Transportation Authority of Marin

900 Fifth Avenue
Suite 100
San Rafael
California 94901

Phone: 415-226-0815
Fax: 415-226-0816

www.tam.ca.gov

INNOVATION WORKSHOP
TRANSPORTATION AUTHORITY OF MARIN
BOARD OF COMMISSIONERS

OCTOBER 23, 2025
4:00 P.M.

MARIN WILDFIRE PREVENTION AUTHORITY BOARD ROOM
1600 LOS GAMOS DRIVE, ROOM 335
SAN RAFAEL, CALIFORNIA

This meeting will be held in-person and via Zoom webinar.

How to watch the live meeting using the Zoom link:
https://us02web.zoom.us/j/86931046450?pwd=3lsKnmpKu5AaxIbPnEoJiwQUI0q3Z4.1

Webinar ID: 869 3104 6450
Passcode: 195744

Teleconference: Members of the public wishing to participate via teleconference may do so by dialing the following number at 4:00 p.m. on the day of the meeting: +**1 669 900 6833**; Access Code: **869 3104 6450**; Password: **195744**

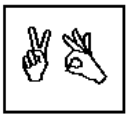
How to provide public comment (limited to 2 minutes or less):

Before the meeting: Please email your comments to info@tam.ca.gov, no later than 5:00 p.m. the day before the meeting to facilitate timely distribution to Board members. Please include the agenda item number you are addressing and your name and address. Your comments will be forwarded to the TAM Board members and will be placed into the public record.

During the meeting: For members of the public participating in-person, the Board Chair will recognize persons from the audience who wish to address the Board during public open time or on a particular agenda item at the time that item is considered by the Board.

If watching this meeting online, click the "raise hand" feature in the webinar controls. This will notify TAM staff that you would like to comment. If participating by phone, "raise hand" by pressing *9 and wait to be called upon by the Chair or the Clerk. You will be asked to unmute your device when it is your turn to speak and your comments will become part of the public record.




Late agenda material can be inspected in TAM's office between the hours of 8:00 a.m. and 5:00 p.m. The TAM Office is located at 900 Fifth Avenue, Suite, 100, San Rafael.

The meeting facilities are accessible to persons with disabilities. Requests for special accommodations (assisted listening device, sign language interpreters, etc.) should be directed to Jennifer Doucette, 415-226-0820 or email: jdoucette@tam.ca.gov no later than 5 days before the meeting date.

AGENDA

1. Chair's Welcome/Roll Call

2. Innovation Workshop (Discussion) – **Attachment**

3. Open time for public expression, up to two minutes per speaker, on items not on the agenda that are within the subject matter of the agency's jurisdiction. (While members of the public are welcome to address the Board, under the Brown Act, Board members may not deliberate or take action on items not on the agenda, and generally may only listen.)

Transportation Authority of Marin

DATE: October 23, 2025

TO: Transportation Authority of Marin Board of Commissioners

FROM: Anne Richman, Executive Director
Derek McGill, Director of Planning

SUBJECT: Innovation Workshop (Discussion), Agenda Item No. 2

RECOMMENDATION

Discussion item only.

BACKGROUND

On February 24, 2017, TAM hosted its first Innovation Workshop, gathering industry experts, innovators, and practitioners to develop a further understanding of how a variety of technological changes are likely to influence Marin's transportation network and travel behaviors. At the time of the workshop, TAM was developing its Strategic Vision Plan, a countywide planning effort that supported the development of the Measure AA Expenditure Plan, which included a standalone Innovation Program, consisting of 0.5% of overall revenues. A second workshop was held in 2018, prior to the passage of the Measure AA Transportation Sales Tax renewal.

With the adoption of the Countywide Transportation Plan 2050 (CTP 2050) in December 2024, TAM has an adopted vision, goals, and specific strategies to *advance safe, equitable and sustainable transportation, together.* With recent Board discussions on the required Measure AA Expenditure Plan review, staff is considering the role of innovation in making measurable progress on the wide range of CTP performance measures and implementation efforts, including whether a standalone program is still a best practice or another approach would be preferred. Coupling this potential policy shift with a further understanding of what role emergent and potentially disruptive technologies may play in Marin's transportation system is the focus of this third Innovation Workshop.

DISCUSSION/ANALYSIS

The Innovation Workshop is a chance to discuss key emerging technologies and trends that are going to alter the transportation system in the near future. Staff have invited a panel of experts to discuss some key areas of transportation technology, including Artificial Intelligence (AI), Autonomous Vehicles (AVs), and Advancing Road Safety with Technology. This will be a chance to discuss these key topic areas in further detail and hear from experts on how local governments can prepare for this changing landscape.

The expert panelists include:

- Molly D'Augustino, Executive Director of Mobility Science, Automation, and Inclusion Center (MoSAIC), UC Davis - Overview on Top Trends in Transportation Innovation
- Tilly Chang, Executive Director of SFCTA - Local Government's Role with Autonomous Vehicles
- Ben Stabler, Director of Practice Development at DKS Associates - Getting Ready for AI
- Linda Lim, Researcher at UC Berkeley Partners for Advanced Transportation Technology (PATH) - Advancing Road Safety with Technology

Staff are seeking to develop a common understanding of the current state of transportation innovations and to foster discussion on how to incorporate innovation in local planning and project development that supports the CTP 2050 goals. Finally, staff are seeking input from the Board on how to build partnerships that advance using technology to address our CTP 2050 goals.

FISCAL CONSIDERATION

There are no fiscal impacts associated with this presentation.

RELATIONSHIP TO COUNTYWIDE TRANSPORTATION PLAN (CTP)

Innovation can inform and advance many elements of the CTP's strategies and goals. The CTP strategy of Transportation Data and System Management in particular notes the development of a data management program to support the introduction and management of new technologies.

NEXT STEPS

Based on the input received, staff will return to the TAM Board with further discussions on advancing innovation.

ATTACHMENTS

Attachment A – Workshop Program
Attachment B – Staff Presentation
Attachment C – Autonomous Vehicles Fact Sheet

Innovation Workshop Program

Thursday, October 23, 2025, 4pm-6pm

Marin Wildfire Prevention Authority Boardroom

Workshop Goals:

1. Educate on current status of Innovation by staff and industry experts
2. Support CTP Implementation by examining how innovative technologies can support goals and strategies
3. Incorporate into Measure AA Expenditure Plan Review Discussions – How can proposed "reimagined roadway" capital program advance innovation, and how else can projects and programs be "future proofed"?

Workshop Outline:

1. Introduction/Background (5 mins)
2. TAM and local efforts underway (staff) (10 mins)
3. Where do we want to go, and how do we want to get there (Initial Discussion) (10 Mins)
4. Guest panel –
    - Overview on Top Trends in Transportation Innovation – Molly D'Augustino, Executive Director of Mobility Science, Automation, and Inclusion Center (MoSAIC), UC Davis
    - Local Government's Role with Autonomous Vehicles – Tilly Chang, Executive Director at SFCTA
    - Getting Ready for AI – Ben Stabler, Director of Practice Development at DKS Associates
    - Advancing Road Safety with Technology – Linda Lim, Researcher at UC Berkeley Partners for Advanced Transportation Technology (PATH)
5. Q&A and Discussion (up to 30 mins)
6. Public Comment
7. Wrap up and next steps

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TAM Innovation Board Workshop

Transportation Authority of Marin

Board of Commissioners

October 23, 2025

Welcome!

High Collision Network

This map shows shows the High Collision Network identified in the 2024 Marin County Local Road Safety Plan.

Transit Priority Routes

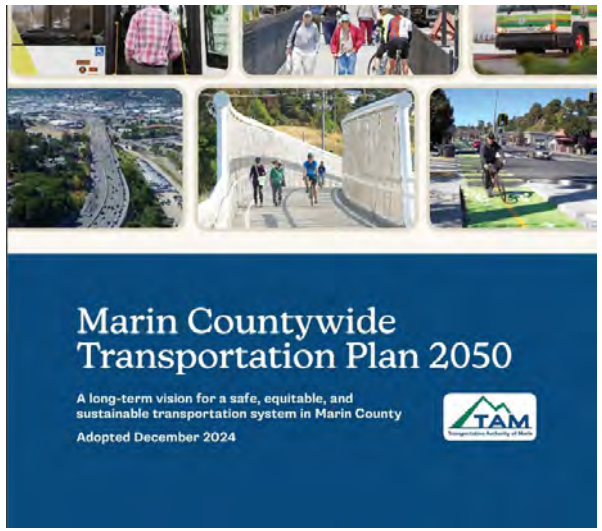
This map shows a network of transit priority corridors (in green) where transit would be prioritized, and treatments implemented to improve transit operations, and/or avoid a deterioration in service that would otherwise occur.

Primary Active Transportation Network

What Does Innovation Mean?

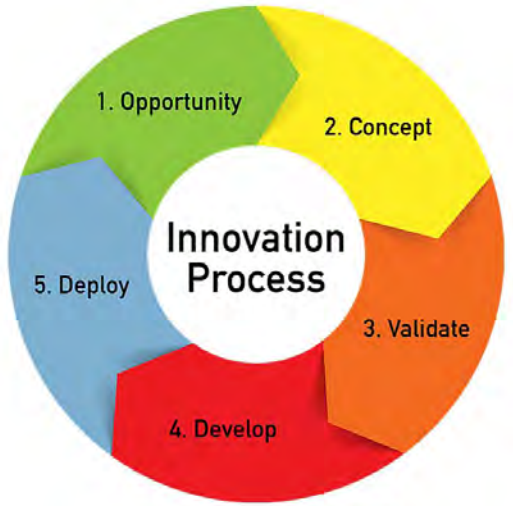
*"Innovation is the process of creating **something new,** such as an idea, method, or product, that **provides value or solves a problem**. It can be a completely novel invention or a significant improvement on something that already exists."* – Google AI

Applying Innovation



Planning

Projects



Process

Culture

Countywide Transportation Plan 2050

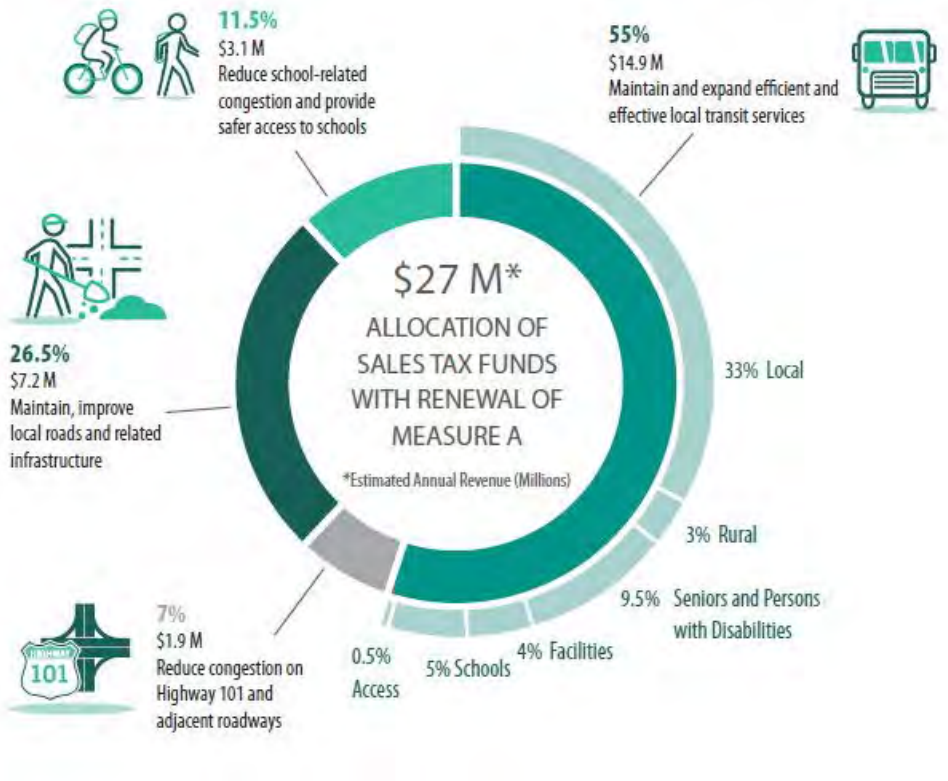
Defines Values, Goals, Strategies

Advance safe, equitable, and sustainable transportation *together*.

- Innovation can support measurable progress towards CTP implementation
- Requires cross jurisdictional collaboration and innovation to deliver
- For example: safety improvements, emission reduction, network approaches

TAM and Local Efforts Underway

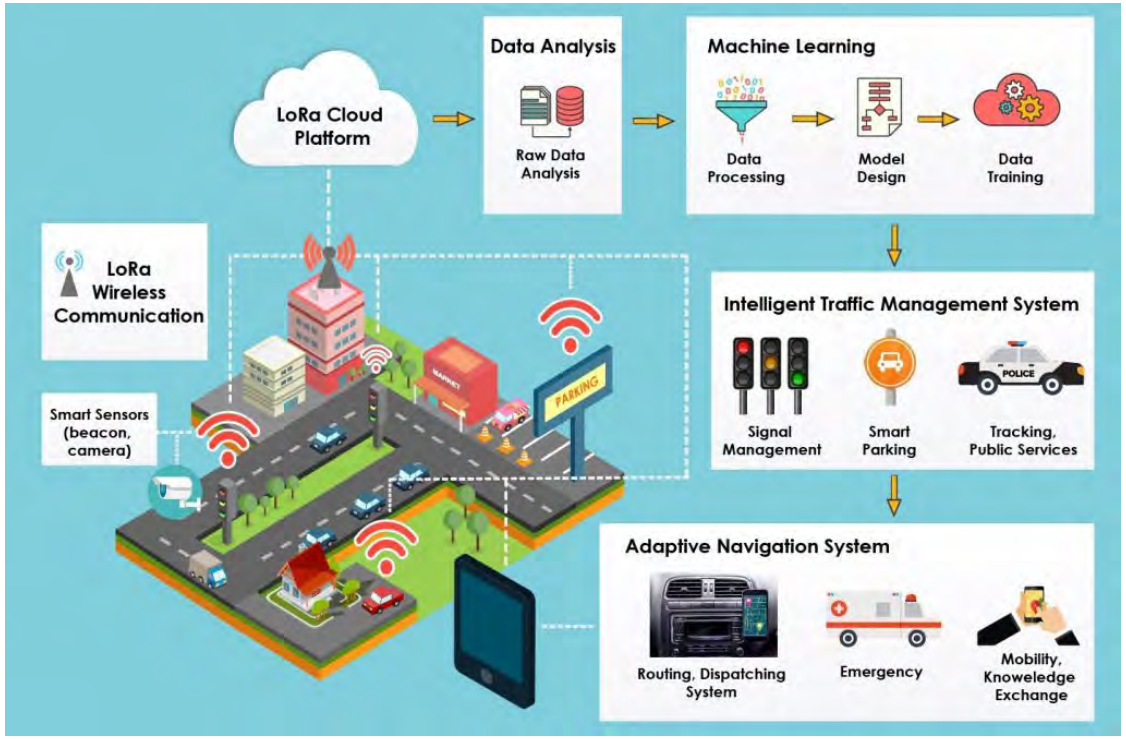
TAM History of Innovation



TAM Innovative Pilots

Upcoming TAM Studies

Countywide Signal Modernization Plan



Lincoln Avenue AI Corridor Study

Local Examples

2020 Quick Build Funding

AI Signals at San Anselmo Hub

Hub Transportation Study

AI -optimized Traffic Signals

Following the Hub Transportation Study:

The Town has installed a first-of-its-kind system that uses AI to optimize the traffic signal at The Hub. The system is made by Roundabout Technologies, a San Francisco-based company founded by veterans of the autonomous vehicle and medical device industries. The system has reduced wait times by over 30% at peak hours and is saving travelers 91 hours across an average weekday.

Where typical systems use detection cameras to determine whether or not vehicles are present, Roundabout goes a step beyond this to determine the exact speed and position of every vehicle in real time, allowing it to choose the optimal course of action for reducing delays and increasing safety.

The system uses AI to dynamically detect and respond to unsafe situations. Over the next few months, the system will support additional safety features for bikes and pedestrians and will be able to prioritize Marin Transit buses. Wait times for all road users are expected to continue to be reduced over time.

Potential for expansion:

The system is in the process of being expanded to control the nearby Bank St & Sir Francis Drake Blvd intersection, and the town has applied for a grant from the Transportation Authority of Marin to extend the system citywide.

Local Examples, cont.

Adaptive Ramp Metering

San Rafael Miovision Signals

Local Implementation Observations

Benefits

- Potential for Safety & Mobility Improvements
- Potential efficiency gains, cost savings
- Advance CTP Goals
- Attract Regional, State & Federal Funds

Challenges

- Complex regulatory environments
- Limited data for decision makers
- Decentralized decision making
- Large role of private companies, may have differing priorities/approaches
- Project delivery for non-standard approaches
- Limited staffing resources, O&M focus

Framing Questions for the Discussion

Where do we want to go?

How do we get there?

Guiding Questions for Today's Discussions

Where do we want to go?

- Deliver on the CTP as Policy Framework
- CTP Goals of Safety, Equity, Sustainability and Partnerships
- Strategies that respond to local needs and implement the CTP goals
- Measurable performance indicators
- How can innovation in AI, AVs and safety technology help Marin deliver on CTP goals and strategies?

How do we get there?

- Should TAM set aside a portion of funds for innovation pilots that advance multiple CTP goals or should TAM lead innovation pilots?
- How should TAM build innovation into project planning, such as with Reimagined Roadway corridor proposal? How do local jurisdictions?
- What role does staff play in advancing Innovation?
- What role do TAM Commissioners play, at the TAM Board and at local councils?
- What infrastructure or policies could be most beneficial?
- Should TAM or another agency formalize a data/innovation working group to coordinate across jurisdictions?

Expert Panel Discussion

Overview on Top Trends in Transportation

Molly D'Augustino, Executive Director of Mobility Science, Automation, and Inclusion Center (MoSAIC), UC Davis

Local Government's Role with Autonomous Vehicles

Tilly Chang, Executive Director of SFCTA

Getting Ready for AI

Ben Stabler, Director of Practice Development at DKS Associates

Advancing Road Safety with Technology

Linda Lim, Researcher at UC Berkeley Partners for Advanced Transportation Technology (PATH)

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Fact Sheet: Autonomous Vehicles

Permits, Operators, and Local Oversight

September 2025

What are Autonomous Vehicles?

An autonomous vehicle (AV) is a car, truck, or other vehicle that can operate without direct human control, using a combination of sensors, cameras, artificial intelligence, and software to perceive its surroundings, make driving decisions, and navigate to a destination.

Key Characteristics

- Perception Systems: AVs use advanced detection and communication systems such as lidar, radar, and cameras to detect other vehicles, pedestrians, cyclists, road markings, and traffic signals.
- Decision-Making AI: Advanced algorithms interpret sensor data to plan routes, respond to changing conditions, and handle complex scenarios like merging or avoiding hazards.
- Levels of Autonomy: Overseen by the SAE (Society of Automotive Engineers)
    - Level 0 (no automation) to Level 5 (full automation in all conditions, no human needed)
        - Currently, most AVs operate at Level 2–4, requiring some human oversight in certain conditions.

Permits: Who Oversees AV Deployment?

NHTSA permit process:

National Highway Traffic Safety Administration (NHTSA) establishes, monitors, and enforces vehicle safety standards across the country. As a part of this, NHTSA issues permits for AV use and requires AV crash reports within one day of collision as a condition of the permit. Depending on the vehicle, an AV company may be exempt from the approval process. For instance, Waymo uses a Jaguar vehicle so they are exempt from the approval process, whereas Zoox's custom and proprietary vehicle requires NHTSA approval in order to operate.

DMV permit process:

The DMV serves as the first permit threshold for driverless vehicles operating on public roads. They issue permits through programs in 3 different categories: Testing (with driver), Driverless Testing, Deployment (commercial). Through a series of deployment applications & checklists, fees, insurance/Operational Design Domain (ODD), law enforcement interaction plan & safety requirements found here, the DMV provides oversight of vehicle and driver systems. A list of the current testing permit holders (with driver) and driverless testing lists is posted here: current permit holders.

CPUC permit process:

Once a company has been issued a driverless permit from the DMV, if they intend to carry passengers, they need to obtain a CPUC permit. CPUC permits are not required for commercial exclusive (non-passenger carrying) operators. The CPUC requires submission of a Passenger Safety Plan (PSP), reporting of incidents, and information on data privacy. The CPUC monitors Drivered/Driverless Pilots and Phase 1 Deployments (fare charging) (California Public Utilities Commission). As a part of monitoring the list of applicants, the CPUC posts letters of advice on whether the company should be approved for Driverless deployment and maintains a running advice-letter status page for Driverless Phase I deployment and expansions (e.g., service-area changes) here. The CPUC permit allows companies to be able to charge fares to passengers to ride in the vehicles, but no restrictions are placed on how the rides are charged.

Companies Currently Operating in California (passenger & goods)

Note that this is not a comprehensive list of all companies operating in California but includes information on several key operators in the Bay Area and companies relevant to Marin County. A list of the current companies that have obtained DMV and CPUC permits is available here on the CPUC website.

Waymo (Alphabet) — passenger robotaxi

- **Permits:** DMV Driverless Testing & Deployment (CA); CPUC Driverless Phase I Deployment (fare-charging). CPUC approved Waymo's PSP/ODD expansion in May 2025 (AL-0003). (California Public Utilities Commission)
- **Where operating:** San Francisco & Los Angeles (plus out-of-state markets). (California Public Utilities Commission)
- **Tech:** Level-4 stack with lidar + radar + cameras.

Zoox (Amazon) — passenger pilots

- **Permits:** DMV Drivered + Driverless Testing; CPUC Drivered + Driverless Pilot (no fare-charging). CPUC confirmed driverless pilot permit and TCP renewal (2024–2025). (California Public Utilities Commission)
- **Where operating:** Limited geofences (e.g., Foster City); speed-limited operations.
- **Tech:** Purpose-built bi-directional EV; lidar + radar + cameras.

Tesla — "robotaxi" branding; CA operations require human driver/monitor

- **Permits (CA):** DMV testing with driver; no DMV driverless or Deployment permit; CPUC authority limited to non-autonomous charter operations (no driverless passenger service). (Politico, WIRED, Chron)
- **Tech: Vision-only** (camera-based); no lidar/radar.

Local Oversight & City Responses to AV Deployment

San Francisco

San Francisco Municipal Transportation Agency (SFMTA) and the San Francisco County Transportation Authority (SFCTA) manage curb and lane use, staging areas, and establish protocols for first responders. These agencies also serve as advocates on safe operations and ensuring AVs support city goals of vision zero, transit first, and countywide transportation goals. These actions include providing formal input to state regulators, including detailed comments to the CPUC on permit applications. Other city departments, including the Mayor's Office, coordinate on AV related topics and responses.

Los Angeles

Similar to SFCTA and SFMTA, Los Angeles has sought to increase local regulation of these services. In June 2024, the Council voted to enhance monitoring of driverless vehicle activity, to seek improved access to AV operational data, and to support state-level legislation that would give local governments stronger regulatory tools among other legislative policy.

State Legislation

Bill	Content	Outcome
AB 1777 – Ting	Establishes operational requirements and performance standards for AV-emergency responder interactions & mechanism to document AV traffic violations	Signed into law
AB 3061 – Haney	Addressed critical gaps in data reporting and data transparency requirements	Vetoed by Governor Newsom
SB 915 – Cortese	Authorized cities of >250K citizens to enact local ordinance for AV ops in their jurisdiction	Pulled by author after Assembly Transportation presented major amendments

Safety Regulation and Oversight

NHTSA is the agency responsible for monitoring the safety aspects of autonomous vehicle technology. Currently, NHTSA is investigating several incidents related to AV companies including Waymo and Zoox for both collisions with objects as well as vehicle system errors.

The CPUC also implements safety oversight through a series of reporting requirements, including:

- New Stoppage Event Reporting (reporting when AVs get stuck during operations)
- Enhanced Incident Reporting (reporting on trip-level incidents including citations and stoppage events)
- Streamlined Collision Reporting (reporting, jointly with NHTSA, on any collision within one day)

Data reported through NHTSA, the DMV, and the CPUC show that there are a series of incidents that AVs are involved in, but the rate of serious injury is generally very low. Further information is provided through incident reporting, but this information is not readily available to local agencies or the public.

ADA Requirements

NHTSA, the DMV, and the CPUC presently do not require vehicles to be fully ADA accessible to those who require wheelchair access or assistance. Though there is continual discussion about how to better integrate ADA accessibility for better physical access, several accessibility gaps still exist that need to be addressed:

- Physical access: There are existing ADA guidelines for public transportation, but these may not be suitable for the design of smaller AV fleets. Standards are needed for features such as wide doors, flat floors, and wheelchair restraints.
- Communication systems: Vehicles must have accessible communication interfaces for passengers with sensory disabilities. This includes redundant systems (e.g., voice activation, text, and Braille) for navigation, emergency reporting, and communications with remote operators.
- Wayfinding: For passengers with vision impairments, AVs need to incorporate orientation information, such as audible cues for arrival and navigation.
- Equitable service: Though not a uniform requirement, to ensure that accessible AVs are available and affordable for people with disabilities, states may need to consider subsidies or incentives. There are also concerns that AV service may be limited to certain geographic areas, leaving out rural communities.

Helpful Links

- DMV – Autonomous Vehicles (program hub + lists): testing permit holders, driverless testing, deployment program & forms. (California DMV)
- CPUC – AV Programs (policies and prerequisite note): overview + guidance. (California Public Utilities Commission)
- CPUC – AV Program Permits Issued (live table of permit holders): (California Public Utilities Commission)
- CPUC – Driverless Phase I Deployment Advice-Letter Status (expansions): (California Public Utilities Commission)
- Waymo CPUC approval (May 19, 2025 disposition): (California Public Utilities Commission)
- Zoox CPUC letters (driverless pilot granted; TCP renewals): (California Public Utilities Commission)
- San Francisco AV regulation links: (The Guardian, SFMTA) (SFGATE, Local News Matters)
- Los Angeles AV regulation links: (CBS News, NBC Los Angeles) (LegiScan, Digital Democracy | CalMatters, ABC7 San Francisco) (The Verge, LegiScan) (Reuters)