



# *Communicating CAV for DOTs: Public Perception, Awareness, and Education*

September 24, 2020



# Web Meeting & Audio Information

- Participants will be in “Listen Only” mode throughout the web meeting
- Please press \*0 to speak to an operator for questions regarding audio
- Please call Justin for difficulties with the web or audio application
- **This web meeting will be recorded**
- Presentations will be posted to the Eastern Transportation Coalition website. Participants will receive a link to the presentations after they are posted.

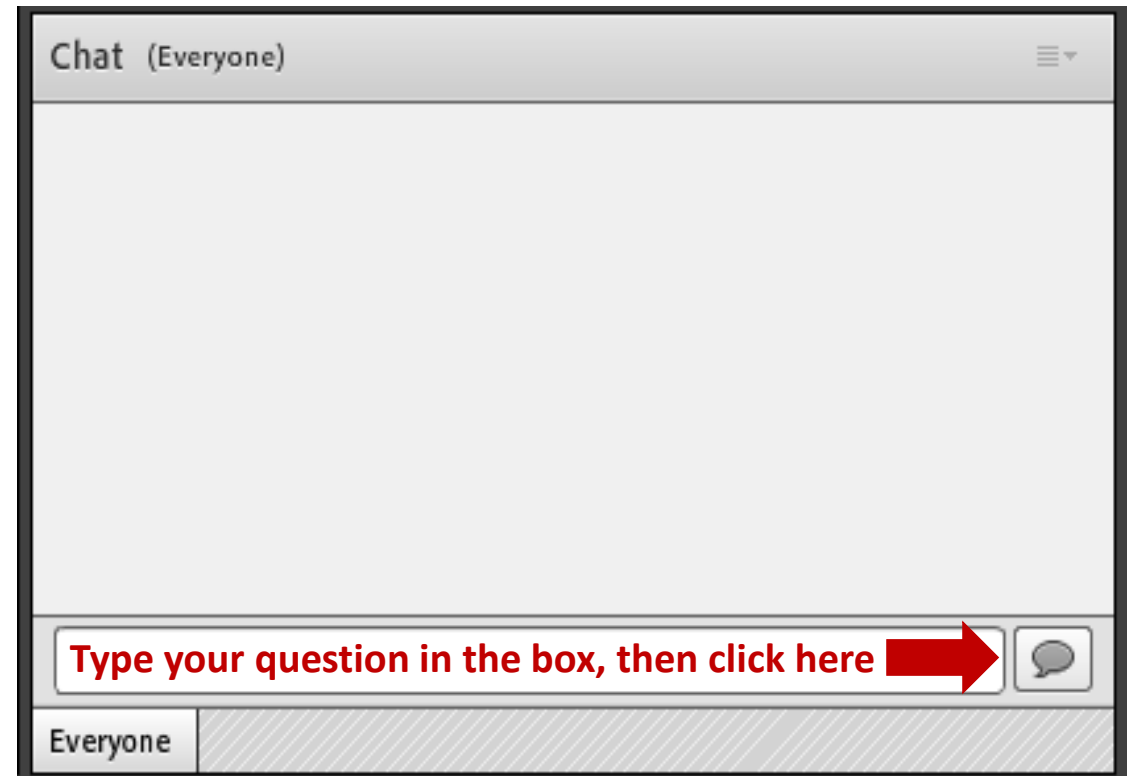




# Asking Questions



- Please pose your questions using the **chat box**
- Questions will be monitored then answered by the speakers either at the end of their presentation or at the end of the web meeting





# Welcome



**Virginia Reeder**, Program Associate, Innovation Program,  
The Eastern Transportation Coalition  
*(Formerly the I-95 Corridor Coalition)*





# Agenda

Topic	Speaker
Welcome & Introductions	Virginia Reeder, The Eastern Transportation Coalition
Are Drivers Ready to Take Their Hands Off the Wheel?	Kristin Kolodge, J.D. Power
From Baby Cows to Robot Cars: How to Talk About An Unknown Future	Kristin White, Minnesota DOT
Communicating & Collaborating Cooperative CAV Strategies within IOOs	Carole Delion, P.E., Maryland DOT SHA Roxane Mukai, Maryland Transportation Authority
Wrap Up	Virginia Reeder



# Participants

## Agencies

Alabama DOT	Connecticut DOT	Gaston-Cleveland-Lincoln MPO	Maryland Transportation Authority	New Jersey DOT	Vermont AOT
Centralina Regional Council	Delaware DOT	Gaston County, NC	Massachusetts DOT	New York Metropolitan Transportation Council	Village of Misenheimer, NC
Charlotte DOT	Delaware Transit Corporation	Iowa DOT	Michigan DOT - SEMTOC	North Carolina DOT	Virginia DOT
Charlotte Regional TPO	DVRPC	Maine DOT	Minnesota Office of Connected & Automated Vehicles	South Carolina DOT	
City of Charlotte, NC	FHWA	Maryland DOT - SHA	Montgomery County Planning Commission	Southwestern Pennsylvania Commission	
City of Norwalk, CT	Florida DOT	Maryland DOT MVA	MWCOG	US DOT / FHWA	

## Other Participants

AECOM	DC Autonomous Vehicles Association	JD Power	VHB
Atkins	HDR	TranSmart/EJM	



# Coalition Update



**JULY 1<sup>st</sup>**

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*We “flipped the switch”*

# **The Eastern Transportation Coalition**



# Coalition Update – Innovation Program Events

## RECENT

- ✓ **AV Readiness Project: Kick-Off and Topic Specific input** – June 17, 26, 29, 30
- ✓ **Southeast CAV Quarterly Meeting** – September 17, 2020
- ✓ **Mid-Atlantic CAV Quarterly Meeting** – September 22, 2020

## UPCOMING

- ✓ **Northeast CAV Quarterly Meeting** – September 29, 2020
- ✓ **AV Readiness Project: Draft Framework Review** – September 30, 2020





# Introductions



**Kristin Kolodge**

*Executive Director of Human  
Machine Interface (HMI) and  
Driver Interaction,  
J.D. Power*



**Kristin White**

*Executive Director Connected  
and Automated Vehicles  
Office (CAV-X),  
Minnesota Department of  
Transportation*



**Carole Delion, P.E.**

*Division Chief &  
CAV Program Manager,  
MDOT SHA - CATS Division*



**Roxane Mukai**

*Operations Engineer & CAV Liaison  
Maryland Transportation  
Authority*



## Poll Question #1

1

My agency is actively engaged in (*check all that apply*):

- Clarifying the language and terminology we are using to communicate about CV/AV technology
- Communication about CV/AV advancements and our plans and policies internally
- Communication with our partner agencies (local municipalities, etc.) about CV/AV plans, policies, programs and pilots
- Communication with the public about CV/AV technology, policies, pilots, etc.



## Poll Question #2

2

Staff from the following divisions are engaged in communication about CV/AV (all types - internal, external, with leadership, etc.) *(check all that apply)*

- Public affairs/communication
- Planning
- Engineering
- Operations (including incident management), etc.
- Other





# Are Drivers Ready to Take Their Hands Off the Wheel?



**Kristin Kolodge**, Executive Director of Human Machine Interface (HMI) and Driver Interaction  
J.D. Power

# Are Drivers Ready to Take Their Hands Off the Wheel?

Kristin Kolodge, Executive Director Driver Interaction and HMI

Eastern Transportation Coalition | September 2020



# The Automotive Landscape Today

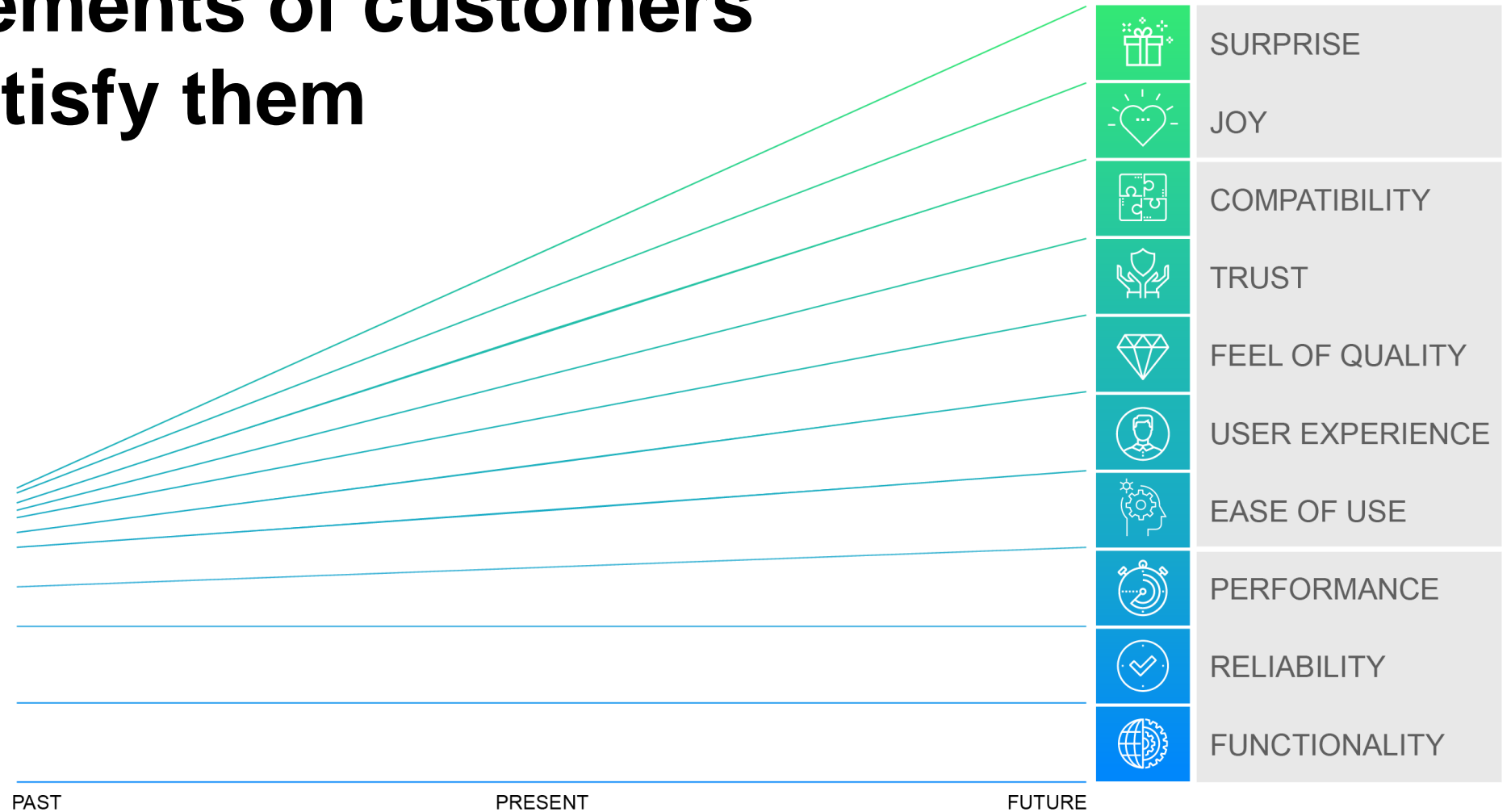




# Quality is to fulfill the requirements of customers and satisfy them

- Deming

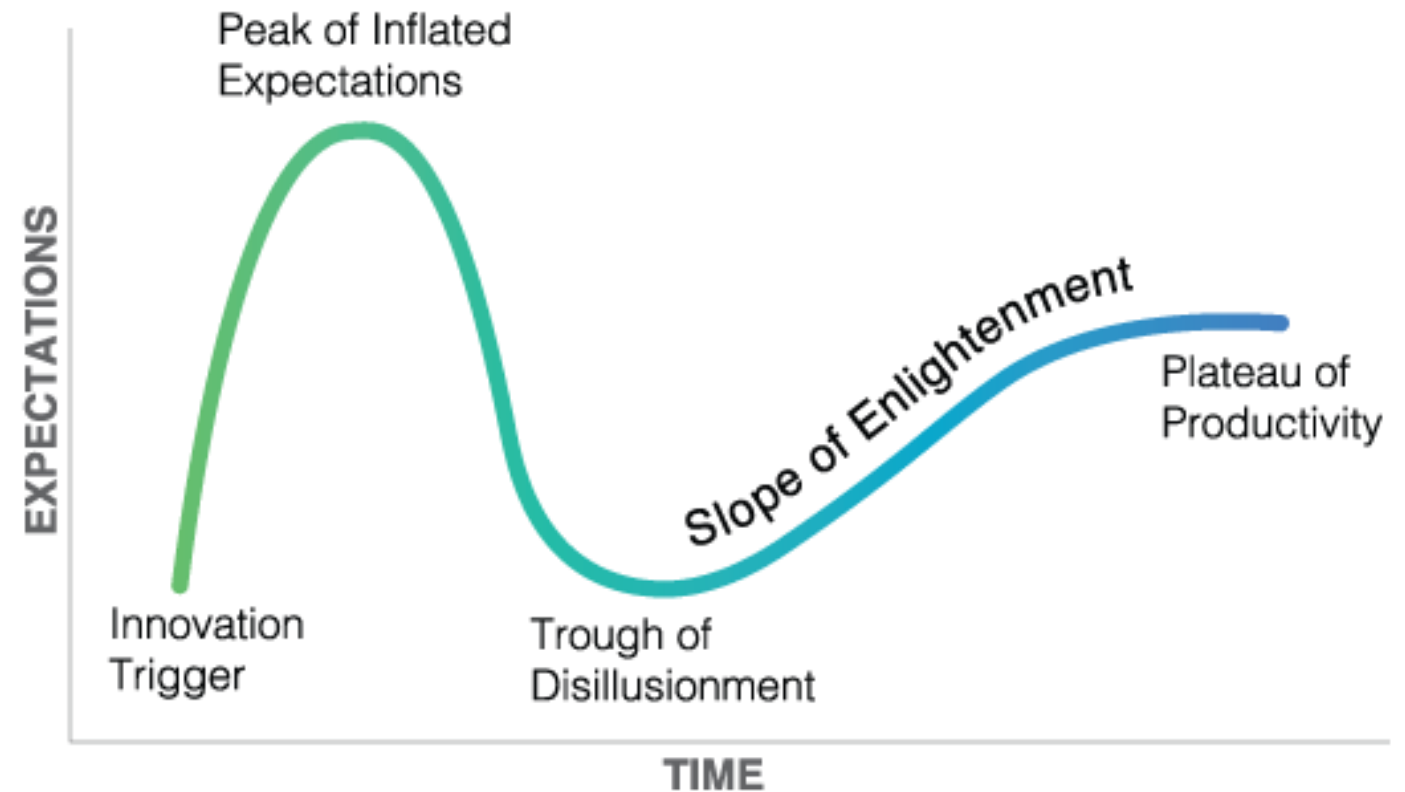
Customer requirements are increasing and becoming much broader



# Beyond the Hype

- Technology race to the future
- But, but, but...

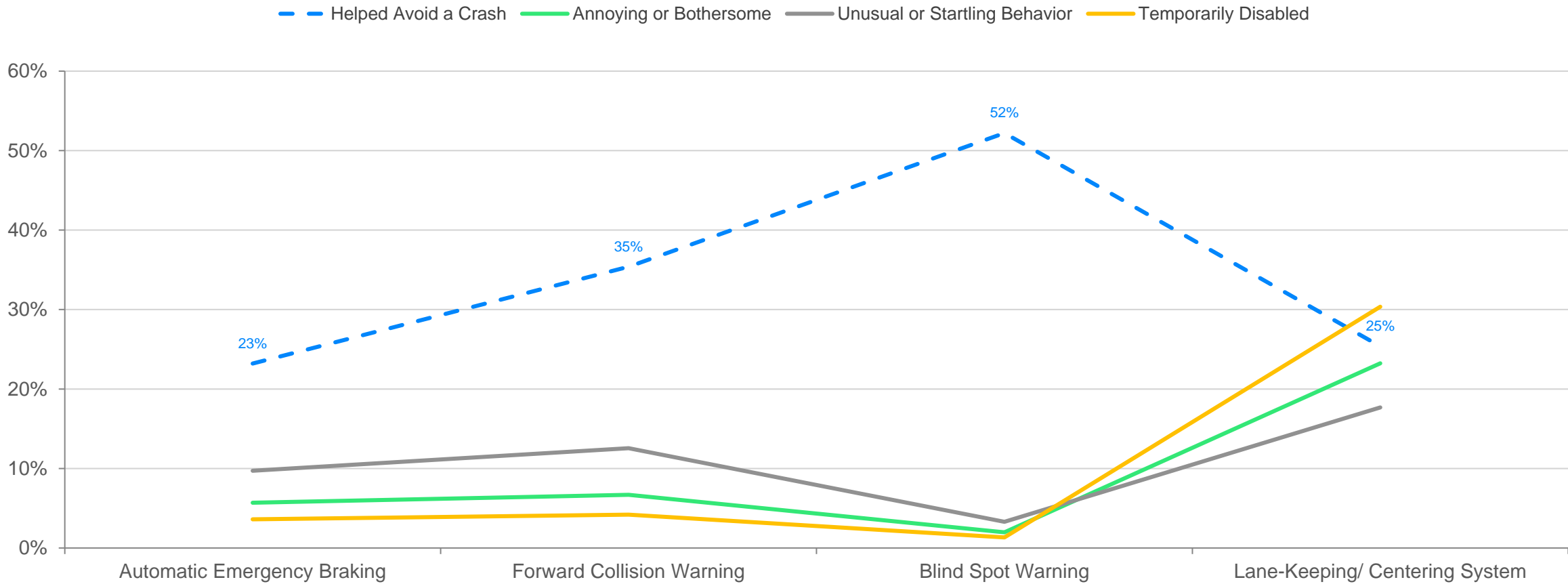
## GARTNER HYPE CYCLE



Source: Gartner.com

# 61% of owners experienced at least one of their ADAS features helping them avoid a crash in the first 90 days, but look at the entire user experience for red flags

Collision Protection Experiences - Industry



Source: J.D. Power 2019 Tech Experience Index Study (TXI)

# Lane-Keeping/Centering System – Industry Feedback



The basics of what, when, why and how is being sought out as many express this system is new to them. While owners recognize the system will take time to learn, not all have the patience to experiment if the perceived value is not evident

Wasn't aware the system would sometimes **fight you back with steering**. Also sometimes **misinterprets** merging lanes as drifting and will fight you. – **Acura RDX**

Annoying on **narrow, curvy roads**. – **Volvo S60**

**I didn't realize I had it**. The wheel would randomly shift on the freeway, **I thought it was heavy winds**. It was only after I looked it up online that I realized what was happening. I think the system is too sensitive and can't recognize ambiguous lane... – **Kia Niro**

I hear the buzzing but **I'm not sure what it means** because I am in the proper lane and I don't think I am over the line. – **Lexus ES**

I wasn't quite sure exactly what the display icon indicated **until I re-read about the system in the owner's manual**. – **Ford Edge**

It sometimes seems too strong, **kind of surprises me** and actually makes me over correct sometimes. Not sure I like this feature the way it is. – **Subaru Ascent**



# Clearing the Confusion

## Solving understandability issues begins with a consistent naming framework

- Simple
- Specific
- Based on system functionality
- Elevate awareness that the systems are designed to assist, not replace an engaged driver

### CLEARING THE CONFUSION: Recommended Common Naming for Advanced Driver Assistance Technologies



Advanced Driver Assistance Systems (ADAS) have become increasingly prevalent on new vehicles, but the terminology used by automakers to describe them varies widely and so far has focused on marketing strategies.

The common naming outlined is simple, specific and based on system functionality. The list is meant to aid in reducing driver confusion and define the functions of ADAS in a consistent manner. **This is critical to ensure that drivers are aware these systems are designed to assist, not replace an engaged driver.**

The list is not meant to replace automaker proprietary system or package names, but rather help identify key functions within those packages and provide clarity to consumers. *The list will be continually refined as we work with other stakeholders and as new systems are developed.*

#### COLLISION WARNING

<b>Blind Spot Warning</b>	Detects vehicles in the blind spot while driving and notifies the driver to their presence. Some systems provide an additional warning if the driver activates the turn signal.
<b>Forward Collision Warning</b>	Detects a potential collision with a vehicle ahead and alerts the driver. Some systems also provide alerts for pedestrians or other objects.
<b>Lane Departure Warning</b>	Monitors vehicle's position within the driving lane and alerts driver as the vehicle approaches or crosses lane markers.
<b>Parking Collision Warning</b>	Detects objects close to the vehicle during parking maneuvers and notifies the driver.
<b>Rear Cross Traffic Warning</b>	Detects vehicles approaching from the side at the rear of the vehicle while in reverse gear and alerts the driver. Some systems also warn for pedestrians or other objects.

#### COLLISION INTERVENTION

<b>Automatic Emergency Braking</b>	Detects potential collisions with a vehicle ahead, provides forward collision warning, and automatically brakes to avoid a collision or lessen the severity of impact. Some systems also detect pedestrians or other objects.
<b>Automatic Emergency Steering</b>	Detects potential collisions with a vehicle ahead and automatically steers to avoid or lessen the severity of impact. Some systems also detect pedestrians or other objects.
<b>Reverse Automatic Emergency Braking</b>	Detects potential collisions while in reverse gear and automatically brakes to avoid or lessen the severity of impact. Some systems also detect pedestrians or other objects.

<sup>1</sup> Classified as Level 2 Driving Automation by SAE J3016

Last Modified 08/03/20

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#### ASSISTANCE

Acceleration and/or braking to maintain a driver-  
ome systems can come to a stop and continue

the driver in preventing the vehicle from departing  
keep the vehicle centered within the lane.

tion support to the driver at the same time. The  
support feature and maintain responsibility for

#### ANCE

when in reverse gear.

of some or all sides of the vehicle while stopped

other functions during parking maneuvers. Driver  
and/or select gear position. Some systems are  
lar parking. The driver must constantly supervise  
possibility for parking.

resent inside the vehicle, provides steering,  
action while moving a vehicle into or out of a  
ntly supervise this support feature and maintain

while backing towards a trailer or during backing  
me systems may provide additional images while  
systems may provide steering assistance during

#### NCE SYSTEMS

eadlamps automatically based on lighting and traffic.

they are not engaged in the task of driving. Some  
and/or head position.

g into the driver's forward line of sight.

r projecting enhanced images on instrument

#### LEASE CONTACT

ty Council **Keith Wilson** - SAE International  
Program Manager  
Global Ground Vehicle Standards  
248-273-2470

for  
action

J.D. POWER



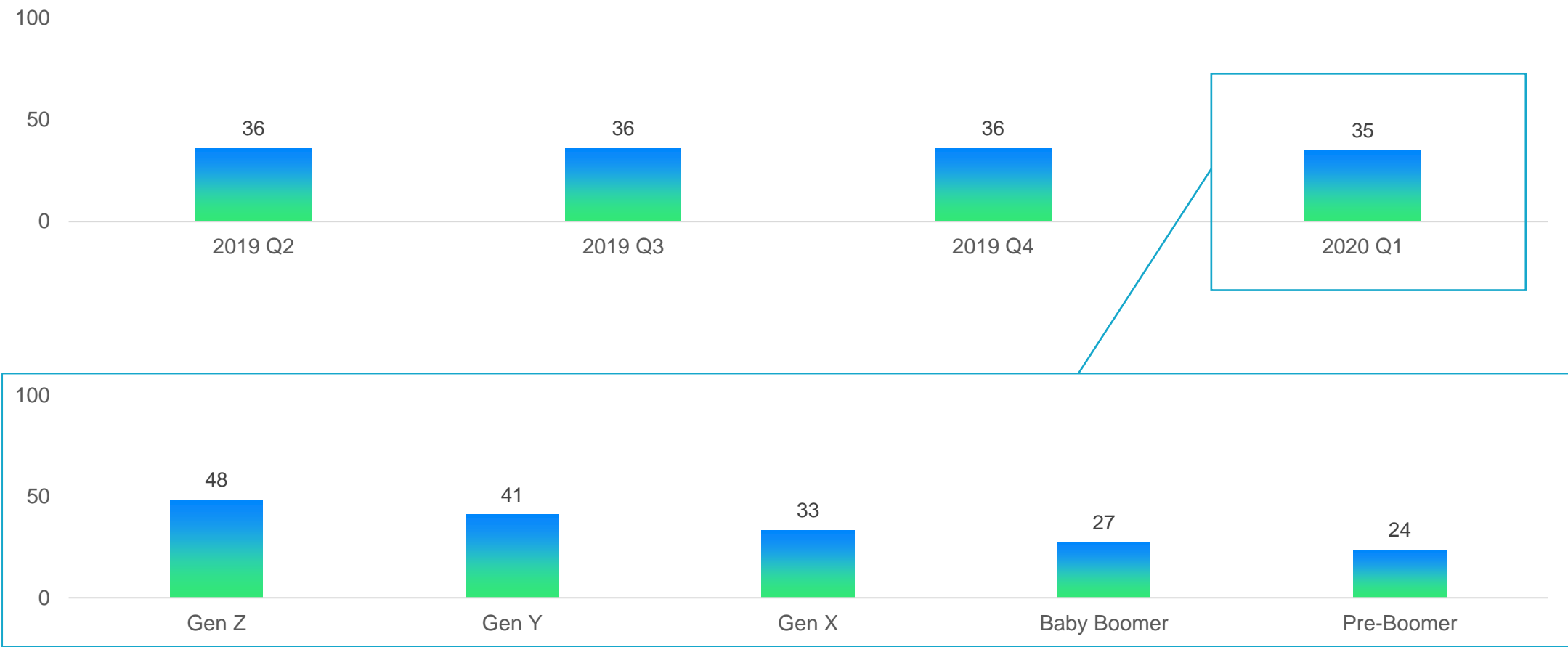
# The Future of Mobility: Automated Vehicles





# Consumer confidence in future mobility technologies lags far behind automakers' plans to bring self-driving vehicles to the marketplace

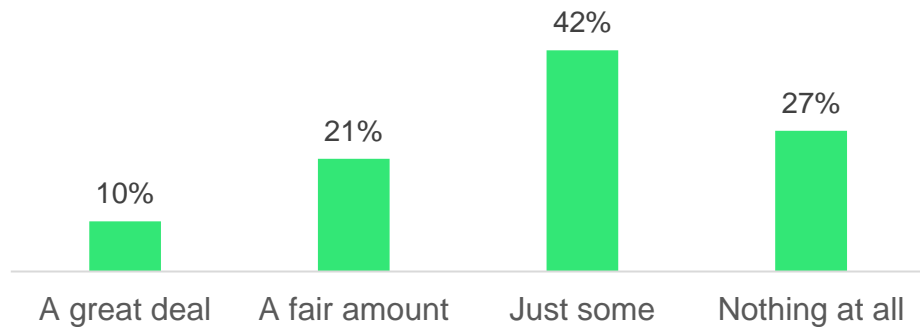
Self-Driving Vehicle Index



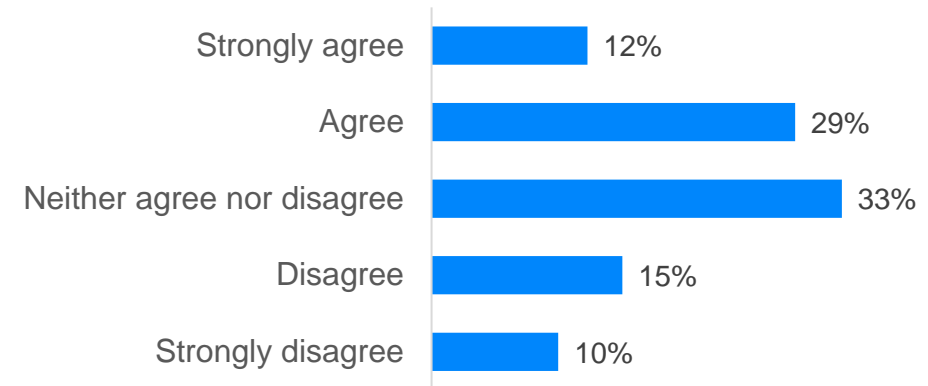


# While consumers are beginning to possess some knowledge about self-driving vehicles, overall, 27% admit having no knowledge at all

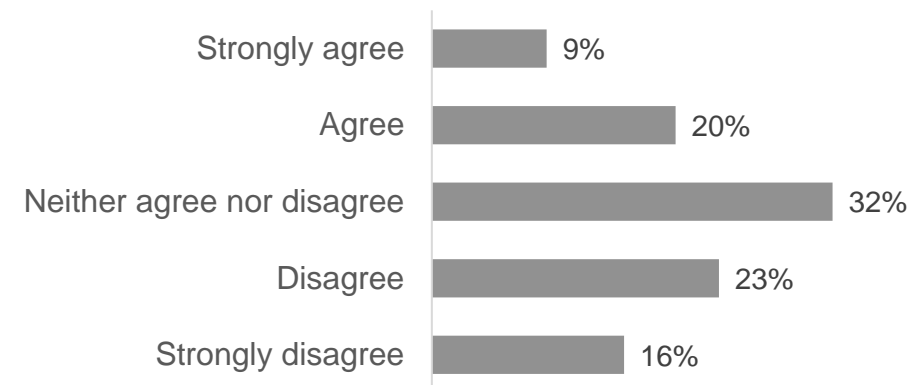
## Current Knowledge Level



## Agreement Level: Things I have read or heard about self-driving vehicles have made me more interested in them

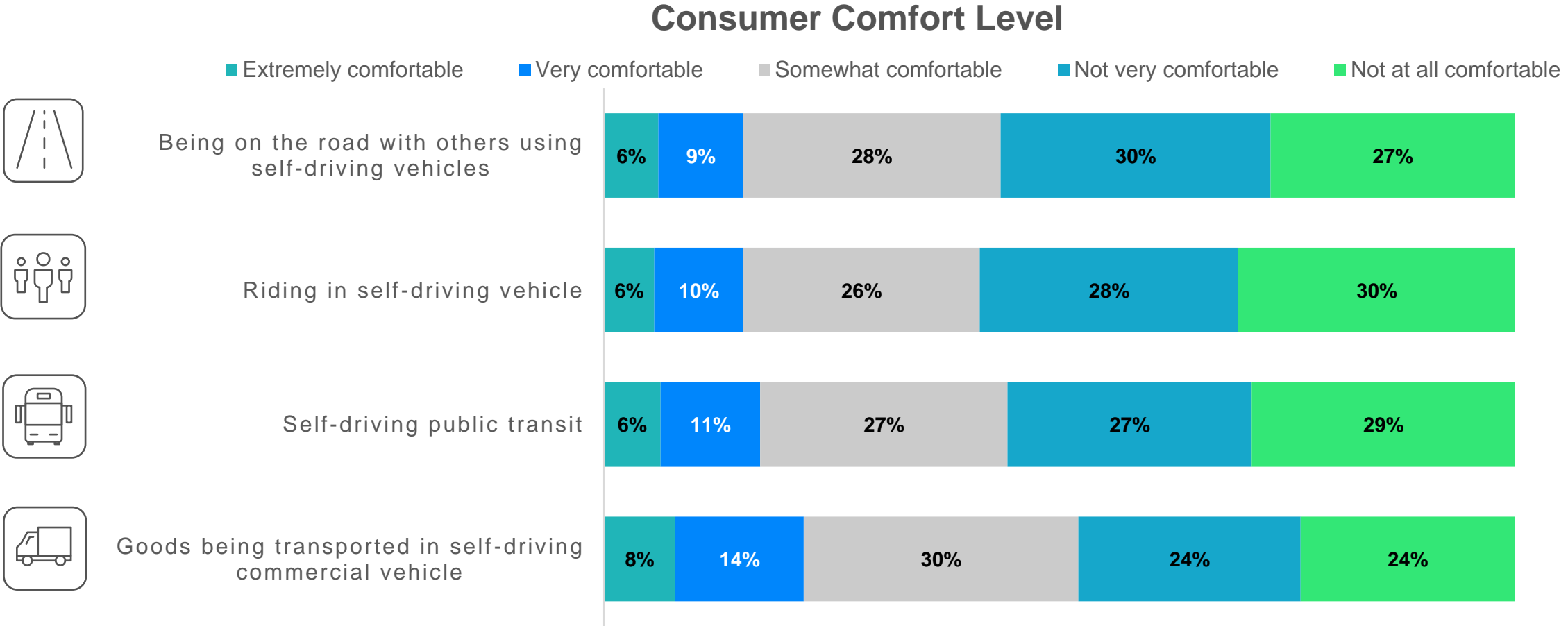


## Agreement Level: I have sought out information on self-driving vehicles because I have an interest in them





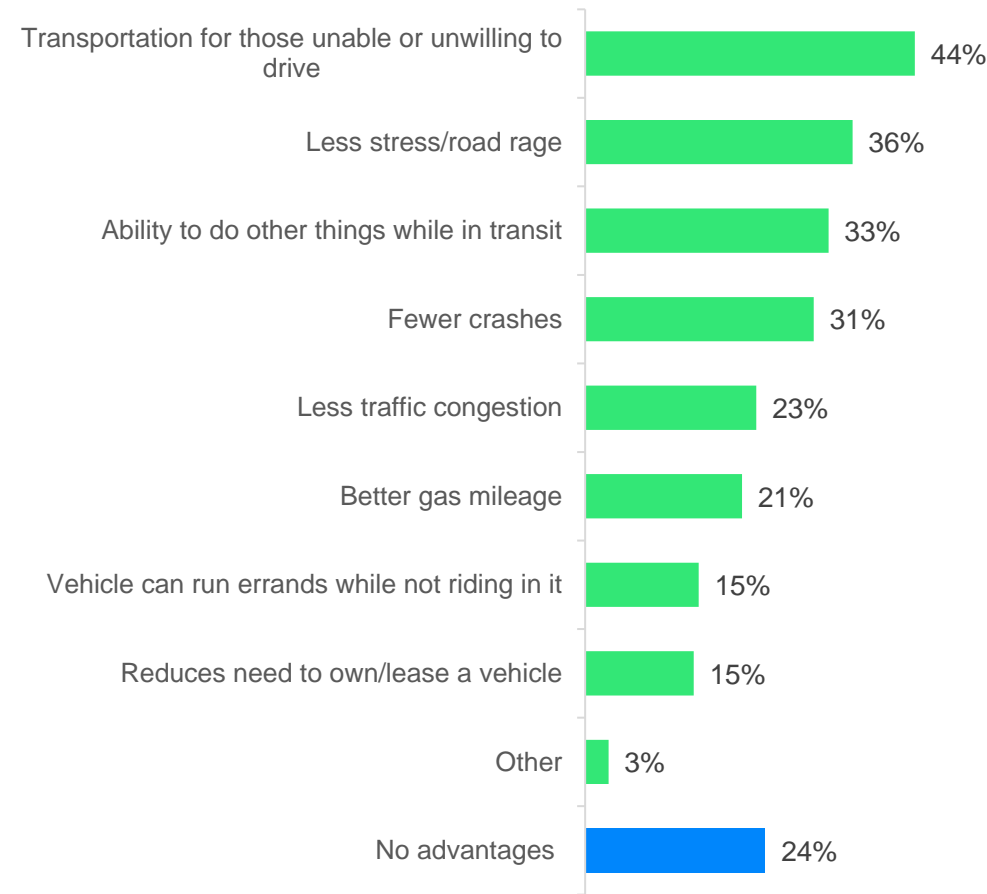
# Consumers are slightly more comfortable with goods being transported in self-driving vehicles compared to themselves riding in one



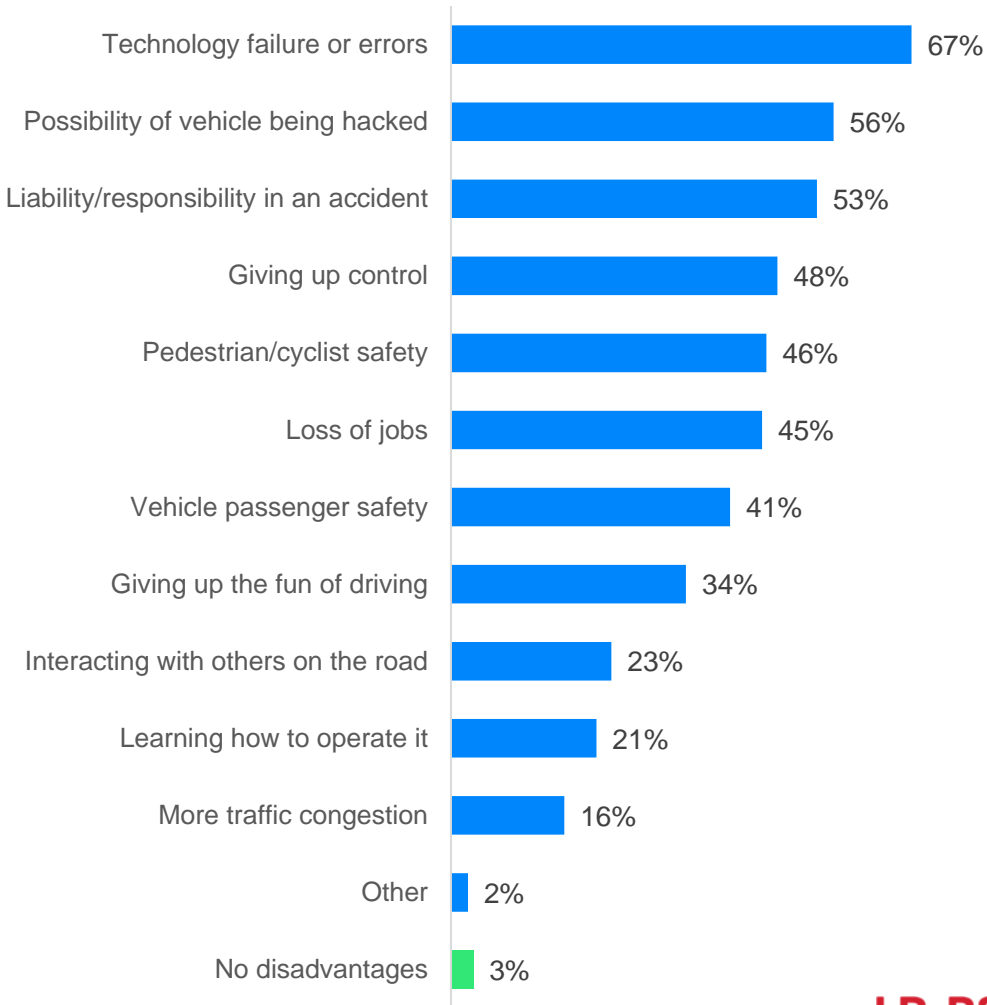
# Consumer Perceptions About Self-Driving Vehicles



## Advantages



## Disadvantages







# Self-Driving Vehicles – Are they ready? Are we ready as a society?

## Are They Ready?

**Lots of questions. Consumers looking for proof points**

“Ability of SDV to **respond to odd situations**, like traffic lights out and police directing traffic with hand signals.”

“**It won't know how** to go around obstacles, and GPS is so poor that it will deliver to the wrong address. My job is delivery and GPS takes me to wrong address all the time, or has me go in circles.”

“Not sure... worried about “perfection” of the technology - **too many “what ifs”**.”

“The future (if perfected and all vehicles have) can mean fewer wrecks, better traffic, etc. But the **technology is not yet mature enough** and the **consequences are significant**.”

“When SD vehicles can outperform (even with human mistakes) humans, then time for SD vehicles. **Technology far too infantile** in development stage.”

## Are We Ready as a Society?

**What consequences come about as a result?**

“The **Law of Unexpected Consequences**.”

“Even though this technology is in its infancy, they do not get DUIs, they do not get sleepy on the road, they can see much further down the road. However, I'm not pleased the way the trucking industry is doing their testing without the public's knowledge. **Many jobs will be lost** and many families will be affected.”

“I don't care for it at all because all its doing is **making people more lazy**.”

“Self-driving vehicles terrify me, and I wanted to select “no advantages”. However, the only good thing is that they **could help people who can't drive for medical reasons** able to travel more independently.”

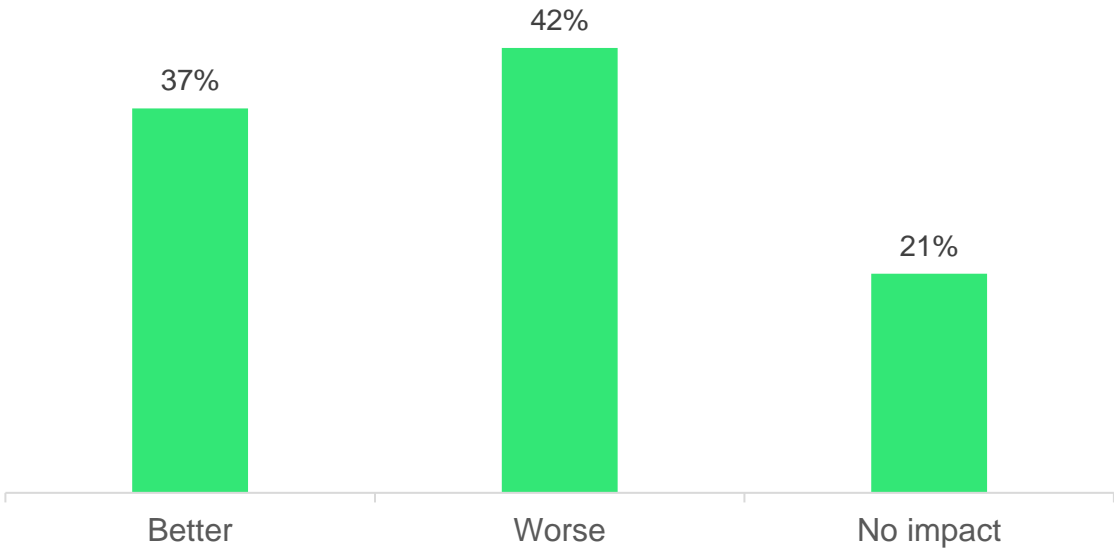
“I think one of the things with the self-driving car that really gets to me is it just caters to those that are lazy. As a nation, we are **becoming more and more dependent on technology** to do and perform task that man has done for years.”



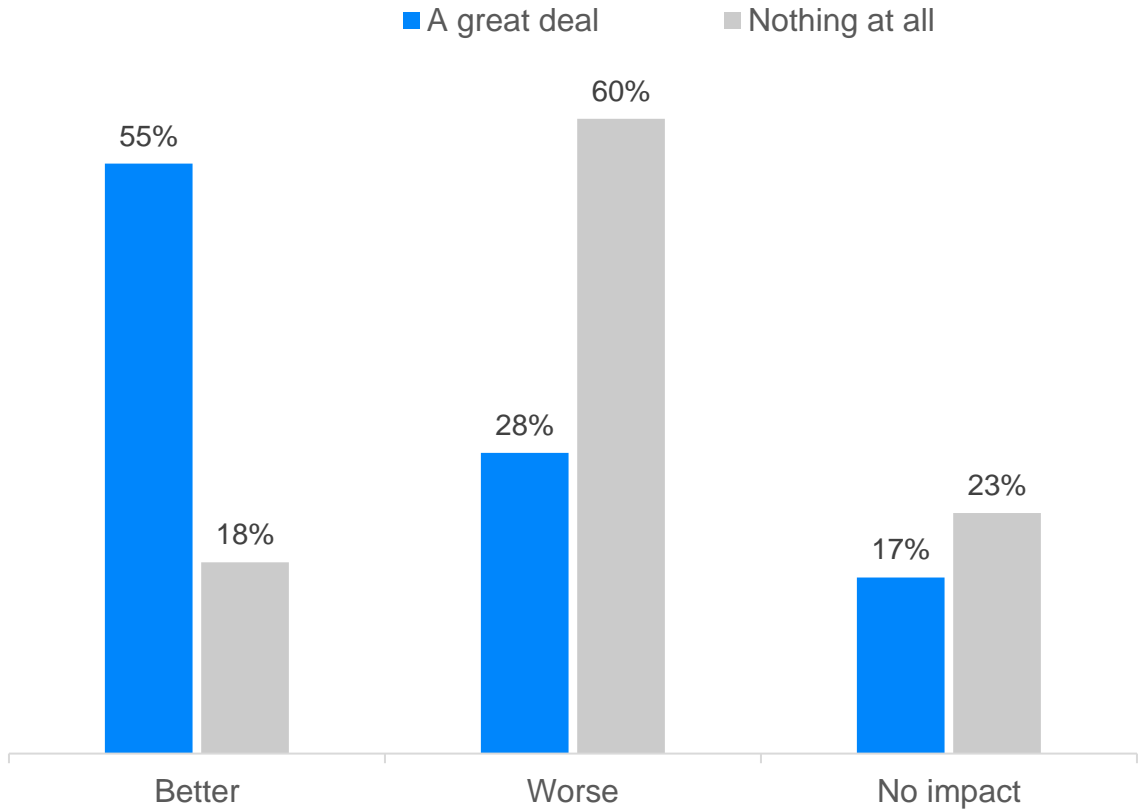
More consumers anticipate traffic safety will be worse with self-driving vehicles. Those who know a great deal about self-driving vehicles strongly believe otherwise

As self-driving vehicles become more common, how will traffic safety be effected?

Traffic Safety  
Overall



Traffic Safety  
Knowledge Level of Self-Driving Vehicles

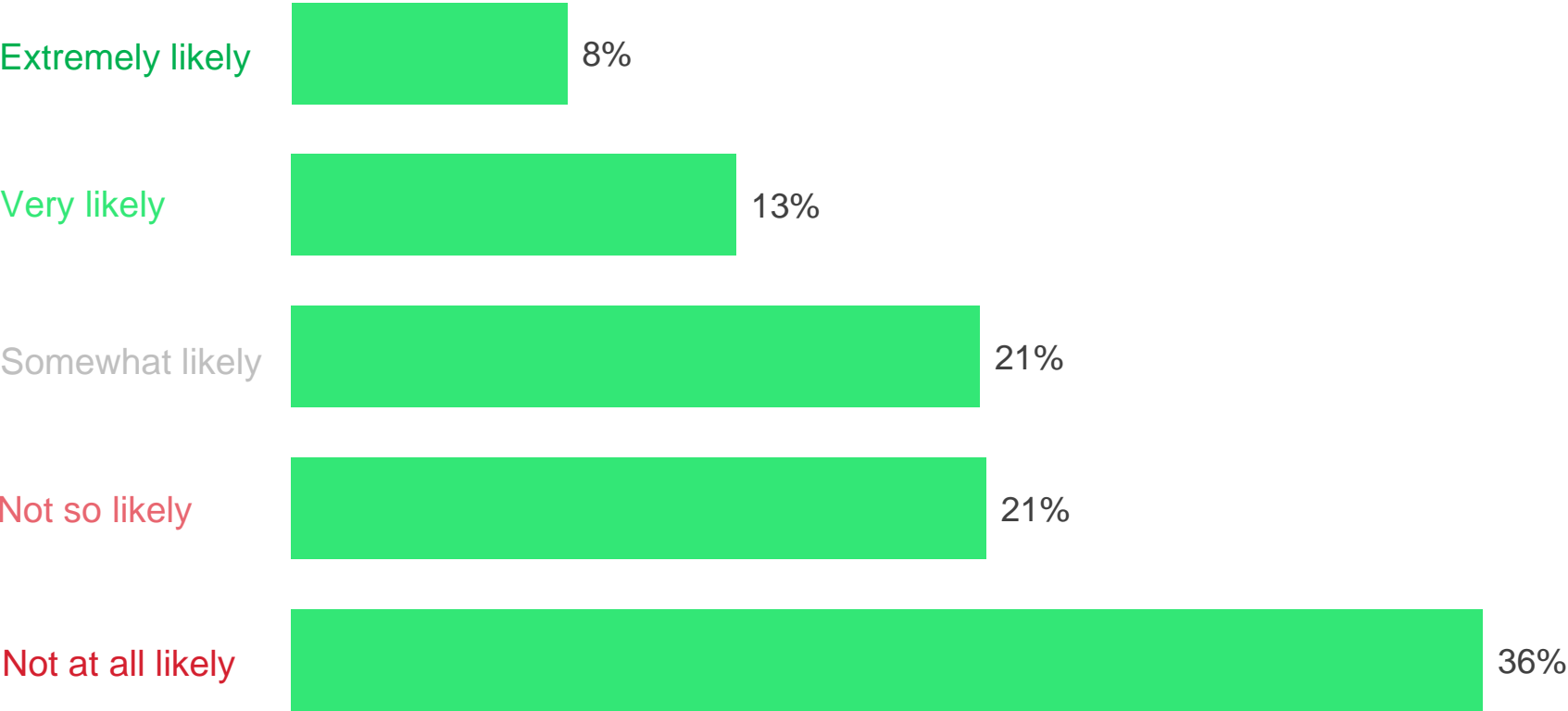




While 57% state there is little to no likelihood of purchasing a self-driving vehicle...



Consumer Likelihood to Purchase/Lease a Self-Driving Vehicle





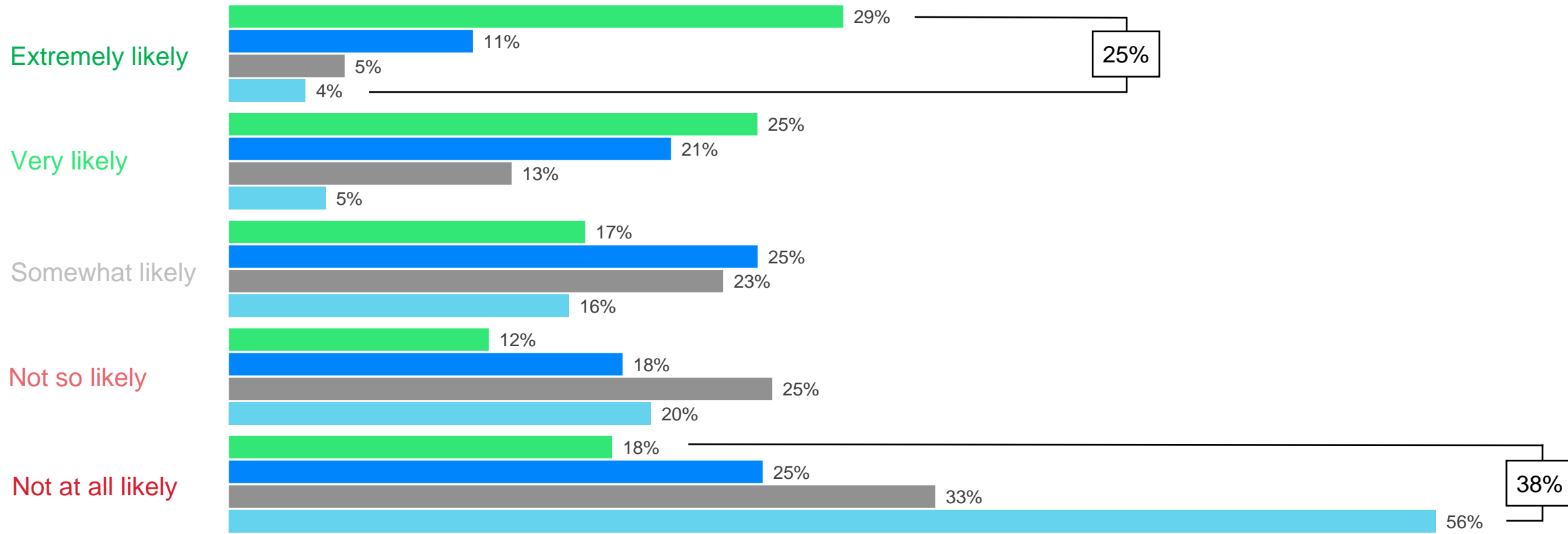


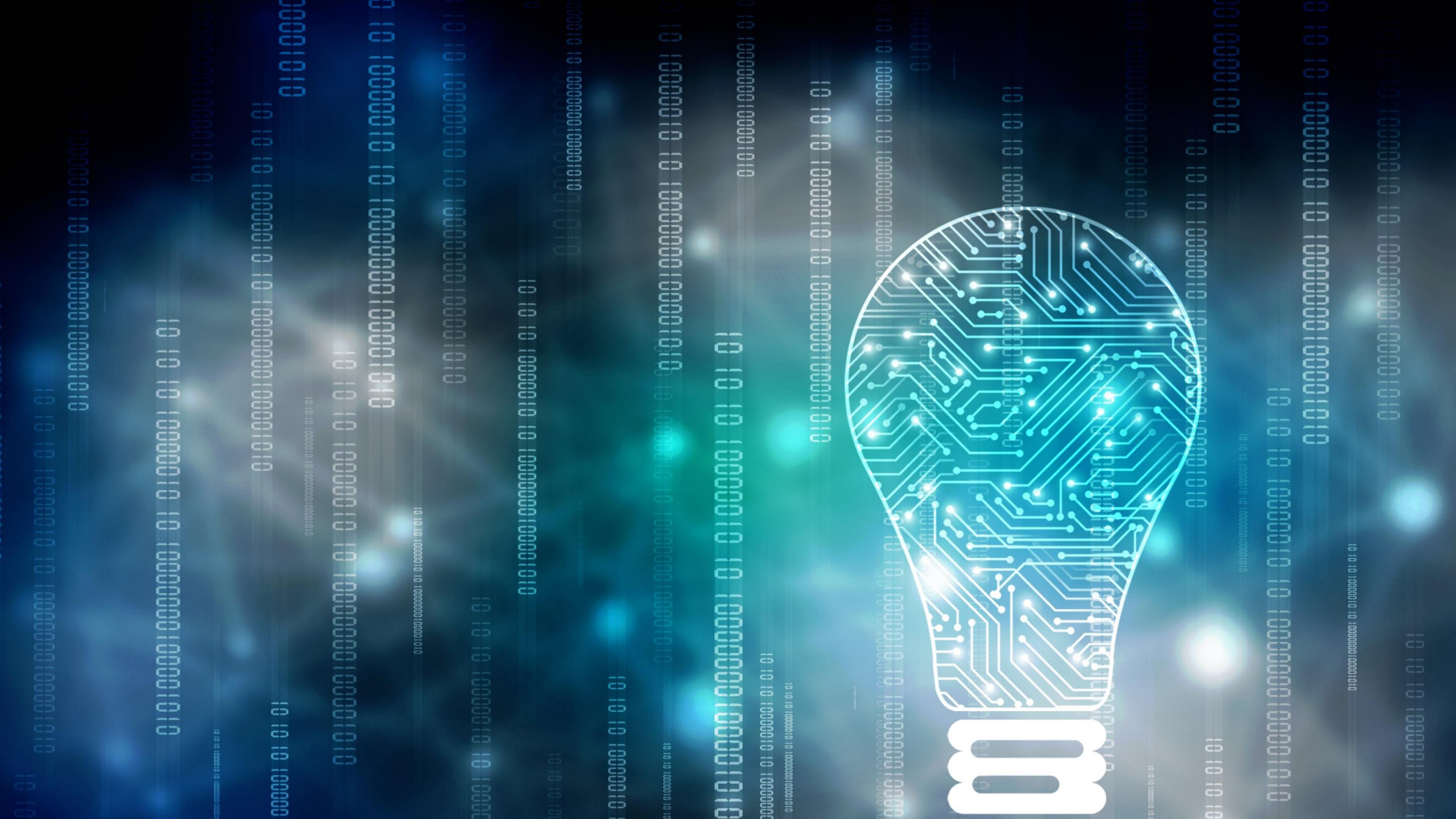
...the numbers change drastically for those who know a great deal about them



## Consumer Likelihood to Purchase/Lease a Self-Driving Vehicle vs. Knowledge Level

■ A great deal   ■ A fair amount   ■ Just some   ■ Nothing at all









# J.D. POWER

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# From Baby Cows to Robot Cars: How to Talk About An Unknown Future



**Kristin White**, Executive Director Connected and Automated Vehicles Office, (CAV-X)  
Minnesota Department of Transportation









SEPTEMBER 24, 2020

# FROM BABY COWS TO ROBOT CARS: HOW TO TALK ABOUT AN UNKNOWN FUTURE

EASTERN TRANSPORTATION COALITION

KRISTIN WHITE, J.D.  
EXECUTIVE DIRECTOR  
MINNESOTA OFFICE OF CONNECTED & AUTOMATED VEHICLES

# HOW FAR ALONG ARE WE?

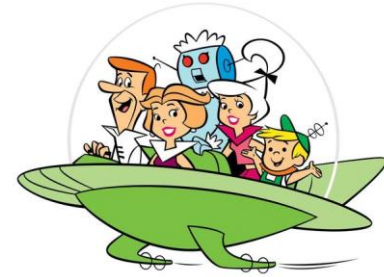
<div> <div>← NO AUTOMATION</div> <div>→ FULL AUTOMATION</div> </div>					
					
LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
<p>No Automation</p> <p>Human operates everything</p> <p>Honda Fit</p>	<p>Driver Assist</p> <p>One piece of automation</p> <p>Ford Jeep Compass</p>	<p>Partial Automation</p> <p>Two or more</p> <p>Tesla Model 3</p>	<p>Conditional Automation</p> <p>Not approved in U.S.</p> <p>Audi A8 (Europe)</p>	<p>High Automation</p> <p>Geo-fenced;</p> <p>Slow-speeds</p> <p>Easy Mile Shuttle</p>	<p>Full Automation</p> <p>No human driver</p> <p>Waymo?</p>
					34



# WHAT OUR FRIENDS THINK

← ANCIENT HISTORY

SELF-DRIVING CARS CAN BE BOUGHT AND ARE EVERYWHERE →



THE STONE AGE

THE HISTORY  
BOOKS

THE FIRST CAR

MY FIRST CAR

I CAN BUY THIS,  
RIGHT?

JETSONS IN  
2021

# TRANSPORTATION AS THE NEXUS



ECONOMY



HEALTH



EDUCATION



HAPPINESS



COMMUNITY



EQUITY



ENVIRONMENT



# WHY TALK ABOUT CAV?

INNOVATION AND TECHNOLOGY HELPS US MEET OUR STATE AND REGIONAL GOALS



GREATER  
MOBILITY &  
EQUITY



WORKFORCE  
DEVELOPMENT



SAFETY &  
OPERATIONS



ECONOMIC  
DEVELOPMENT &  
SMALL BUSINESS



INFRASTRUCTURE  
INVESTMENT



HEALTH &  
ENVIRONMENT

# STRATEGIC COMMUNICATIONS PLAN

TAKE TIME TO ALIGN EDUCATION, OUTREACH & MESSAGING ACROSS THE REGION



CAPITAL INVESTMENT



RESEARCH



PARTNERSHIPS



REGULATION & POLICY



OPERATIONS &  
MAINTENANCE



MULTIMODAL



STRATEGIC STAFFING



COMMUNICATIONS



LONG-RANGE  
PLANNING



# STRATEGIC COMMUNICATIONS PRIORITIES

STRATEGIES IDENTIFIED IN OUR CAV STRATEGIC PLAN



Create a CAV newsletter for internal staff and external stakeholders



CAV “brown bag” discussions and “Lunch and learns” with internal staff



Develop Public Engagement & Communications Plan



Develop an external public-facing website and industry-facing website



Host demos throughout the state with diverse communities



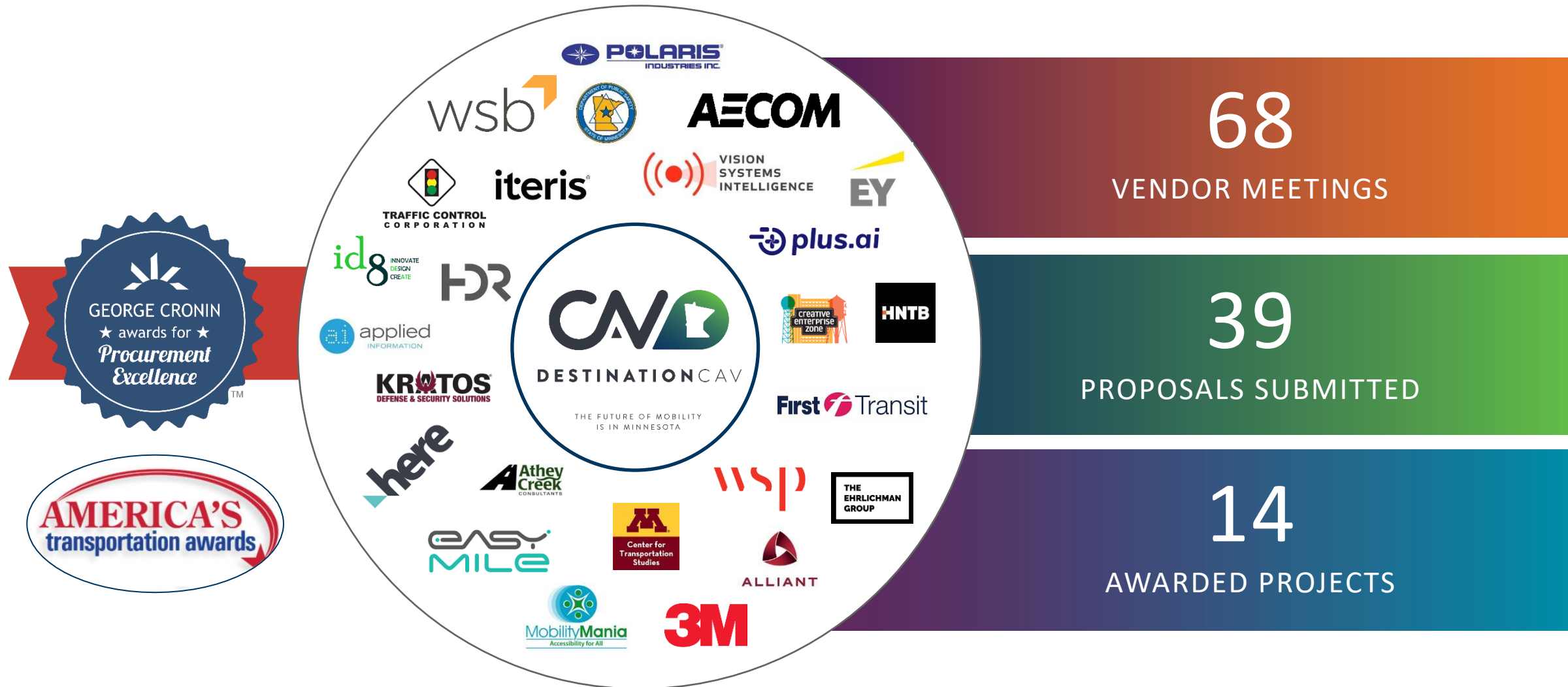
Survey the public



Host regular industry outreach

# CAV CHALLENGE INNOVATION PROGRAM

DEVELOP FLEXIBLE PROCUREMENT & PARTNERSHIPS FOR NEW APPROACHES TO MESSAGING





# KEY QUESTIONS TO ASK

WHAT DO WE WANT TO LEARN?

WHAT DO  
MINNESOTANS  
CURRENTLY THINK  
OF CAV?

WHAT  
TERMINOLOGY  
RESONATES WITH  
PEOPLE?

WHAT ARE  
PEOPLE EXCITED  
ABOUT?

WHAT ARE  
PEOPLE NERVOUS  
ABOUT?

WHAT DO PEOPLE  
WANT TO KNOW  
ABOUT CAV?

WHAT IS THE  
STATE'S ROLE?

HOW DO PEOPLE  
WANT TO BE  
INVOLVED?

WHAT ELSE?

# COMMUNICATIONS & ENGAGEMENT GOALS

STRATEGIC COMMUNICATIONS AND RELATIONSHIP BUILDING ARE CRITICAL IN THIS WORK



Build knowledge and trust in Minnesota's CAV program and how the region is preparing for CAV technology



Grow collaborative and lasting relationships with organizations and communities across the state to be ready for CAV.



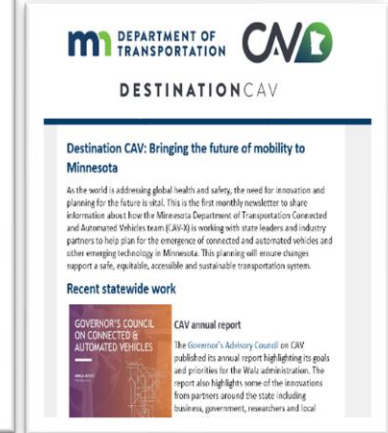
Align state's CAV communications and engagement efforts across programs and organizations.



# LEARN FROM OUR PREVIOUS WORK

WHAT DOES SUCCESS LOOK LIKE? WHAT LESSONS DID WE LEARN FROM PREVIOUS ENGAGEMENT?

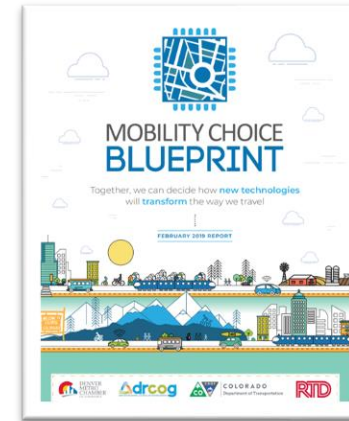
- What public engagement related to CAV have we already done?
- What does it tell us?
- What doesn't it tell us?
- What worked? What didn't?



# LEARN FROM OTHERS

WHAT BEST PRACTICES DO OTHER ORGANIZATIONS HAVE TO SHARE?

- What CAV conversations with the public are happening elsewhere?
- What can we learn from their efforts?
- What do people say on social media?
- What does the media say?
- What do other organizations do well?



Our Driverless Futures: Community Forums on Automated Mobility





# PRIORITIZE YOUR EFFORTS

UNDERSTAND YOUR SPHERE OF INFLUENCE

## Champions & Decision-makers

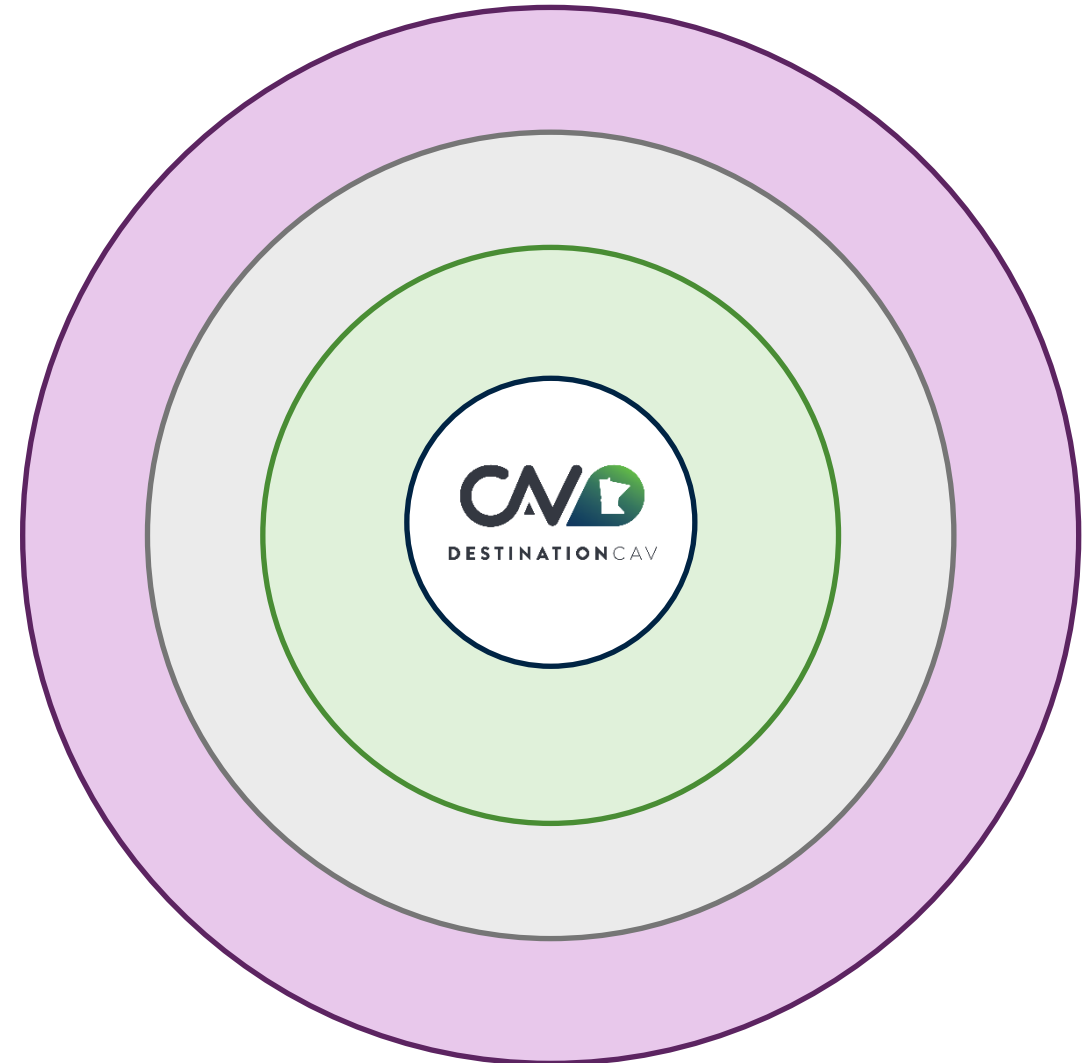
- Direct involvement
- Formal or informal power
- Ability to directly support or create barriers

## Influencers & Advisors

- Can affect outcomes
- May not have direct involvement
- Access to other champions

## Participants & Observers

- Disinterested
- Unfamiliar
- Unlikely to affect outcomes
- Likely to be impacted in the future



# CAV PROGRAM NON-PUBLIC AUDIENCES

USE THE “SPHERE OF INFLUENCE” MODEL TO CATEGORIZE STAKEHOLDERS

Champions & Decision-makers	Influencers & Advisors	Participants & Observers
<ul style="list-style-type: none"><li>• Counties &amp; cities</li><li>• Elected officials</li><li>• Tribes</li><li>• Business</li><li>• CAV/tech industry</li><li>• Freight/logistics</li><li>• Media</li><li>• MPOs/RDOs</li></ul>	<ul style="list-style-type: none"><li>• Transit</li><li>• Education/Research</li><li>• Labor</li><li>• AASHTO/DOTs</li><li>• Underserved communities</li><li>• Mobility advocates</li><li>• Aging population</li></ul>	<ul style="list-style-type: none"><li>• Active transportation</li><li>• Low-income communities</li><li>• Technology skeptics</li><li>• Rural communities</li></ul>

***\*Note: These lists are not inclusive but provide examples of groups in each category***



# TRUE ENGAGEMENT = EMPOWERING COMMUNITIES

USE THE INTERNATIONAL ASSOCIATION OF PUBLIC PARTICIPATION (IAP2) SPECTRUM

LOW LEVEL OF PUBLIC IMPACT

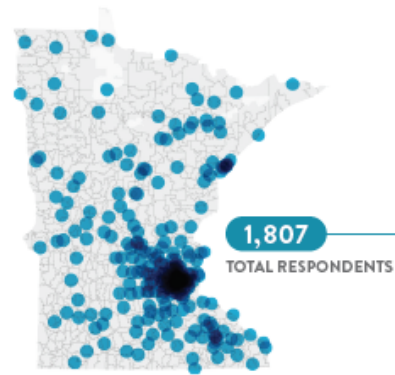
HIGH LEVEL OF PUBLIC IMPACT

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
GOAL	Share balanced and objective information in a timely manner	Seek public feedback	Work directly with communities to ensure their concerns are considered and understood	Partner with communities in every part of the decision-making process	Place final decision in hands of the public
MESSAGE TO PUBLIC	"We'll keep you informed."	"We'll listen to you and acknowledge your concerns."	"We'll ensure your concerns are reflected and show how you influenced the decision."	"We'll seek your advice and solutions and include your feedback into the decision as much as we can."	"We will implement your decisions."

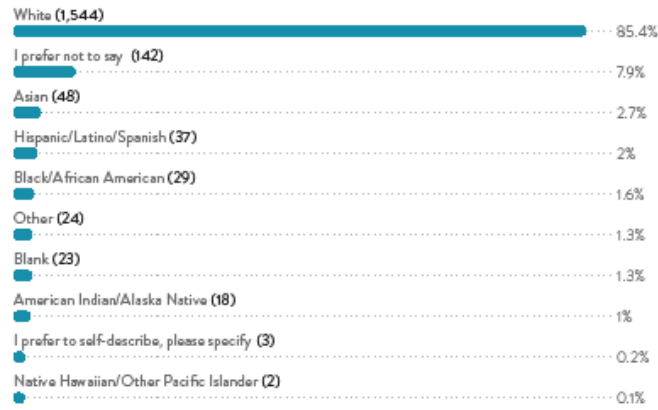
# SURVEY THE PUBLIC

AN INFORMED PUBLIC IS AN ENGAGED PUBLIC

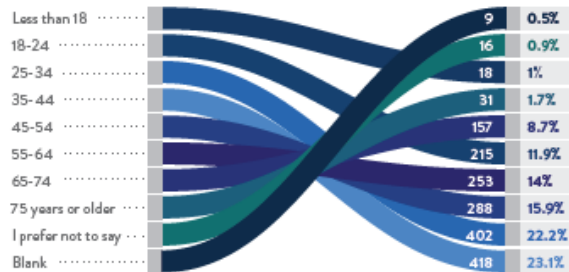
## RESPONSES VIA ZIP CODES



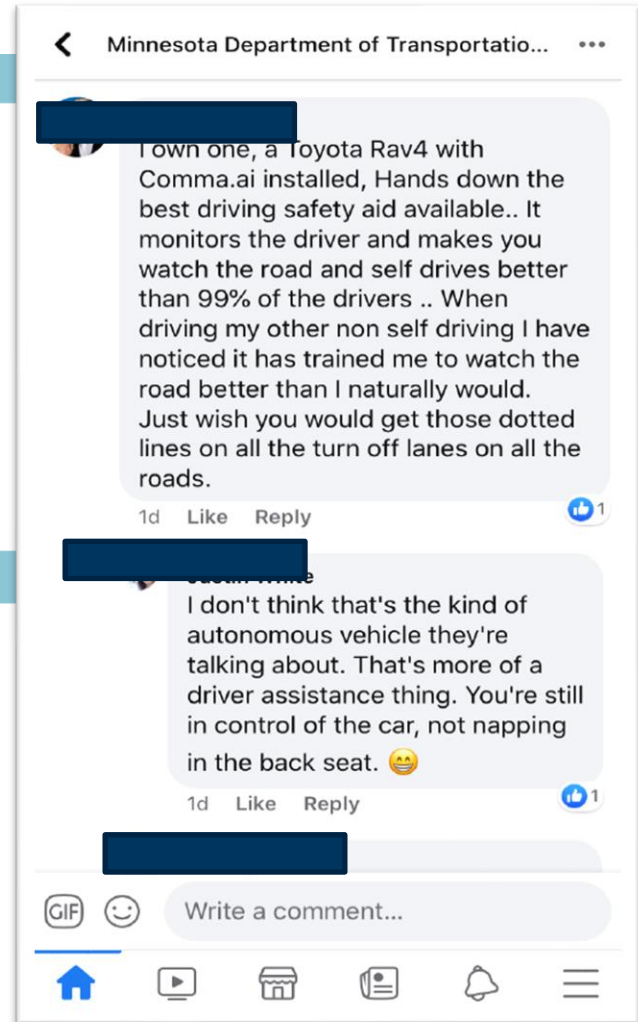
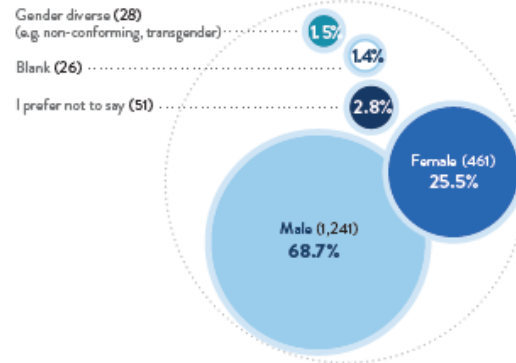
## BY RACE



## BY AGE GROUP



## BY GENDER



# SURVEY DATA FINDINGS - DRAFT

## PRELIMINARY FINDINGS



Males self-reported greater familiarity with and more excitement about CAV technology than other genders



Women self-reported a lower level of familiarity with CAV technology than other genders



Younger respondents tended to report higher levels of familiarity with and more excitement about CAV technology




Metro respondents reported noticeably more excitement and noticeably less concern about CAV technology than Greater MN respondents despite reporting similar levels of familiarity



There is a direct relationship between higher levels of self-reported familiarity with CAV technology and excitement about CAV technology

# DEVELOP PERSONAS

PERSONAS HELP IDENTIFY USERS' NEEDS, EXPERIENCES, BEHAVIOR AND MOTIVATIONS



Hello

## Meet Maria

Maria is a 22-year-old mother who lives in Aurora. She is a student at Metro State University who also works part time at a restaurant in downtown Denver. Her pride and joy is her 4-year old son Gabriel, who often stays with Maria's mother at her home in the Five Points neighborhood. Maria bought a used car but struggles with payments and repairs. She typically uses her car to get to her mother's house, but to avoid high parking costs in downtown Denver, she uses transit to get to school and work. She's open to a Mobility as a Service program if it saves her time and money — her strongest mobility motivators.


**FRUSTRATIONS**

- Reductions in service
- Route changes
- Bus frequency
- Public transit dead zones
- Feeling unsafe on Free MallRide


**NEEDS**

- Fill in the gaps
- Clear communication
- Affordable options

**MOTIVATIONS**




Cost




Time Efficiency


**HOW I RANK MYSELF**



Tech Savviness














New Technology Attitude



Quality of Life

These personas are not actual individuals, but they are inspired by real people interviewed during the engagement process.

-  Technology attitudes
-  Age
-  Gender identity
-  Ability
-  Salary
-  Location
-  Education
-  Family
-  Values
-  Fears
-  Messaging

# MESSAGE THEMES

WHAT DO WE WANT CAV MESSAGING TO MAKE US FEEL AND UNDERSTAND?



## Safety

- Safe
- We're making advancements
- Responsible
- Integrity
- Healthy
- Happy
- Transparent
- Protecting privacy



## Future Innovation

- Future-forward-thinking
- Know when high-level automation will be here
- Inspired
- Excited
- Innovation and exploration
- Creative
- Outside the box
- Human-centered design



## Economic and Workforce Development

- Opportunities
- Growing our economy
- Support small business
- Develop our workforce
- Reduced travel times
- Planning for the future
- Sustainable
- Investing in our region



## Equity, Access & Mobility

- Equal, inclusive, diverse
- Opportunity
- Reduce disparities
- Expand access
- Multi-modal mobility
- Mobility-as-a-service
- Accountable
- Listening

# ENGAGEMENT IDEAS

1. Form Community Advisory Councils to implement and review engagement work
2. Data tracking on engagement, demographics and success metrics
3. Advertise & market your work
4. Publish work and partnerships
5. Use storying telling
6. Create a brand
7. Send regular newsletters
8. Fact sheets and pamphlets
9. Have more presence on social media
10. 1:1 meetings
11. Develop earned media
12. Pitch stories to media
13. Make websites more user/public friendly
14. Create CAV “ambassadors”
15. CAV speaker's bureau
16. CAV 101 presentations - “Train the trainer” model with standard presentations
17. Develop thought leaders
18. Create “canned” articles to share
19. Highlight relevant blog posts from industry
20. Host regular webinars
21. Host lunch hour presentations
22. Host an annual CAV conference
23. Organize regular tech showcases
24. Hold public demonstrations
25. Coordinate work across organizations
26. K-12/Higher ed outreach
27. Create list of orgs to send updates and articles
28. Speak at annual conferences
29. Develop systematic approach to engaging with private and nonprofit sector





# BUT IS IT REALLY ENGAGEMENT?

INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
<div>1. Advertise &amp; market your work</div> <div>2. Publish work and partnerships</div> <div>3. Use storying telling</div> <div>4. Create a brand</div> <div>5. Send regular newsletters</div> <div>6. Fact sheets and pamphlets</div> <div>7. Have more presence on social media</div> <div>8. Develop earned media</div> <div>9. Pitch stories to media</div> <div>10. Make websites more user/public friendly</div> <div>11. Data tracking on engagement, demographics and success metrics</div> <div>12. CAV speaker's bureau</div> <div>13. CAV 101 presentations - "Train the trainer" model with standard presentations</div> <div>14. Create "canned" articles to share</div> <div>15. Highlight relevant blog posts from industry</div> <div>16. Host regular webinars</div> <div>17. Host lunch hour presentations</div> <div>18. Organize regular tech showcases</div> <div>19. Coordinate work across organizations</div> <div>20. K-12/Higher ed outreach</div> <div>21. Create list of orgs to send updates and articles</div> <div>22. Speak at annual conferences</div>	<div>23. Develop thought leaders</div> <div>24. Host an annual CAV conference</div> <div>25. Hold public demonstrations</div>	<div>26. 1:1 meetings</div> <div>27. Form Community Advisory Councils to implementation and review engagement work</div> <div>28. Create CAV "ambassadors"</div>	<div>29. Develop systematic approach to engaging with private and nonprofit sector</div>	<div>30. Directly engage public to inform policy proposals</div> <div>31. Ask community members what pilots and use cases they want deployed</div>

# EXAMPLES



STATEWIDE NEWSLETTER



INTERNAL NEWSLETTER

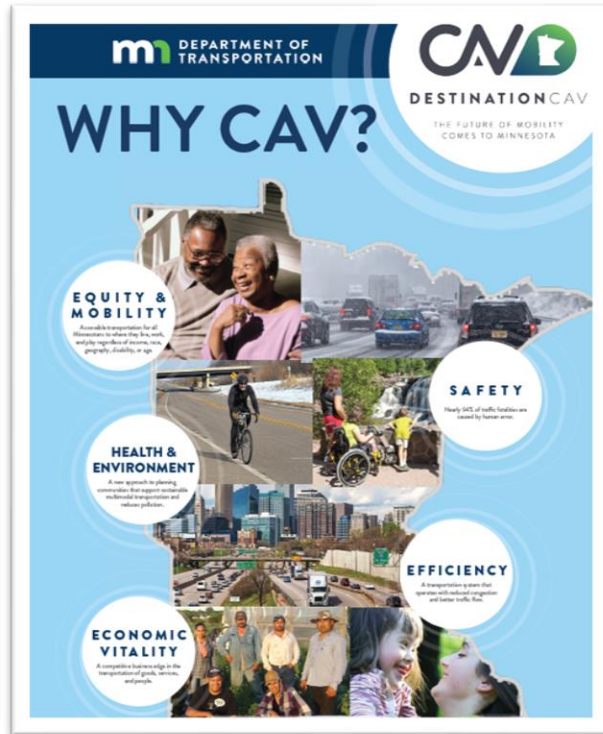


CONFERENCE POSTERS & BOOTHS

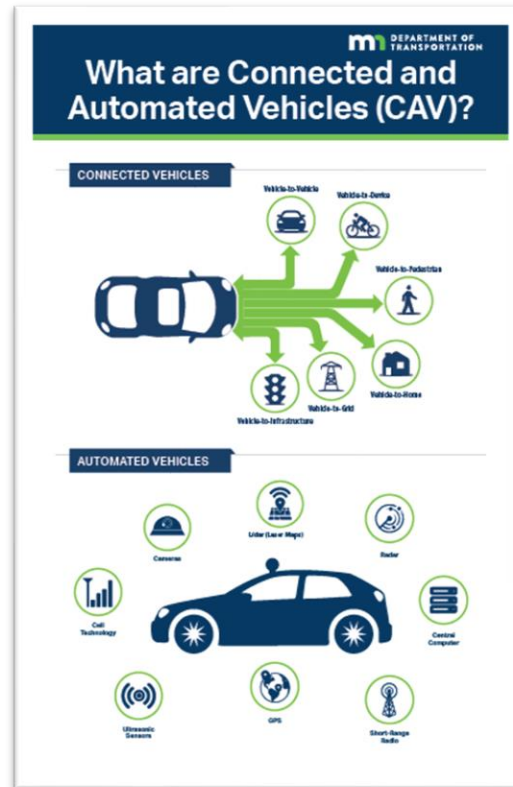
# TAKEAWAYS & INTERACTIVE SURVEYS



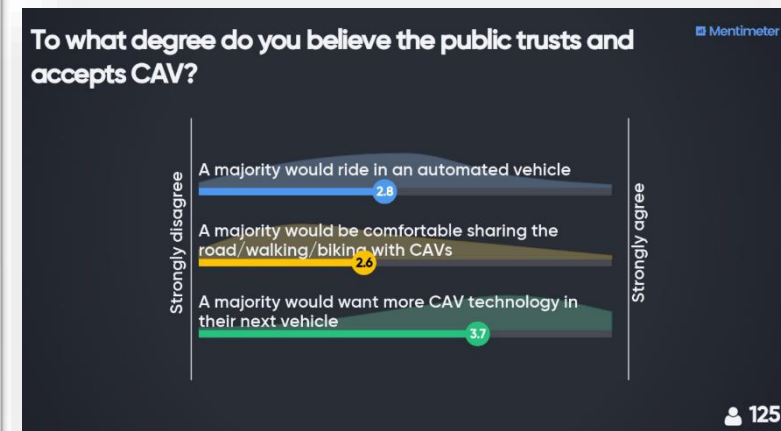
ONE-PAGE FACT SHEETS



DEMONSTRATION POSTERS



COMMUNITY WORKSHOP POSTERS



MENTIMETER REAL-TIME LIVE SURVEYS

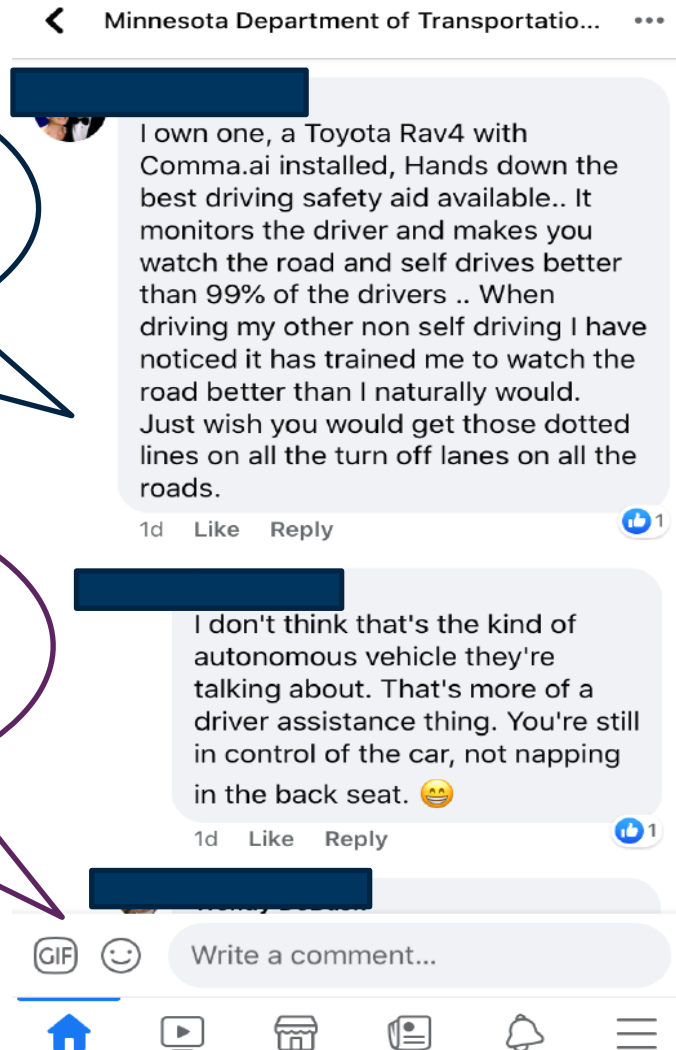


# WHAT ARE WE HEARING?

PLAIN LANGUAGE HELPS USERS UNDERSTAND OUR GOALS AND THE TECHNOLOGY

Why can't you just call them "driverless cars"? I don't understand 'automated' versus 'autonomous'.

What does "infrastructure mean"? Can't you just say, "roads and highways"?



How am I supposed to be concerned about this futuristic issue when I can't get reliable bus service to my job or childcare?

How can you make sure these technologies reach me, in a rural area, with little access to internet or cell service?

# NEED MULTIFACETED COMMUNICATIONS

TABLE AT COMMUNITY EVENTS, HOST VEHICLE DEMONSTRATIONS, INVITE KEY STAKEHOLDERS



Demos

Surveys

Workshops

Conferences

Fact  
Sheets

Website

Newsletter

# ACKNOWLEDGE THE WORLD IS CHANGING



Search





**Runa Sandvik**   
@runasand

To everyone now working from home, let me introduce you to conference call bingo.

HI, WHO JUST JOINED?	CAN YOU EMAIL THAT TO EVERYONE?	IS ____ ON THE CALL?	UH, ____ YOU'RE STILL SHARING...	HEY, GUYS, I HAVE TO JUMP TO ANOTHER CALL
(SOUND OF SOMEONE TYPING, POSSIBLY WITH A HAMMER)	(LOUD, PAINFUL ECHO/ FEEDBACK)	(CHILD OR ANIMAL NOISES)	HI, CAN YOU HEAR ME?	NO, IT'S STILL LOADING.
NEXT SLIDE, PLEASE.	CAN EVERYONE GO ON MUTE?	I'M SORRY; I WAS ON MUTE	(FOR OVERTALKERS) SORRY, GO AHEAD	HELLO? HELLO?
SO (cuts out) I CAN (unintelligible) BY (cuts out) OK?	SORRY I'M LATE (INSERT LAME EXCUSE.)	I HAVE A HARD STOP AT...	I'M SORRY, YOU CUT OUT THERE.	CAN WE TAKE THIS OFFLINE?
I'LL HAVE TO GET BACK TO YOU.	CAN EVERYONE SEE MY SCREEN?	SORRY, I WAS HAVING CONNECTION ISSUES.	I THINK THERE'S A LAG.	SORRY, I DIDN'T CATCH THAT. CAN YOU REPEAT?



# VIEW OUR WORK THRU AN EQUITY LENS

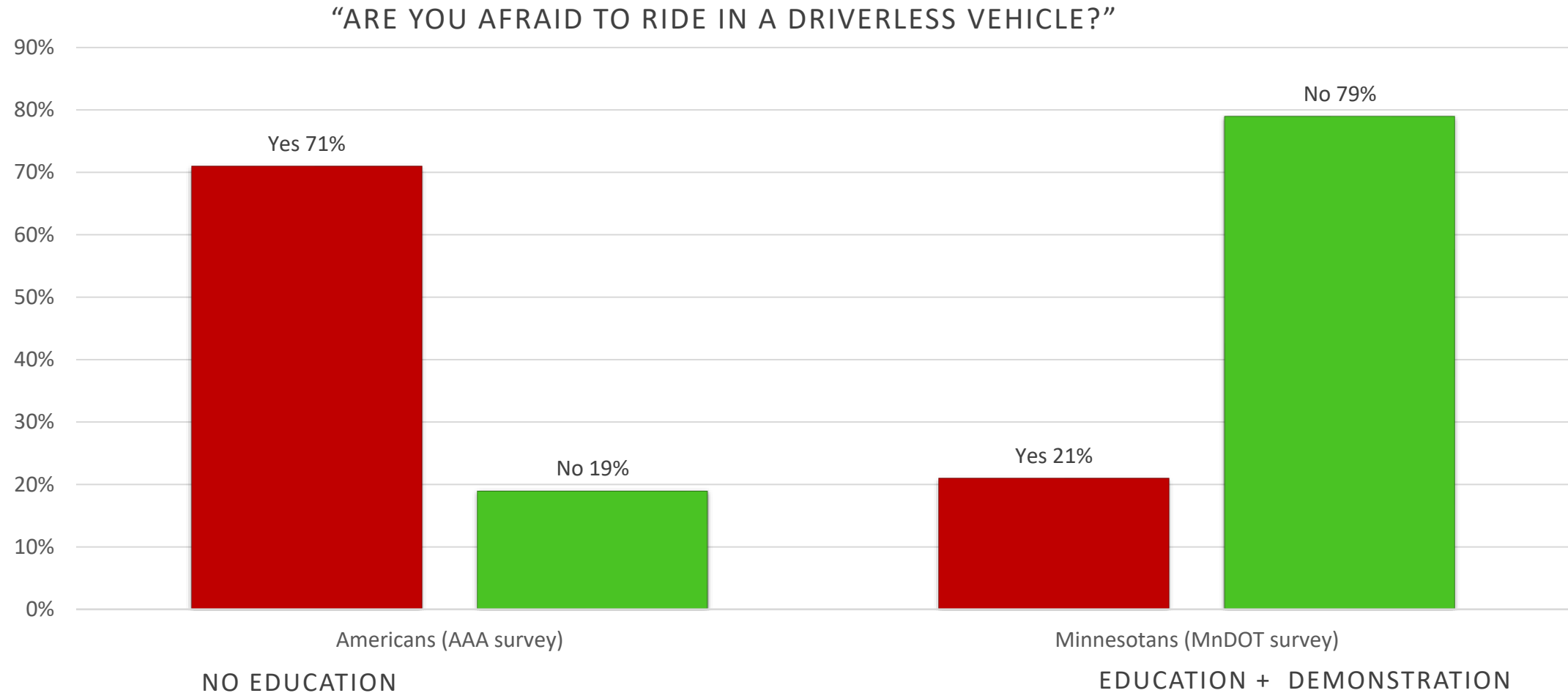
POWERFUL FRAMEWORKS TO HELP MAKE INFORMED DECISIONS AND CHALLENGE OUR ASSUMPTIONS





# THIS WORK MATTERS

EDUCATION + DEMONSTRATIONS = INFORMED AND ENGAGED COMMUNITIES





# THIS WORK TAKES TIME

1. Identify clear goals
2. Learn from previous work
3. Industry scan
4. Tailor messaging and tools to specific communities
5. Survey the public
6. Interview stakeholders
7. Create personas
8. Review plan with stakeholders
9. Develop public-facing website
10. Identify risks and create mitigation strategies
11. Develop evaluation metrics
12. Crisis management planning



# LESSONS LEARNED

1. Take time to plan
2. Engage and empower stakeholders
3. Consider all options
4. Public-private partnerships are key
5. Don't hesitate to ask
6. Leverage current public/private support for this work
7. Don't let a crisis go to waste

# THANK YOU

MINNESOTA CONNECTED & AUTOMATED VEHICLE PROGRAM

KRISTIN WHITE, J.D.  
Executive Director, MnDOT CAV-X  
[kristin.white@state.mn.us](mailto:kristin.white@state.mn.us)  
[www.mndot.gov/automated](http://www.mndot.gov/automated)





# Communicating & Collaborating Cooperative CAV Strategies within IOOs



**Carole Delion, P.E.**, Division Chief & CAV Program Manager  
Maryland Department of Transportation - State Highway  
Administration, CATS Division



**Roxane Mukai**, Operations Engineer & CAV Liaison  
Maryland Transportation Authority

# Communicating & Collaborating Cooperative CAV Strategies within IOOs

The Eastern Transportation Coalition Workshop

Sept 24, 2020



Maryland  
Transportation  
Authority



# Agenda

- CAV in Maryland
- Who is MDOT
- MDTA
- MDOT SHA



# MARYLAND CAV VISION & WORKING GROUP

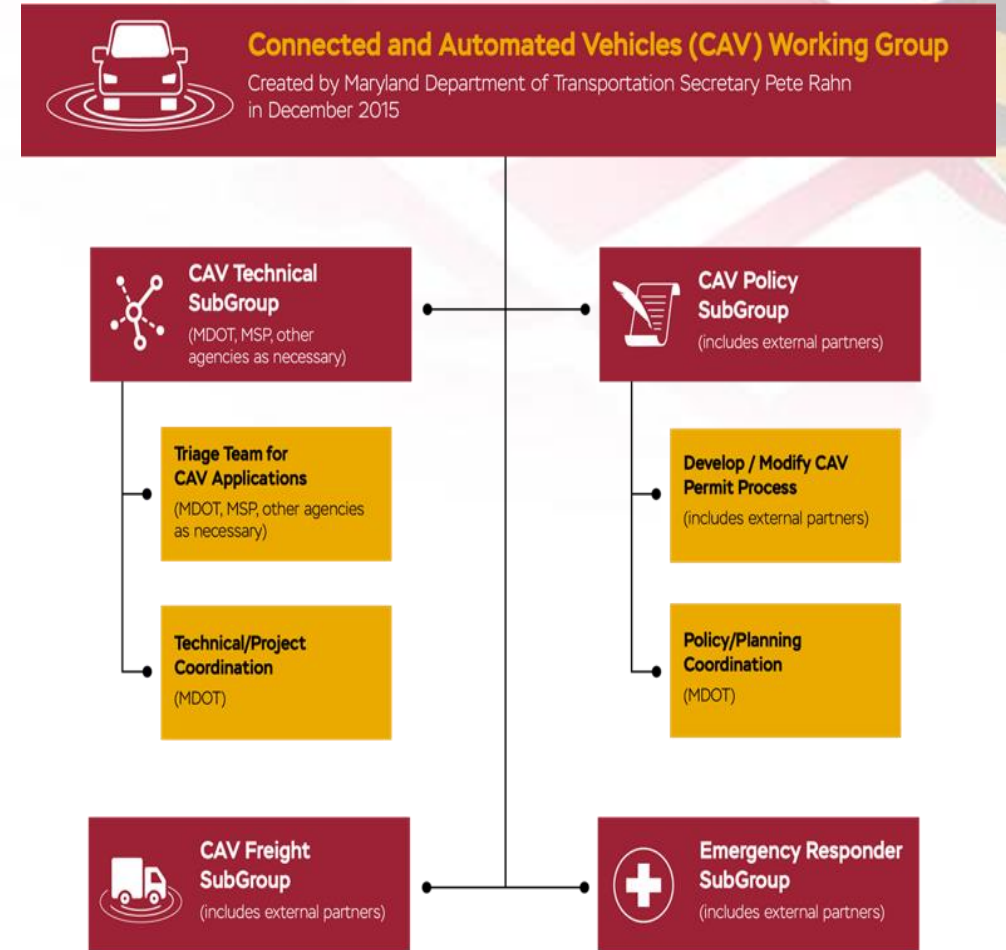
Uphold & enhance a **Safe, Efficient, and Equitable** transportation future by delivering collaborative and leading-edge CAV solutions.

Maryland is open for business and eager to realize the life-saving and economic benefits of CAV technology, while ensuring safety for all.

We are embracing CAV technology and innovation through continuing collaboration with partners interested in researching testing, and implementing CAVs in MD.

## CAV Actions in Maryland

<http://mdot.maryland.gov/MarylandCAV>



E-Mail: [CAVMaryland@mdot.state.md.us](mailto:CAVMaryland@mdot.state.md.us)

# Timeline of CAV in Maryland

**2015**

- + The Maryland Connected and Automated Vehicles (CAV) Working Group is formed by the Secretary of Transportation

**2017**

- + MDOT MVA establishes Expression of Interest process ([Link](#))
- + MDOT MVA permits 1st private firm to perform autonomous parking in a controlled environment using HAV permit
- + MDOT SHA releases a CAV Strategic Action Plan ([Link](#)) & commits to national SPaT challenge

**2019**

- + MDOT helps establish new Mid-Atlantic CAV Group within the I-95 Corridor Coalition that includes MD, DC, VA, DE, PA, NJ, and NY
- + MDOT MTA wins TRB transit IDEA grant and begins testing autonomous vehicle parking at a MARC commuter rail park and ride lot
- + MDOT SHA wins STIC grant to deploy connected vehicle technology for pedestrian safety
- + MDOT MAA releases an RFP that includes autonomous parking technology as a requirement

**2016**

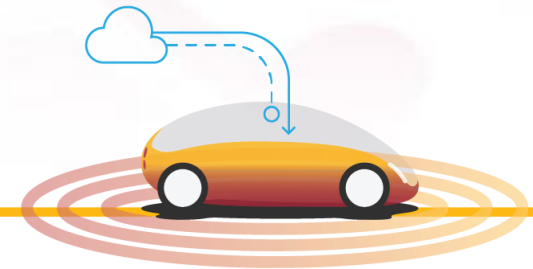
- + MDOT MVA establishes Highly Automated Vehicle permit process ([Link](#))
- + MDOT SHA includes CAV in its TSMO Strategic Action Plan ([Link](#))

**2018**

- + MDOT releases a statewide CAV Vision Statement
- + MDOT begins CAV Strategic Plan development
- + MDTA releases a CAV Strategic Action Plan ([Link](#))
- + MDOT "Locations to Enable Testing Sites" (LETS) application is released to the public ([Link](#))
- + MDOT MVA permits Olli Autonomous shuttle deployment in National Harbor, MD
- + MDOT SHA updates its TSMO Strategic Action Plan with new CAV initiatives ([Link](#))

**2020**

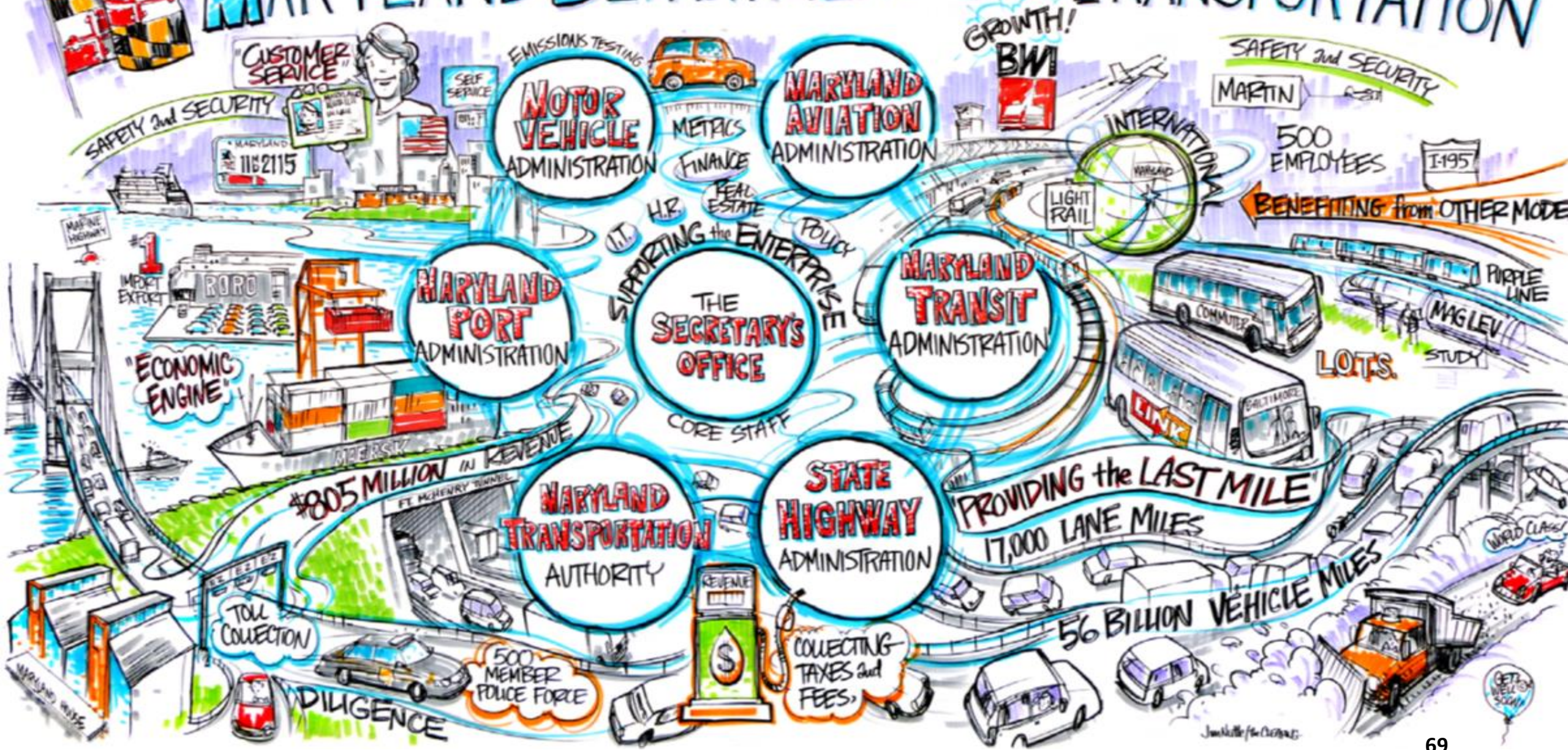
- + MDOT MTA begins conversations with business park on possible autonomous shuttle pilot
- + MDOT SHA hosts educational STEM workshops as part of the AASHTO TRAC program
- + MDOT TSO & MDOT SHA issue outreach survey on needs relating to emerging technologies to local jurisdictions ([Link](#))
- + MDOT to release CAV Strategic Plan (soon!)



September 24, 2020

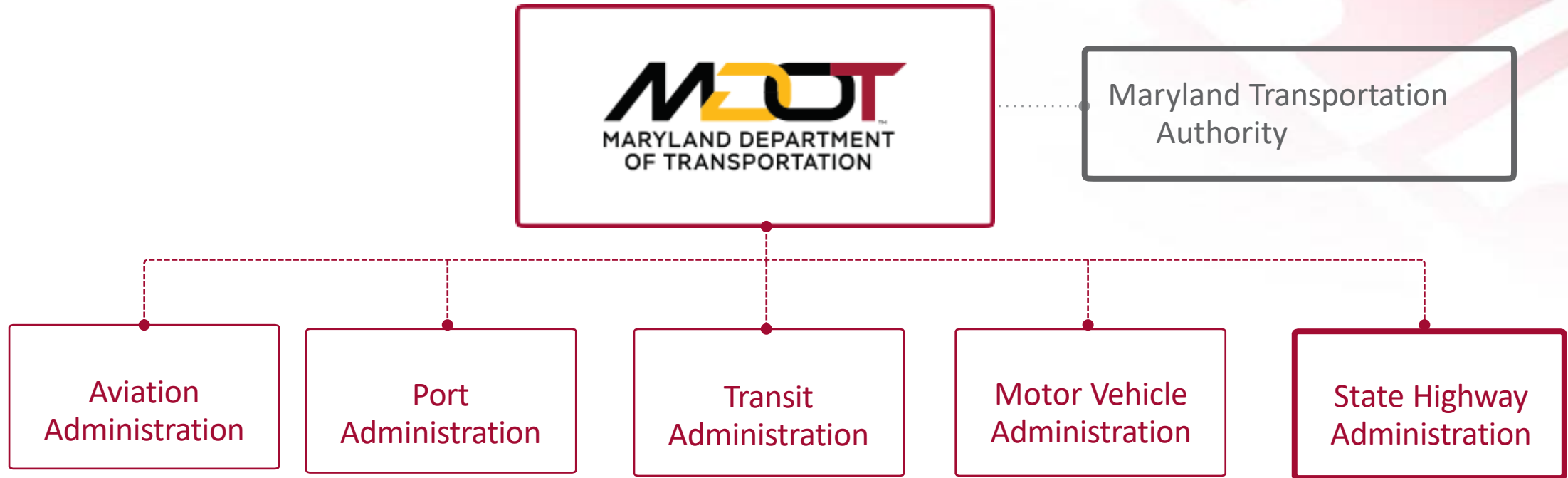


# MARYLAND DEPARTMENT OF TRANSPORTATION





# Who we are



# MARYLAND TRANSPORTATION AUTHORITY

## FACILITIES

- ❶ Thomas J. Hatem Memorial Bridge (US 40)
- ❷ John F. Kennedy Memorial Highway (I-95)
- ❸ Fort McHenry Tunnel (I-95, I-395)
- ❹ Baltimore Harbor Tunnel (I-895)
- ❺ Francis Scott Key Bridge (I-695)
- ❻ Intercounty Connector (ICC)/MD 200
- ❼ William Preston Lane Jr. Memorial (Bay) Bridge (US 50/301)
- ❽ Governor Harry W. Nice Memorial/  
Senator Thomas "Mac" Middleton Bridge (US 301)





# MDTA Strategic Plan for Connected & Automated Vehicles (CAV Plan)



**Maximizing customer experience with the latest vehicle technology.**



**Improving safety and travel-time reliability.**



**Seeking opportunities to partner with technology providers and automakers.**



**Preparing the MDTA workforce for the technology of the future.**



**Communicating with customers on use of CAV technologies on MDTA facilities.**



## CAV Plan Vision Statement

The MDTA will support a framework for CAV transformative technologies to improve customer experience and provide access to safe and reliable transportation solutions.

## MDTA Readiness for CAV:



- The Goals set high-level targets to aim toward.



- Through the internal MDTA CAV Working Group meetings, more than 75 potential actions (considerations) were initially identified, which were later prioritized and explored in greater detail.



- The CAV Plan also provides additional detail on internal/external awareness, impacts to the CTP, operations, and processes and procedures.



- The MDTA CAV Plan – like the technology – will evolve in real-time.

# MDTA CAV Perspectives

## Business

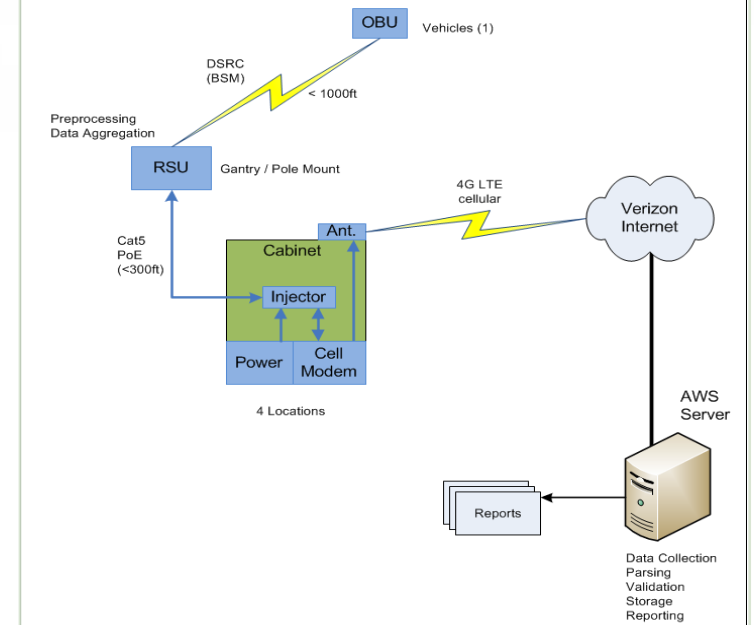
- Monitor specifications and certification processes.
- Toll activity interfaces with infrastructure and business operations.
- Business intelligence – investment costs and profitability, P3s, joint tech pilots, data management.

## Emergency Response.

- Identification
- Interdiction
- Impoundment



## Infrastructure.





# MDTA CAV Information Sharing



## CAV Liaisons.

- Source of information.
- Incorporate CAV into projects.
- Identify areas of possible concern.



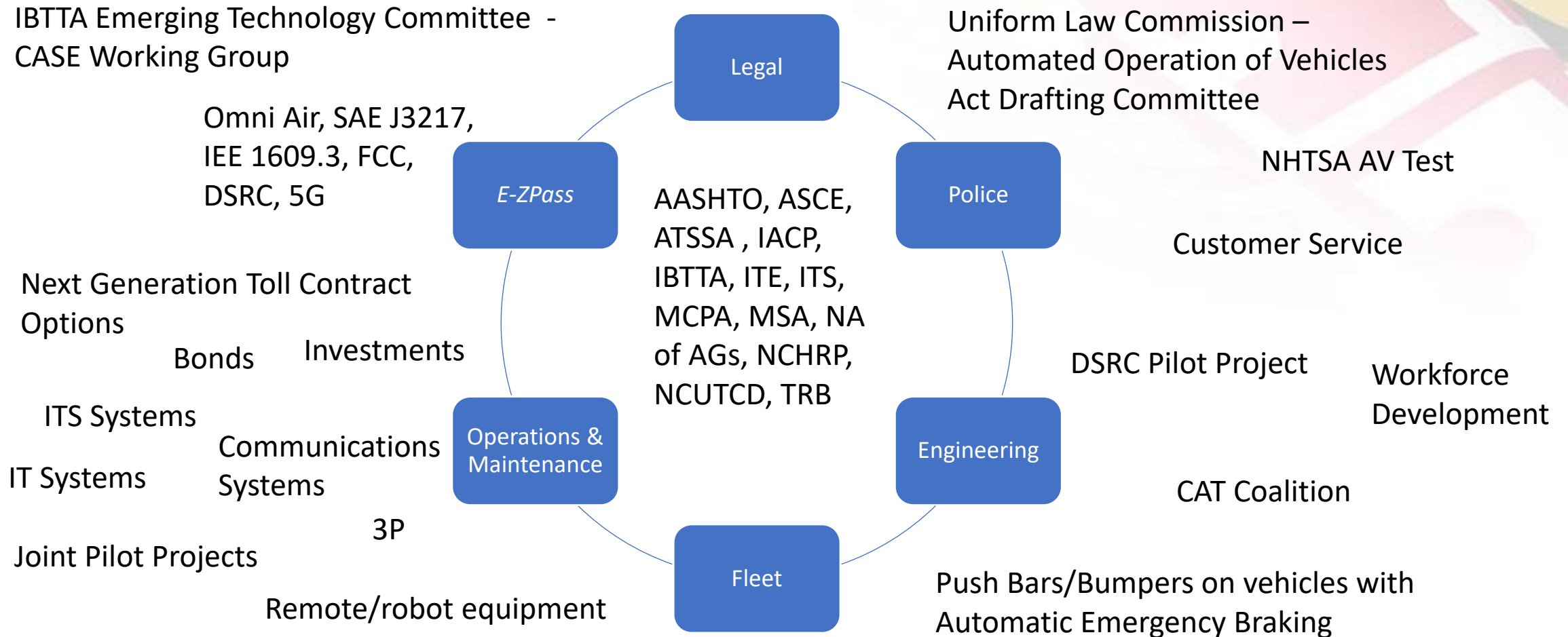
## Lunch and Learns.



## Outreach.



# MDTA CAV-Examples of Monitoring/Participation/Activities



# MDOT SHA

## MDOT SHA

owns and maintains the Interstate, U.S., and Maryland numbered, non-toll routes in



Maryland  
Counties

MDOT SHA maintains the roadways in Maryland which carry **16%** of all State traffic that translates to **59,629,000,000** vehicle miles travelled<sup>1</sup> in Maryland in 2019

**17,178 +**

Lane Miles<sup>2</sup> of Roads and Ramps

**2,960** EMPLOYEES IN 26 OFFICES

**7** Districts

**28** Maintenance Shops

**2,500+**

State Maintained  
Bridges

**\$1.3 billion** State funds

**\$571.8 million** Federal funds

MDOT SHA Funding

**77%** total value of goods moved in MDare by truck

estimated to carry

**198.3** million tons of freight

with over **\$298.2** billion in value

\*Source: U.S. Department of Transportation Freight Analysis Framework (FAF4) Version 4.5 that was refactored using 2017 data. To report 2018 and 2019 data, a 3% annual growth rate was applied. The water tonnage data is estimated for 2019, based on U.S. Army Corp of Engineers reporting.

<sup>1</sup> Vehicle miles of travel (VMT) is the number of miles traveled by all vehicles on all roads.  
<sup>2</sup> Lane-miles is the term used for the mileage down the center line, multiplied by the number of lanes.



# MDOT SHA: Agency Wide Material

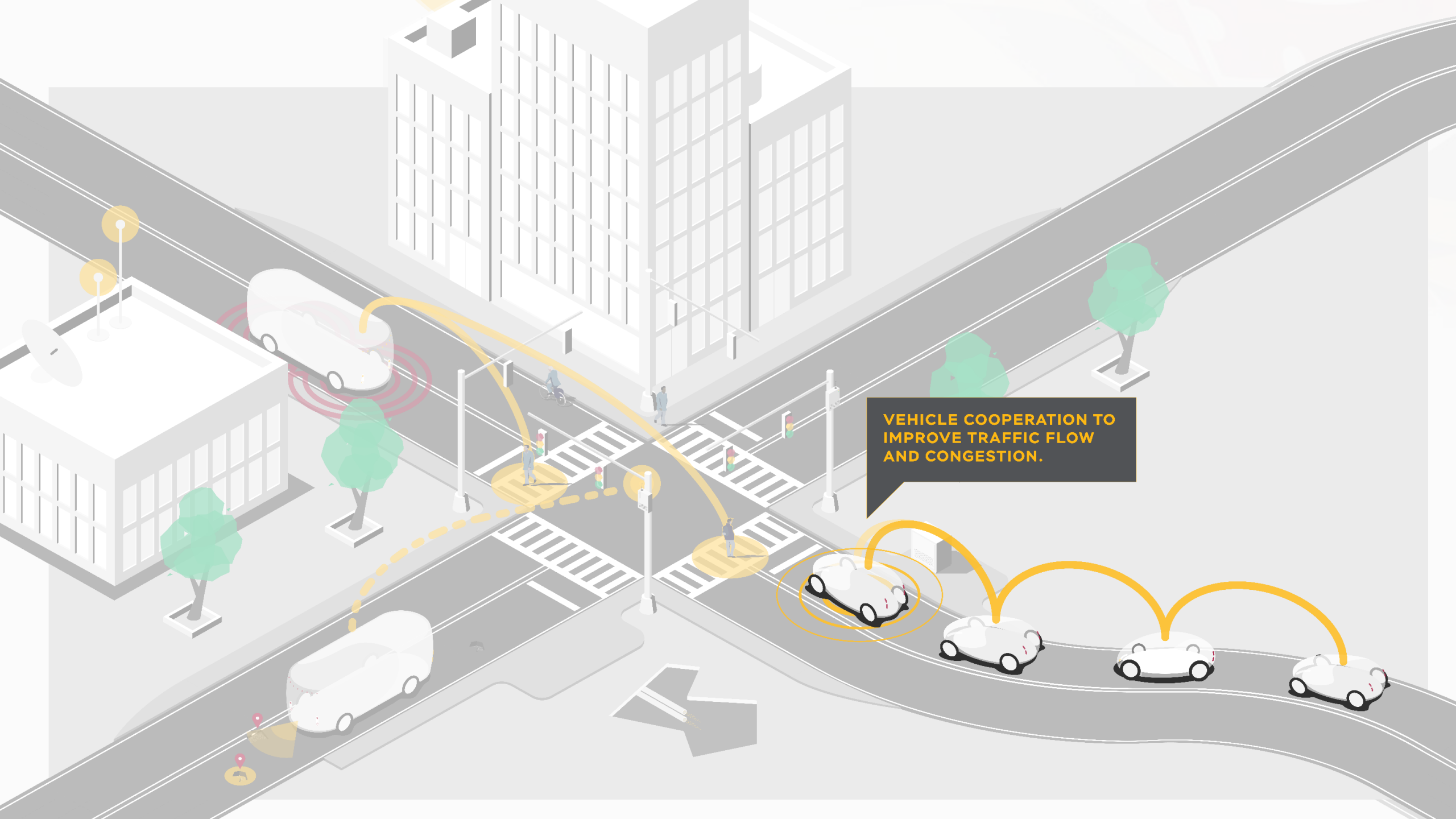


Connected &  
Automated Vehicles  
ONLINE LUNCH & LEARN



**CAV 101** Interactive Training App

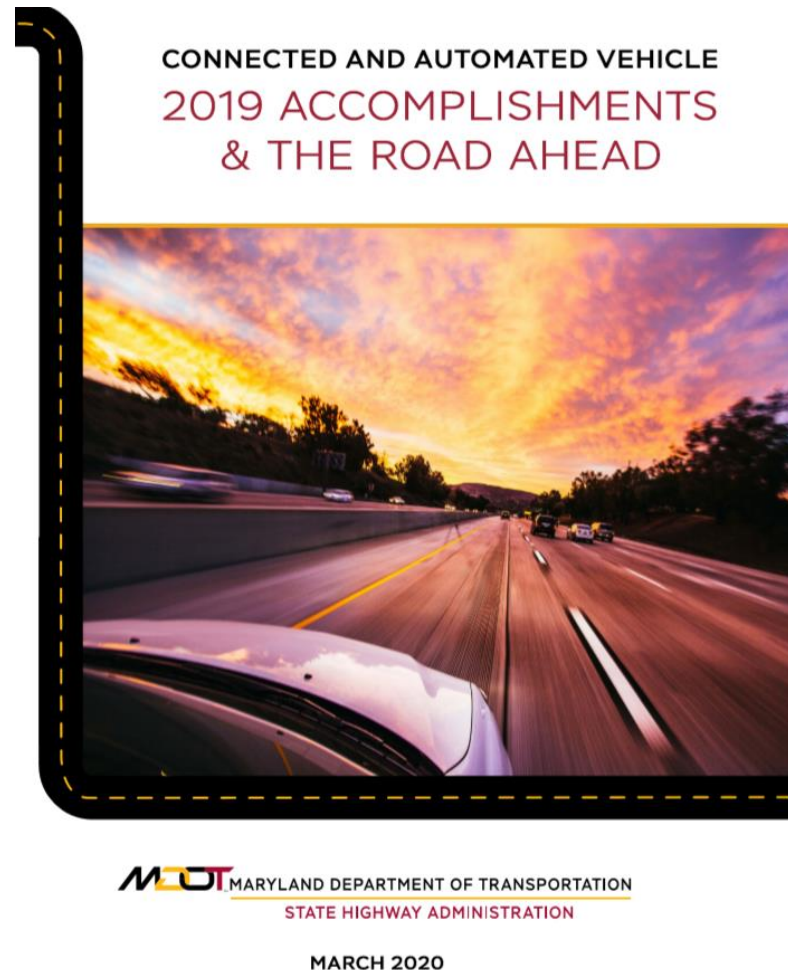




# MDOT SHA: SharePoint Site

- Existing standards related to CAV & national committee efforts
- NCHRP reports or other research documents
- Useful links to additional resources
- Training material and recordings of Lunch and Learn
- Blog that staff can sign up for weekly news and upcoming webinars
- Webinar notes for all to see
- Meeting minutes & bi-monthly updates (sent to leadership)
- Presentations by MDOT & federal responses (**deemed most helpful!**)

# MDOT SHA: Public Facing Documents



# MDOT SHA: Other Efforts

- Internal CAV Working Group with dedicated 'Champions' that meets bi-monthly
- Smaller 1:1 conversations within agency
- Assign strategies to various Divisions



# MDOT SHA: Lessons Learned

- **Use easily editable dashboards & material** so you can test the ones that work best for your group of employees
- **Start by focusing efforts on groups you know pay attention** to hit critical mass before expecting full understanding
- **Have a predetermined outreach strategy** with known dates to keep momentum alive
- **Repeat yourself frequently & track progress** to stay on people's radar, when the group 'tires' (you'll know when) move on to next outreach strategy
- **Get your young staff involved** to help carry the torch in the future

# MDOT SHA: Main Take Away

Collaborate, network broadly, and be kind...you never know who-knows-who (and holds the key to funding your CAV program).

# Questions?

## **Roxane Mukai**

Operations Engineer & CAV Liaison  
MDTA

[rmukai@mdta.state.md.us](mailto:rmukai@mdta.state.md.us)

## **Carole Delion**

Division Chief & CAV Program Manager  
MDOT SHA

[cdelion@mdot.Maryland.gov](mailto:cdelion@mdot.Maryland.gov)



## Poll Question #3

3

Are any of the following areas related to CV/AV communication those in which your agency would benefit from additional resources and/or guidance?  
*(check all that apply)*

- Language and terminology
- Internal communication
- Communication with decision-makers/leadership
- Communication with the public
- Communication with other government partners
- Communication with the private sector
- Communication with neighboring jurisdictions/states



## Poll Question #4

4

What do you see as the greatest challenge related to communication about CV/AV technology? (*Pick your top three*)

- **Conflicting/confusing messaging and marketing**
- **Lack of understanding about the technology**
- **Lack of resources/staff to devote to the effort**
- **Not a priority for my agency**
- **Unclear roles among agencies, industry stakeholders, private sector, etc.**





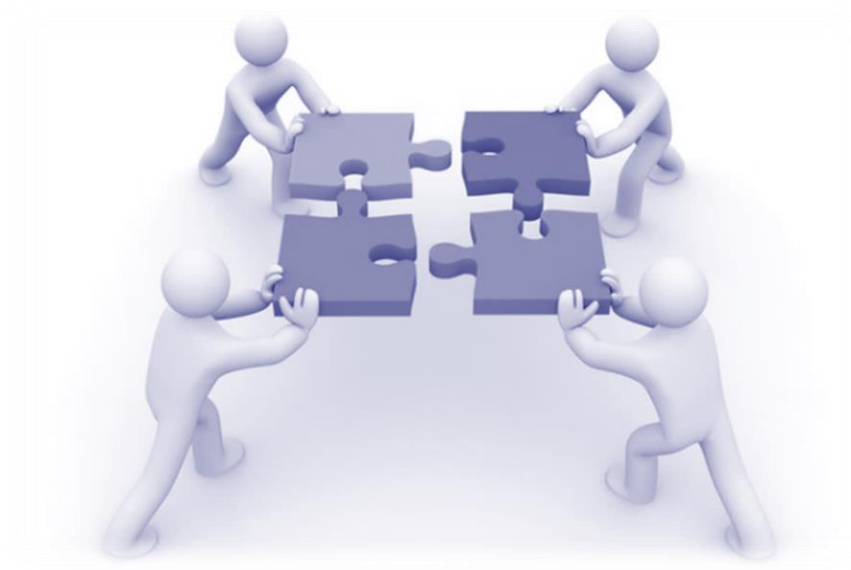
## Poll Question #5

5

Is there anything else the Coalition could do to support your agency in this area?



# Questions?



Remaining Questions from the CHAT Box



# Wrap Up



Meeting information & presentations will be posted to Coalition website.  
Participants will receive a link to the presentations after they are posted.



# In Closing....

## Thank you for joining today

For additional information, please contact:

**Virginia Reeder**

Program Associate

Innovation Program

The Eastern Transportation Coalition

(Formerly the I-95 Corridor Coalition)

(617) 529-9072

[vreeder@tetcoalition.org](mailto:vreeder@tetcoalition.org)

— **THE EASTERN  
TRANSPORTATION  
COALITION**

CONNECTING FOR SOLUTIONS

