

The Autonomous Future is Here: Navigating Robotaxi Deployment

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Defining the Technology: What is a 'Robotaxi'?



SAE Level 4: High automation. No human driver onboard during mature deployments.



Ride-hailing Model: Point-to-Point service, not fixed-route transit



Geofenced & Monitored: Restricted to specific operational domains and supervised by remote centers.

Regulatory Distinction: Fleet-operated assets vs. Personal consumer vehicles

B. Bright, "Top 20 US Autonomous Vehicle Companies (2025)." Accessed: Dec. 09, 2025



Waymo Autonomous Taxi Operating in California (December 2024)



Tesla Robotaxi Prototype Operating in Austin, Texas (June 2025)

Key Events and Milestones

2018–2020

Waymo conducted pilot programs in Phoenix, advancing toward commercial autonomous ride-hailing operations.

August 2023

San Francisco approved 24-hour autonomous driving services; Cruise later suspended operations following safety incidents.

2024

Waymo expanded services to Los Angeles and Austin.

November 2025

Tesla launched a safety-driver pilot program in Phoenix.

June 2025

Tesla autonomous ride-hailing pilot operations began in Austin.

March 2025

(State DOTs) held a joint conference in Austin to discuss best practices for CAV deployment.

November 2024

NACTO released *Urban Street Autonomous Vehicle Principles*

December 2025

Uber partnered with Avride to initiate small-scale autonomous fleet operations in Houston.

January 2026

The U.S. House Energy and Commerce Committee held hearings on federal autonomous-vehicle legislation.

February 11, 2026

The U.S. House of Representatives passed the **Self-Drive Act**, establishing a framework for federal regulatory standards.

The Landscape 2025-2026: From Pilot to Commercial Reality



Operator	Location(s)	Status
Waymo	Phoenix, SF, LA, Austin, Atlanta, Miami,	Fully Driverless Commercial
Tesla	Phoenix (Nox 2025)	Pilot with Safety Driver
Uber+Avride	Dallas (Dec 2025)	Limited Launch

Dominant Operator: Waymo

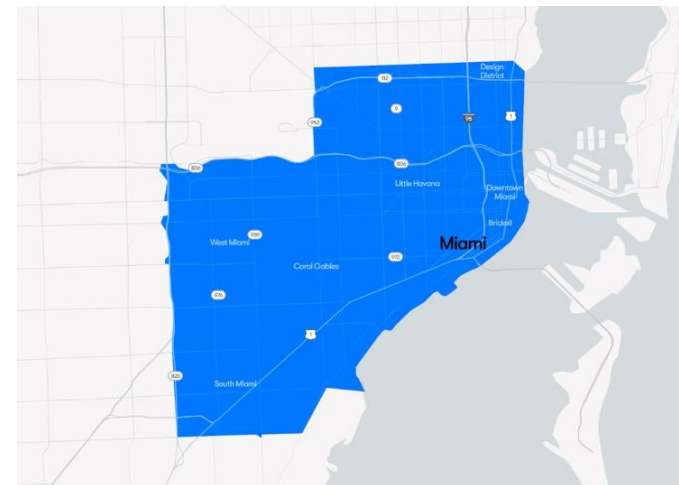


Figure: Upcoming Waymo Service Area in Miami

H. Campbell, "Waymo Stats 2025: Funding, Growth, Coverage, Fleet Size & More." Accessed: Dec. 09, 2025.
J. L, "Waymo Hits 2,500 Robotaxis in US, Shaping the Future of Driverless Rides," Carbon Credits. Accessed: Dec. 09, 2025.

Regulatory & Institutional Framework for AV Taxi Deployment

- **State-level agencies** (e.g., DOTs, DMVs, PUCs) provide the primary authorization for AV testing and public deployment, including permits for driverless and fare-charging services on public roads.
- **MPOs and city transportation departments** do not approve AV technology, but coordinate safety, traffic operations, and system impacts within urban environments.
- Many jurisdictions rely on **memoranda of understanding (MOUs)** with AV operators to define data sharing, operational protocols, performance monitoring, and emergency coordination.
- Agencies often request access to **trip-level or incident data** to support planning, safety evaluation, and network management, though data transparency varies by state and city.
- Transit agencies currently play **a limited role**, with only select pilots testing first- and last-mile connections; most AV taxis operate as ride-hailing services rather than integrated transit.

State Authority vs. City Role in Practice

- **Formal approval for AV taxi service is issued at the state level**, typically through DMVs or PUCs; cities rarely grant separate operating permits.
- **Cities shape local operating conditions**, including geofenced service areas, speed limits, pickup/drop-off rules, and curb space management.
- Local transportation and public safety agencies coordinate **emergency response protocols** and raise concerns when AV operations interfere with transit or emergency services.
- Some cities require **business licenses or TNC permits**, but these are generally layered on top of state AV approvals rather than serving as independent authorization.
- **State examples**
 - *California requires DMV + CPUC permits (with SF/LA filing objections);*
 - *Arizona (Phoenix) allows self-certification process plus ADOT oversight;*
 - *Texas (Austin/Dallas) pre-empts many local restrictions while cities manage operations.*

State DOT Best Practices: From Pilot to Program

Organizational Shift



Moving from ad-hoc Pilots to sustained programs

Vendor Management



Improving RFPs for technology that evolves faster than contracts

Risk Tolerance



Harmonizing regulations across state lines for regional consistency

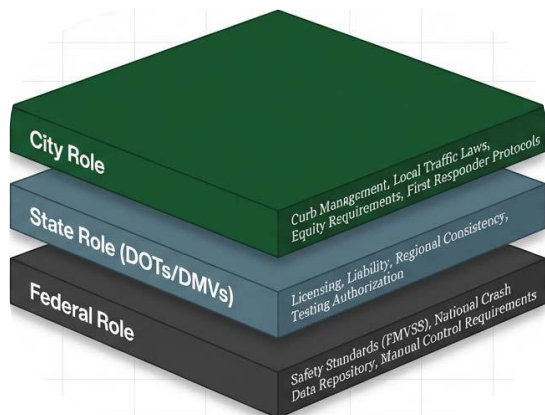
Infrastructure



Balancing investment readiness with uncertain OEM timelines.

Guiding Principles and City Framework

A Roadmap for Readiness



- Expect Safety Excellence: Transparent hardware/ software ODD descriptions and fail-safe protocols.
- Empower Cities: Local authority to enforce traffic laws and manage the curb.
- Ensure Equity: Affordability, accessibility for disabled users, and broad service coverage

Operational Friction: Where the System Breaks Down

The Enforcement Gap



Cities (Las Vegas, Phoenix, SF) report inability to issue Moving Violation Tickets to driverless vehicles. Result: No accountability for traffic infractions.

Emergency Response



Documented incidents of AVs blocking fire trucks and first responders. Vehicles often unresponsive to hand signals or scene commands.

Data Black Holes



Cities lack access to trip-level or incident data necessary for Vision Zero planning. Staff lack resources to analyze data even when available.

THANK YOU!

