CAT Coalition AV Infrastructure-Industry Working Group Quarterly Meeting

June 25, 2020

2:00-3:30 pm (Eastern)

Agenda

- Welcome and Introductions
- Ongoing Commitment to Outreach and Knowledge Transfer
- Working Group Activities and Work Plan
- Quick Update from Focus Area WG: IOO-OEM Forum Products
- Partner Reports: USDOT, ITS America, ITE, and Other Partner Organizations
- AV Deployment Survey Findings, Takeaways, and Next Steps
- FHWA Roadway Automation Concept of Operations Summary and Feedback
- Next WG Meeting and Adjourn

AV I-I Working Group

- Welcome to the new Co-Chair: Ed Bradley

- The role of this Working Group is to:
  - Support pre-competitive industry research that will advance infrastructure development and maintenance
  - Connect IOOs with industry
  - Support the natural evolution of infrastructure to accelerate CAVs
  - Clarify terms, definitions and target audiences

Ongoing Commitment to Outreach & Knowledge Transfer

- Suggestions from WG Members on Ways to Enhance Impact:
  - Proposed new WG Members
  - Communications with/involvement in other initiatives outside the CAT Coalition
  - Knowledge resources to include on CAT Coalition website

Working Group Activities and Work Plan

Tracy Larkin Thomason, Nevada DOT

Ed Bradley, Toyota
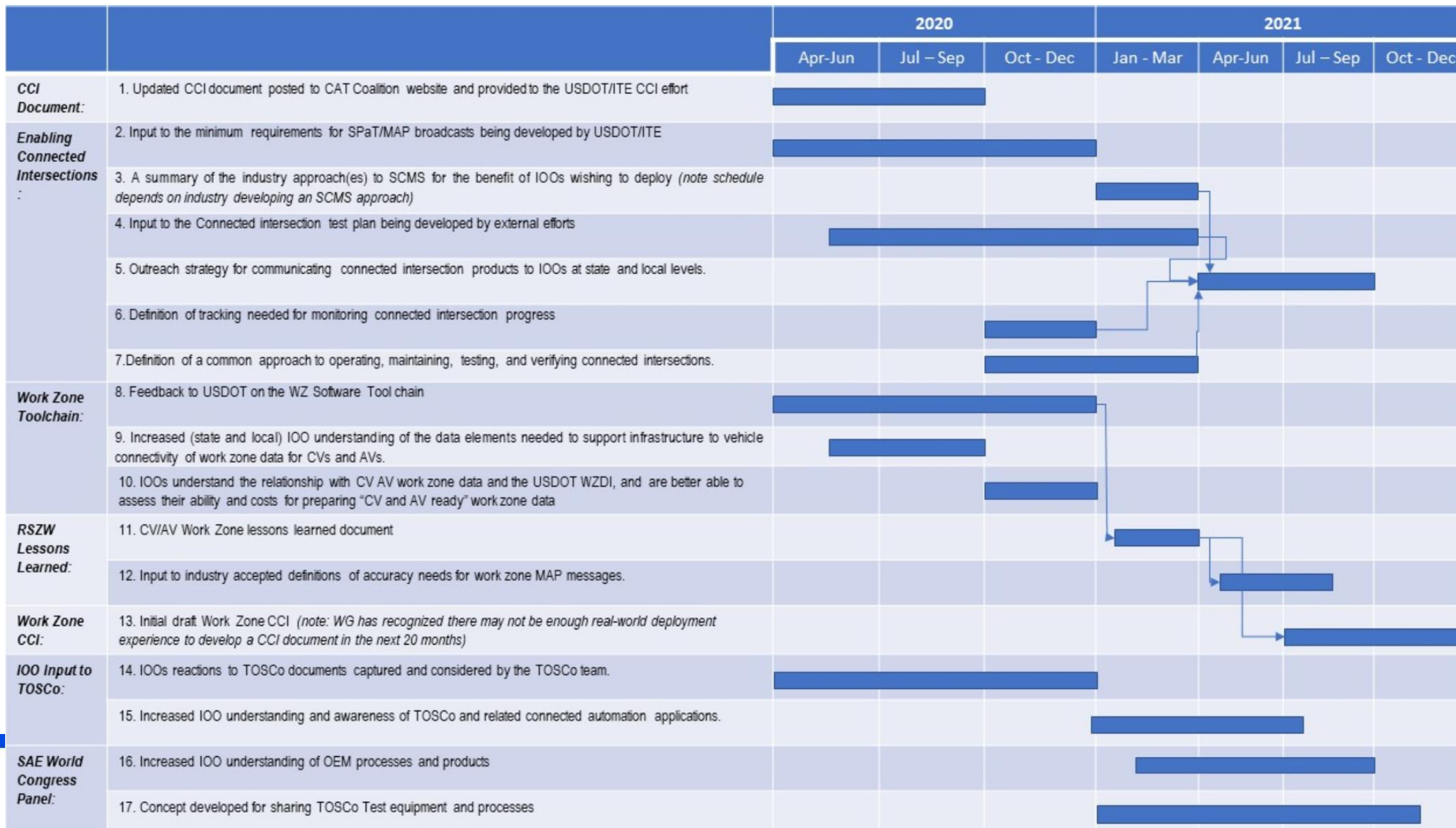
AV I-I Activities

- Ongoing Activities
  - Facilitate Development of Communications 101 Resource
  - Survey of AV Deployment and Shuttle Initiatives in the US
  - Expand membership and increase interactions with appropriate associations
  - Working Group Webinars
  - Primer / Synthesis of CV/AV Terms

- Future Activities
  - Provide reactions to IOO/OEM Forum activities
  - Discussion about bigger picture for CAT infrastructure to understand priorities for planning and implementing IOO infrastructure investments

AV I-I Activities

- Facilitate Development of Communications 101
  - A priority effort for this working group
  - Audience: IOO staff and elected and appointed officials making investments that are new to this realm
  - Content answers:
    - What are the telecommunications methods?
    - What do the terms mean?
    - How does DSRC work?
    - What is the 5.9 GHz spectrum?
    - What are the V2X benefits of the 5.9 GHz spectrum?
  - Currently have three modules of draft content that has been reviewed by this WG and the Resources WG
  - Providing content to NCHRP 23-10 effort to support resource development
    - e.g., YouTube video animations

Quick Update from Focus Area WG: IOO-OEM Forum Products

IOO/OEM Forum Work Plan Activities

		2020			2021			
		Apr-Jun	Jul – Sep	Oct - Dec	Jan - Mar	Apr-Jun	Jul – Sep	Oct - Dec
CCI Document:	1. Updated CCI document posted to CAT Coalition website and provided to the USDOT/ITE CCI effort	▬▬	▬					
Enabling Connected Intersections:	2. Input to the minimum requirements for SPaT/MAP broadcasts being developed by USDOT/ITE	▬▬	▬▬	▬				
	3. A summary of the industry approach(es) to SCMS for the benefit of IOOs wishing to deploy (note schedule depends on industry developing an SCMS approach)					▬▬		
	4. Input to the Connected intersection test plan being developed by external efforts		▬▬	▬▬	▬▬			
	5. Outreach strategy for communicating connected intersection products to IOOs at state and local levels.						▬▬	
	6. Definition of tracking needed for monitoring connected intersection progress			▬▬				
	7. Definition of a common approach to operating, maintaining, testing, and verifying connected intersections.			▬▬	▬▬			
Work Zone Toolchain:	8. Feedback to USDOT on the WZ Software Tool chain	▬▬	▬▬	▬				
	9. Increased (state and local) IOO understanding of the data elements needed to support infrastructure to vehicle connectivity of work zone data for CVs and AVs.	▬						
	10. IOOs understand the relationship with CV AV work zone data and the USDOT WZDI, and are better able to assess their ability and costs for preparing "CV and AV ready" work zone data		▬					
RSZW Lessons Learned:	11. CV/AV Work Zone lessons learned document				▬▬			
	12. Input to industry accepted definitions of accuracy needs for work zone MAP messages.					▬▬		
Work Zone CCI:	13. Initial draft Work Zone CCI (note: WG has recognized there may not be enough real-world deployment experience to develop a CCI document in the next 20 months)							▬▬
IOO Input to TOSCo:	14. IOOs reactions to TOSCo documents captured and considered by the TOSCo team.	▬▬	▬▬	▬				
	15. Increased IOO understanding and awareness of TOSCo and related connected automation applications.				▬▬	▬		
SAE World Congress Panel:	16. Increased IOO understanding of OEM processes and products				▬▬	▬		
	17. Concept developed for sharing TOSCo Test equipment and processes				▬▬	▬▬		

IOO/OEM Forum Work Plan Activities Pertinent to I-I Working Group

		2020			2021			
		Apr-Jun	Jul – Sep	Oct - Dec	Jan - Mar	Apr-Jun	Jul – Sep	Oct - Dec
CCI Document:	1. Updated CCI document posted to CAT Coalition website and provided to the USDOT/ITE CCI effort	▬▬						
Enabling Connected Intersections:	2. Input to the minimum requirements for SPaT/MAP broadcasts being developed by USDOT/ITE	▬▬▬						
	3. A summary of the industry approach(es) to SCMS for the benefit of IOOs wishing to deploy *(note schedule depends on industry developing an SCMS approach)*					▬		
	4. Input to the Connected intersection test plan being developed by external efforts		▬▬▬▬					
	5. Outreach strategy for communicating connected intersection products to IOOs at state and local levels.						▬▬▬	
	6. Definition of tracking needed for monitoring connected intersection progress				▬			
	7. Definition of a common approach to operating, maintaining, testing, and verifying connected intersections.				▬			
Work Zone Toolchain:	8. Feedback to USDOT on the WZ Software Tool chain	▬▬▬						
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IOO/OEM Planned Outreach to I-I Working Group

		2020			2021			
		Apr-Jun	Jul – Sep	Oct - Dec	Jan - Mar	Apr-Jun	Jul – Sep	Oct - Dec
Infrastructure Industry WG	1. Receive briefing/provide reactions to data needs for WZ CAT systems and role of IOOs providing data			▬				
	2. Receive briefings / provide reactions to approach for operating and maintaining connected Intersections	ⓘ			▬			
	3. Receive briefing / provide reactions to draft plan for tracking connected intersection deployments					▬▬▬		
	4. Receive briefing on industry approaches to SCMS development (no reaction needed)					▬		

ⓘ Introduce IOO/OEM Forum Linkage

AASHTO ITS AMERICA ite

Partner Reports

US DOT, ITS America, ITE, and Other Partner Organizations

AV Deployment Scan Findings, Takeaways, and Next Steps

AV Deployment Scan Findings

- Scan conducted in early 2020
- Joint effort with this WG and the CTSO CAT WG
- Covers a wide variety of AV deployment topics
  - Many open-ended responses
  - Not all respondents answered every survey question: 9-38 responses per question
- 38 responses received:
  - 30 state and 8 local agency staff
  - Representing 26 state agencies and 8 local agencies in 22 states and DC

Current AV Deployment & Shuttle Initiatives in the United States

Synthesis of Agency Experiences and Lessons Learned

A JOINT EFFORT OF THE
CTSO Cooperative Automated Transportation & CAT Coalition Infrastructure-Industry (I-I) Working Groups
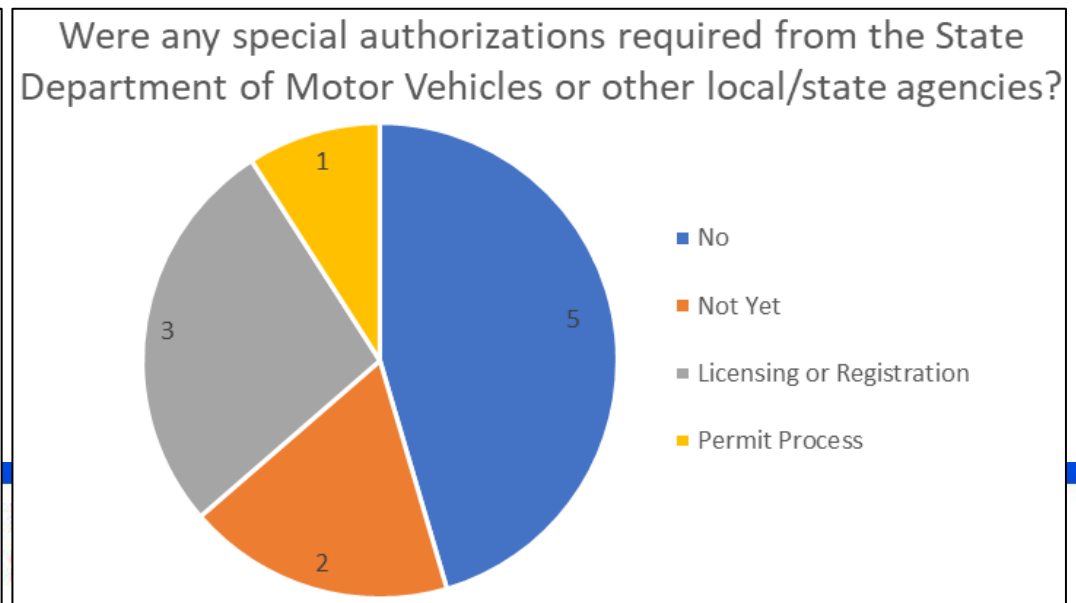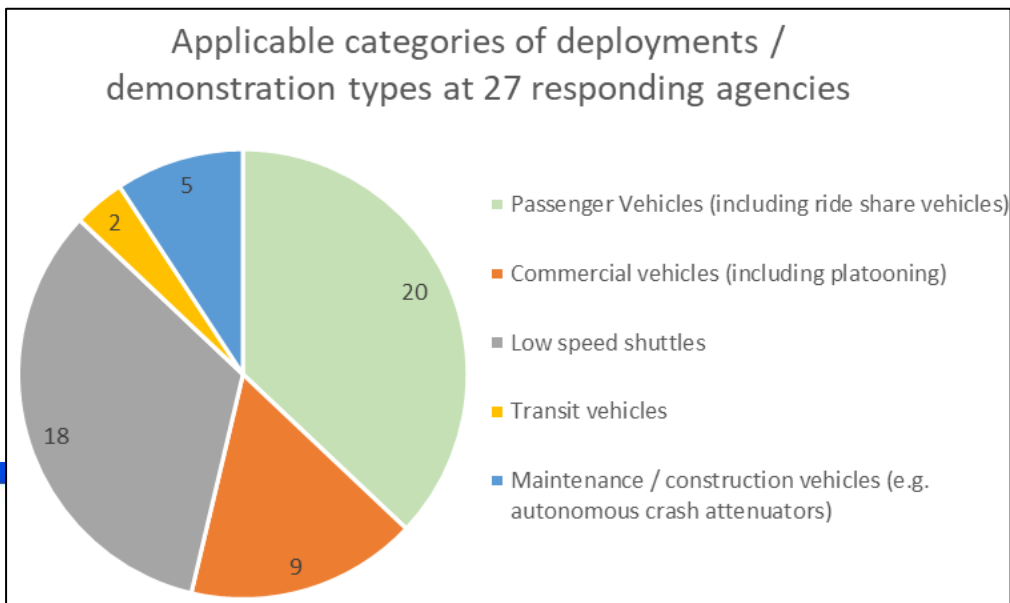
June 2020

AV Deployment Scan Findings

- Recurring responses of top three critical success factors:
    - Safety
    - Coordination, collaboration, or partnership
    - Public engagement and acceptance
    - The need to test new systems and technologies in order to improve them
- 5 of 10 respondents established direct communications between the AV and infrastructure
    - Two more respondents have plans to do so
    - DSRC, C-V2X, and other vehicle-based technologies were noted.

Have Autonomous Vehicles (AVs) been tested or deployed in your region?

- Yes — 84%
- No — 11%
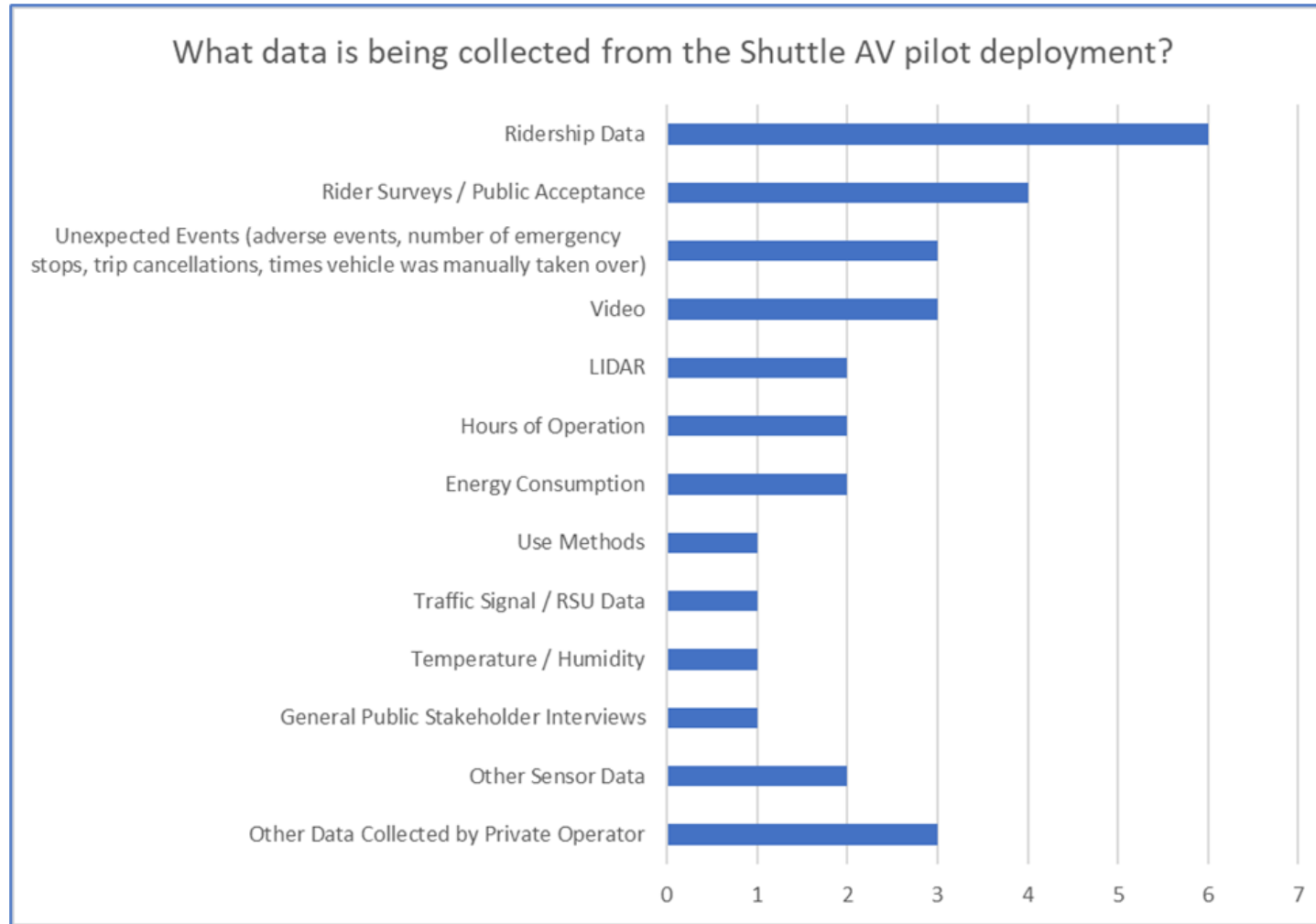- No, but we have been approached — 5%
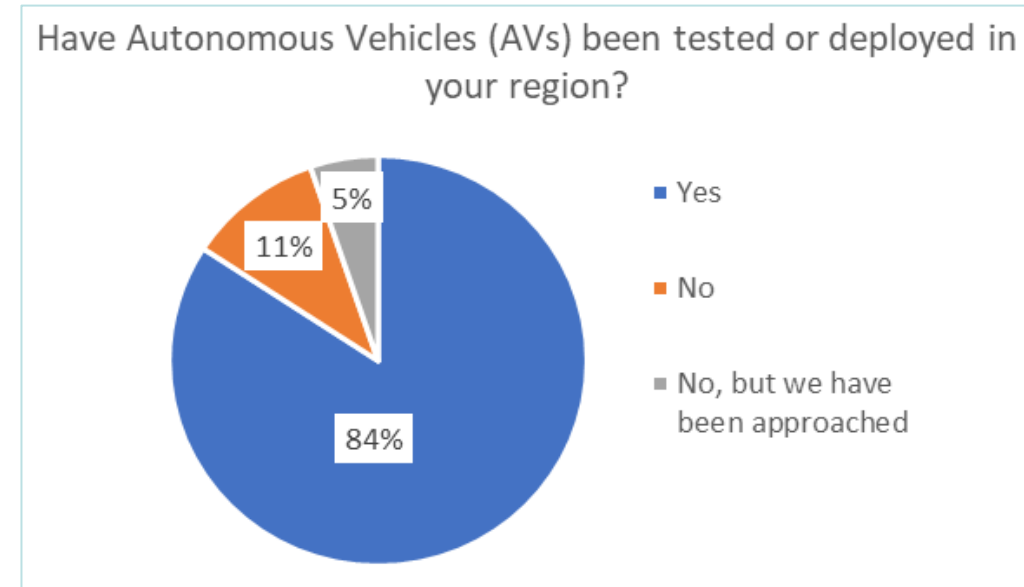
AV Deployment Scan Findings

- Common lessons learned noted:
  - Public acceptance and enthusiasm for AV deployments
  - The need to involve emergency responders or other partners
  - The importance of the relationship between agency and vendor
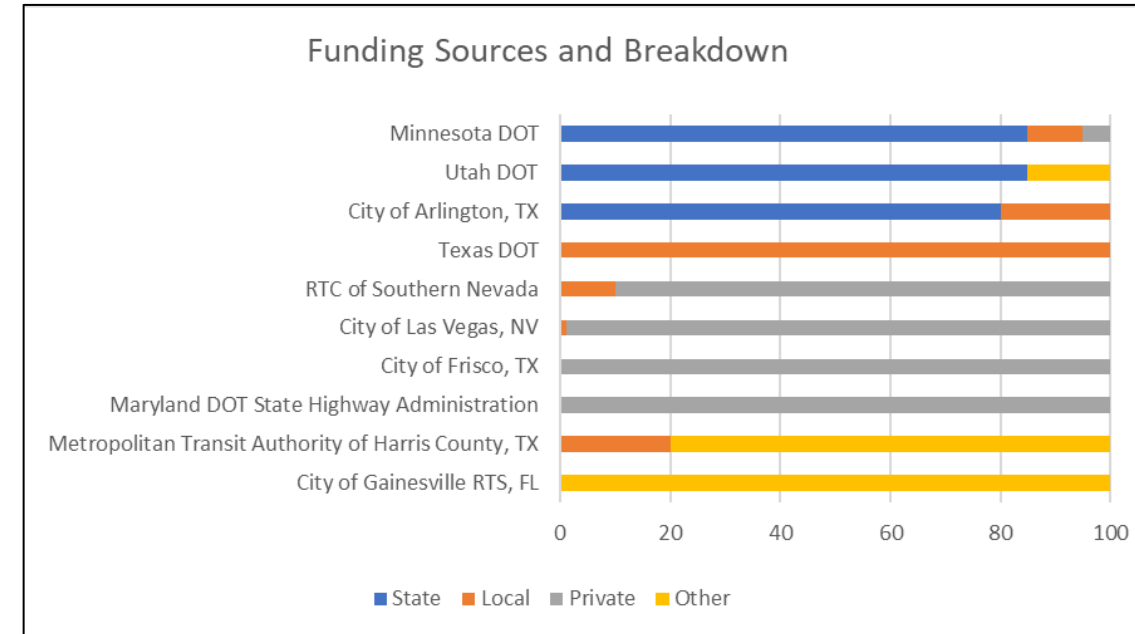 - Validation of technology and specific issues
  - Cost considerations

Applicable categories of deployments / demonstration types at 27 responding agencies

- Passenger Vehicles (including ride share vehicles)
- Commercial vehicles (including platooning)
- Low speed shuttles
- Transit vehicles
- Maintenance / construction vehicles (e.g. autonomous crash attenuators)

Were any special authorizations required from the State Department of Motor Vehicles or other local/state agencies?

- No
- Not Yet
- Licensing or Registration
- Permit Process

AV Deployment Scan Findings

What data is being collected from the Shuttle AV pilot deployment?

AV Deployment Scan Findings

- Regarding next steps:
  - 2 have additional planned deployments or new phases of testing
  - 2 have no plans yet
  - 6 are seeking new opportunities or funding to pursue additional, related activities

Funding Sources and Breakdown

	State	Local	Private	Other

Minnesota DOT
Utah DOT
City of Arlington, TX
Texas DOT
RTC of Southern Nevada
City of Las Vegas, NV
City of Frisco, TX
Maryland DOT State Highway Administration
Metropolitan Transit Authority of Harris County, TX
City of Gainesville RTS, FL

0   20   40   60   80   100

■ State ■ Local ■ Private ■ Other

AV Deployment Scan Next Steps

- Encourage everyone to read the summary report
  - Please provide any comments you have for revisions

- Any reactions to this survey and how it should drive future efforts of this group?
  - Disseminate to other audiences?
  - Conduct follow-up scan to same respondents in ~12 months to learn new developments, lessons learned, and/or additional questions?
  - Conduct follow-up scan to gather information from more / other deployments?
  - Other ideas?

National Roadway Integration of ADS Concept of Operations

CAT Coalition Working Group Engagement

May-June 2020

Action Items & Next Steps

Next Meeting

AV Infrastructure-Industry WG

August 20, 2-3:30 pm (Eastern)