (MPOs)
> Universities
> Transit agencies
> Other local agencies
> Consultants (please specify):_____
> Other (please specify):_____
> Don't know/Not sure *[EXCLUSIVE]*

14. *[ASK if Q11=OPTION 1]* **Automated Vehicle Tests or Deployments**

14a. Which, if any, of the following automated transit vehicle (e.g., bus, shuttle, etc.) tests or deployments are or were being conducted?

> Automated Fixed Route Shuttle
> Automated Bus Rapid Transit (BRT)
> Automated Flexible Mobility-on-Demand Shuttle Service
> Automation for Maintenance, Yard, and Parking/Storage Operations
> Automated taxi or ride-hailing testing (e.g., Uber, Lyft)
> Other automated transit vehicle test/deployment (please specify):_____
> Don't know/Not sure *[EXCLUSIVE]*
> None *[EXCLUSIVE]*

14b. Which, if any, of the following automated commercial vehicle (e.g., delivery truck, large truck) tests or deployments are or were being conducted?

Small Delivery Robotic Vehicles
Automated Last Mile Delivery
Automated Regional or Long-Haul Trucking
Truck Platooning
Other automated commercial vehicle test/deployment (please specify):_____
Don't know/Not sure *[EXCLUSIVE]*
None *[EXCLUSIVE]*

14c. Are or were any automated light duty passenger vehicle tests or deployments being conducted (other than automated transit)? (Select all that apply)

Automated light duty passenger vehicle test/deployment (please specify):_____
Don't know/Not sure *[EXCLUSIVE]*
None *[EXCLUSIVE]*

[FOR EACH RESPONSE CHECKED IN Q14]:

14d. Where is/was the *[ENTER TEST FROM Q14]* testing or deployment occurring? (Select all that apply)
(See table below)

Test bed or proving grounds
Sidewalks
Dedicated "slow lane"
Urban city streets
Highway
Campus environment
Private commercial or residential development
Other (please specify):
Don't know/Not sure *[EXCLUSIVE]*

Category
Automated Transit Vehicles
1. Automated Fixed Route Shuttle
2. Automated Bus Rapid Transit (BRT)
3. Automated Flexible Mobility-on-Demand Shuttle Service
4. Automation for Maintenance, Yard, and Parking/Storage Operations
5. Automated taxi or ride-hailing testing (e.g., Uber, Lyft)
6. Other *automated transit vehicle test/deployment*
Automated Commercial Vehicle Tests/Deployments
1. Small Delivery Robotic Vehicles
2. Automated Last Mile Delivery
3. Automated Regional or Long-Haul Trucking
4. Truck Platooning
5. Other *automated commercial vehicle test/deployment*
Automated light duty passenger vehicle test/deployment

15. *[IF Q11 = OPTIONS 2 OR 3]* **Are there plans for your agency to participate in automated vehicle testing or deployment in the future? (Select one)**

    1. Yes [CONTINUE]
    2. No [SKIP TO Q19]
    3. Don't know/Not sure [SKIP TO Q19]

16. *[IF Q15 = OPTION 1]* **When does your agency expect to participate in automated vehicle testing or deployment? (Select one)**

    1. Within the next 3 years
    2. In 3 to 6 years
    3. In 7 or more years
    4. Don't know/Not sure

17a. *[IF Q11=1 OR Q15=1]* **Does your agency face any of the following challenges in planning or conducting automated vehicle testing or deployment? (Select all that apply)**

Cost

    Cost of automated vehicle technology
    Cost of required updates to communications and/or physical infrastructure (e.g. communications networks, pavement markings, road/curb conditions, signage, etc.)
    Cost to operating and maintaining AV technology

Technology

    Lack of information about automated vehicle technology
    Uncertainty about the information/communications technologies needed
    Too much technical risk; want to wait until technology and standards mature
    Uncertainty about benefits of automated vehicles
    Data privacy issues (e.g. protection of Personally Identifiable Information)
    Cybersecurity issues

Institutional

    Partnerships issues
    Procurement issues
    Limited funding (e.g., due to competition for funds with other transportation projects)
    Lack of support from leadership and decision-makers

Policy

    Lack of a regulatory framework
    Legal/policy/regulatory issues at the Federal level
    Legal/policy/regulatory issues at the State or local level

Operations

Lack of public acceptance of automated vehicles

Worker acceptance issues (e.g., apprehension, confusion, or annoyance with technology; union issues, etc.)

Lack of staff with the right qualifications/expertise

Lack of support for long term operations and maintenance

Integrating new technology with current systems

Data

Data access issues

Data storage issues

Data governance concerns

Other (please specify):_____

Don't Know/Not Sure *[EXCLUSIVE]*

None *[EXCLUSIVE]*

17b. *[IF Q11 = 2 OR 3 & Q15 NE 1]* **Does your agency see any of the following as major barriers to planning or conducting automated vehicle testing or deployment? (Select all that apply)**

Cost

Cost of automated vehicle technology

Cost of required updates to communications and/or physical infrastructure (e.g. communications networks, pavement markings, road/curb conditions, signage, etc.)

Cost to operating and maintaining AV technology

Technology

Lack of information about automated vehicle technology

Uncertainty about the information/communications technologies needed

Too much technical risk; want to wait until technology and standards mature

Uncertainty about benefits of automated vehicles

Data privacy issues (e.g. protection of Personally Identifiable Information)

Cybersecurity issues

Institutional

Partnerships issues

Procurement issues

Limited funding (e.g., due to competition for funds with other transportation projects)

Lack of support from leadership and decision-makers

Policy

Lack of a regulatory framework

Legal/policy/regulatory issues at the Federal level

Legal/policy/regulatory issues at the State or local level

Operations

Lack of public acceptance of automated vehicles

Worker acceptance issues (e.g., apprehension, confusion, or annoyance with technology; union issues, etc.)

Lack of staff with the right qualifications/expertise

Lack of support for long term operations and maintenance

Integrating new technology with current systems

Data

Data access issues

Data storage issues

Data governance concerns

Other (please specify):_____

Don't Know/Not Sure *[EXCLUSIVE]*

None *[EXCLUSIVE]*

18. *[ASK ALL]* **Has your state or locality changed (or in the process of changing) their laws, regulations, or policies to accommodate automated vehicles? (Select one)**

    1. Yes
    2. No *[SKIP TO Q20]*
    3. Don't Know/Not Sure *[SKIP TO Q20]*

18a. *[IF Q18= OPTION 1]* **What laws, regulations, or policies have been or are being changed? (Select all that apply)**

State laws for operation of motor vehicles (e.g., licensing, permitting)

State laws for operation of commercial vehicles

State laws pertaining to the insurance of automated vehicles

State laws pertaining to the procurement of AV-equipped vehicles

Other (please specify): _____

Don't know/Not sure *[EXCLUSIVE]*

19. *[ASK ALL]* **The US Department of Transportation is trying to understand agencies' readiness to deploy AV technology. For each of the following activities, please indicate your agency's current status. (Select one response per row)**

Planning

Conducted an automated vehicle planning study

    1. Underway or complete
    2. Not underway, but plan to
    3. No plans to
    4. Don't know

Developed local regulations or other policies regarding automated vehicle testing and operations
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Included automated vehicle technologies and/or applications in agency planning documents (e.g., long range transportation plan, Strategic Highway Safety Plan, Transportation Improvement Program, etc.)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Partnered with other entities to test automated vehicles
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Developed Concept of Operation or initial Systems Engineering documents
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

<u>**Demonstrations and Deployment**</u>
Updated your Regional ITS Architecture to include automated vehicle applications and interfaces
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Applied for a Federal grant to fund the testing of automated vehicle technology (even if grant was not awarded)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

<u>**Infrastructure**</u>
Enhanced infrastructure maintenance (i.e., ensuring roadway striping is visible, removing visibility barriers from signs, etc.)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Upgraded physical infrastructure for automated vehicles
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Organizational

Procured contractor support for automated vehicles technologies
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Hired staff with knowledge about automated vehicles
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Data Management

Created a data management plan for collecting, storing, analyzing, reporting, and protecting privacy of AV data
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

Created a data repository for storing AV data (e.g., cloud service, new data servers, etc.)
1. Underway or complete
2. Not underway, but plan to
3. No plans to
4. Don't know

20. *[ASK ALL]* **What types of assistance or resources does your agency need to support automated vehicle testing or deployment? (Select all that apply)**

Funding/Procurement
Competitive grant funds
Technology procurement information

Evaluation Resources
Best practices on automated vehicle deployments
Evaluation methods and strategies
Information on the benefits/return on investment
Information/data on costs of automated vehicle technologies

Training/Technical Assistance
Training
Education for decision-makers
Education for the general public
Technical assistance
Information on institutional arrangements and agreements

Legal/Regulatory/Policy
    Legal/Regulatory/Policy
    Legal/regulatory/policy support at the Federal level
    Legal/regulatory/policy support at the State/local level

    Other (please specify):_____
    Don't know/Not sure *[EXCLUSIVE]*
    None *[EXCLUSIVE]*

20a. *[IF YES TO TRAINING/TECHNICAL ASSISTANCE]* **Please provide more detail on the type of training or technical assistance that would be most useful to you (be as specific as possible).**

_____ *[OPEN END]*

21. *[ASK ALL]* **Is there anything else you would like to share about your agency's current or future planned activities related to connected and automated vehicles?**

_____ *[OPEN END]*