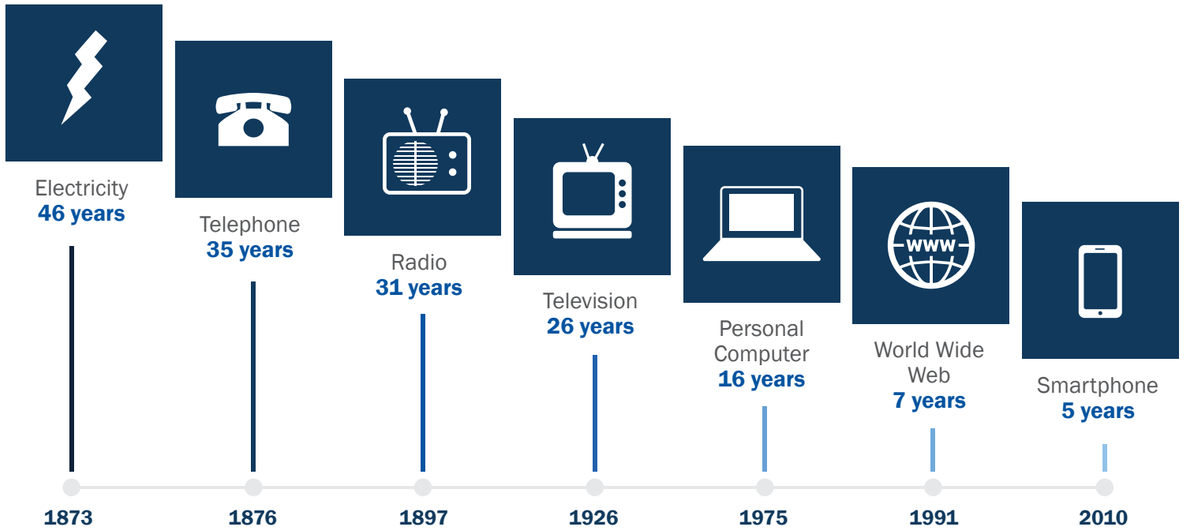
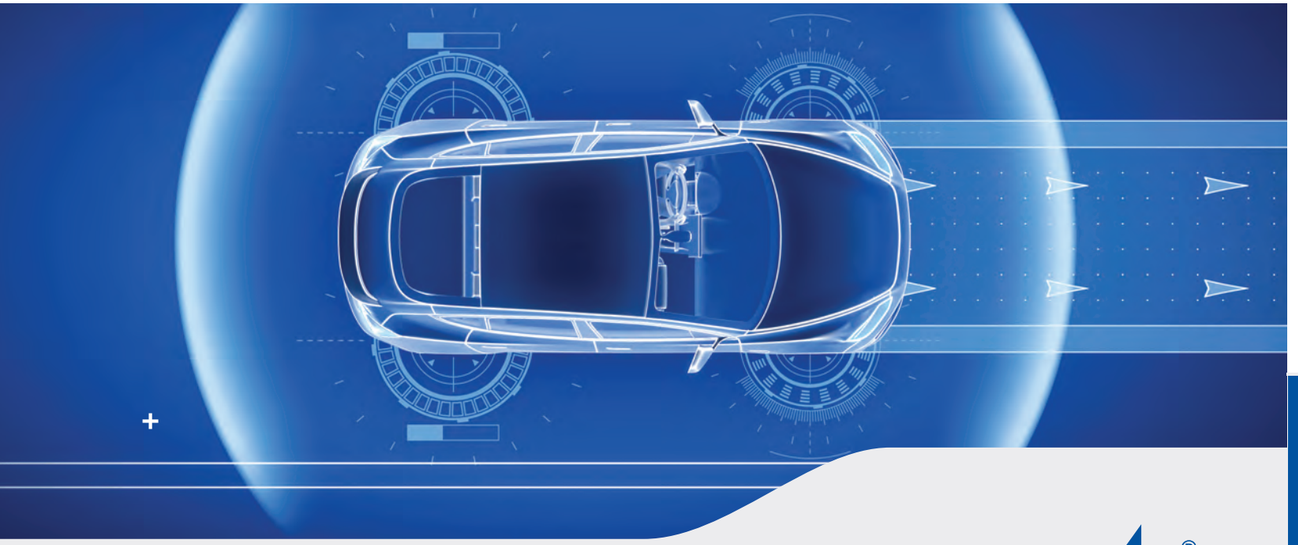
Pace of Change



The speed at which one quarter of the U.S. population adopts new technologies has increased significantly in the past century.

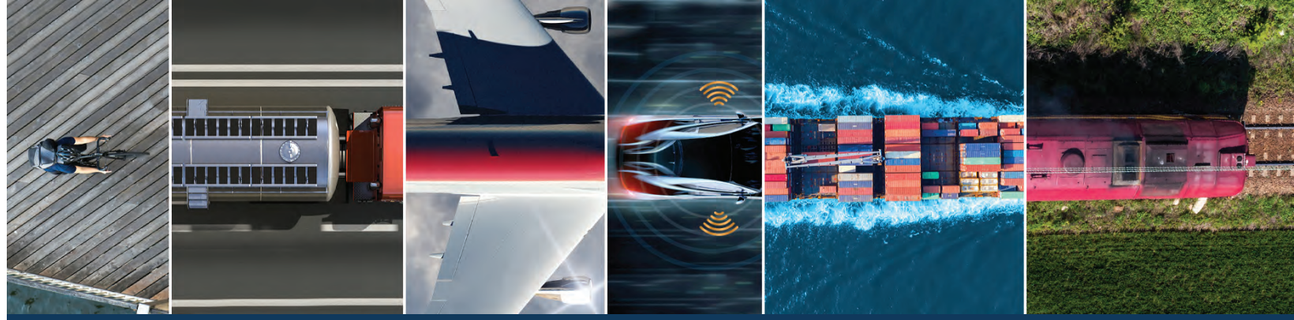
Ford, Tesla, Toyota, Renault-Nissan, and Hyundai anticipate having market-ready autonomous vehicles (AV) on highways as early as 2020.

Sources: Transportation Research Board and Pew Research Center



For more information, please visit www.TxDOT.gov – keyword search "TTP 2050". To be added to the outreach lists, please email the team at TTP_2050@txdot.gov.

Texas Department of Transportation



FUTURE OF TEXAS TRANSPORTATION

TEXAS TRANSPORTATION PLAN 2050

Emerging Technologies

TxDOT is developing scenarios that envision a range of possible futures. With these scenarios in mind, TxDOT can effectively plan for the potential benefits and risks of emerging transportation technologies.

What is "emerging transportation technology"?

Emerging transportation technology spans many transportation modes and services, including connected and automated vehicles (CAV) and more (see p. 2).

Telecommuting and ridesharing along with innovations like drone delivery will likely lead to new mobility services and change travel behaviors.

How will transportation technologies change mobility?

Technology can enable more efficient use of roadway operations by increasing the number of vehicles a road can carry. For example, TxDOT uses intelligent transportation systems (ITS) technology, such as dynamic messaging signs and computer-aided dispatch for emergency vehicles. These and other ITS devices help keep traffic moving, especially during rush hour.

Connected vehicles and self-driving technology have the potential to increase a road's vehicle capacity. Vehicles that "talk" to each other are expected to be able to travel closer together and more safely than human-operated vehicles. On the other hand, automated vehicles may ultimately make driving more convenient and less expensive, resulting in an overall increase in the number of vehicles on the roadways.

The exact nature and impact of emerging technologies is impossible to predict, but TxDOT is committed to being as prepared as possible.

How is TxDOT preparing?

In 2013, the Texas Legislature tasked TxDOT with examining and evaluating innovative transportation technologies. The goal was to reduce traffic congestion, enhance safety, increase economic productivity, and save costs. The Texas Technology Task Force (TTTF), created that same year, monitors the development of connected and automated vehicles (CAVs) and recommends technologies to evaluate.

Over the next year, TxDOT will be producing its first statewide Emerging Transportation Technology Plan (ETTP). The plan's objective is to prepare TxDOT for the timing and impact of emerging technologies. The ETTP will include performance implications, planning considerations, and implementation strategies.

Share your thoughts - take the emerging technology survey before November 15, 2019.
www.surveymonkey.com/r/EmergeTech2050

Technologies

As emerging technologies evolve, all facets of transportation, from funding and physical infrastructure, to travel patterns and communications, will be impacted. Future mobility, enabled by new technologies, could also bring shifts in behavior. Telecommuting (working from an off-site location through the use of technologies like video conferencing) may increase as communication technologies continue to develop. Similarly, micro-mobility options like bike- and scooter-sharing are likely to keep growing, while other "disruptive" companies like Uber and Lyft may also emerge.

Connected Technology:

Vehicles, infrastructure, and other devices that "talk" to one another, using features such as short-range radio signals, to communicate and share information.

- Connected Passenger Vehicles
- Truck Platooning

Autonomous Technology:

Vehicles or technology that can function without being told what to do by a person.

- Autonomous Passenger Vehicle
- Autonomous Trucks
- Autonomous Passenger Shuttles
- Freight Terminal Automation

Travel Demand Management:

Strategies aimed at maximizing traveler choices to reduce vehicle trips.

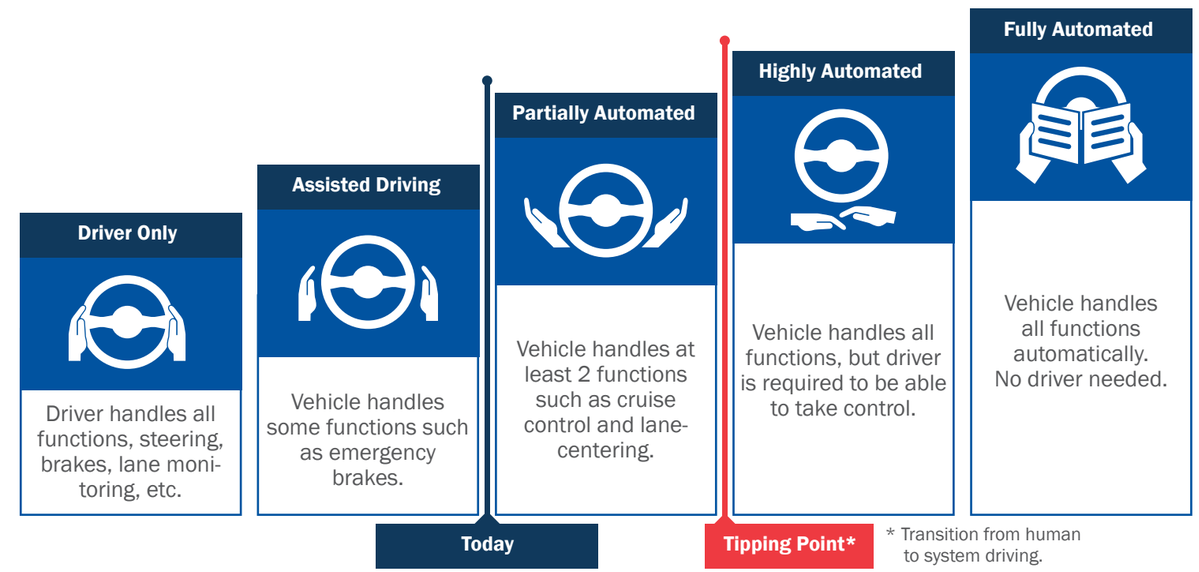
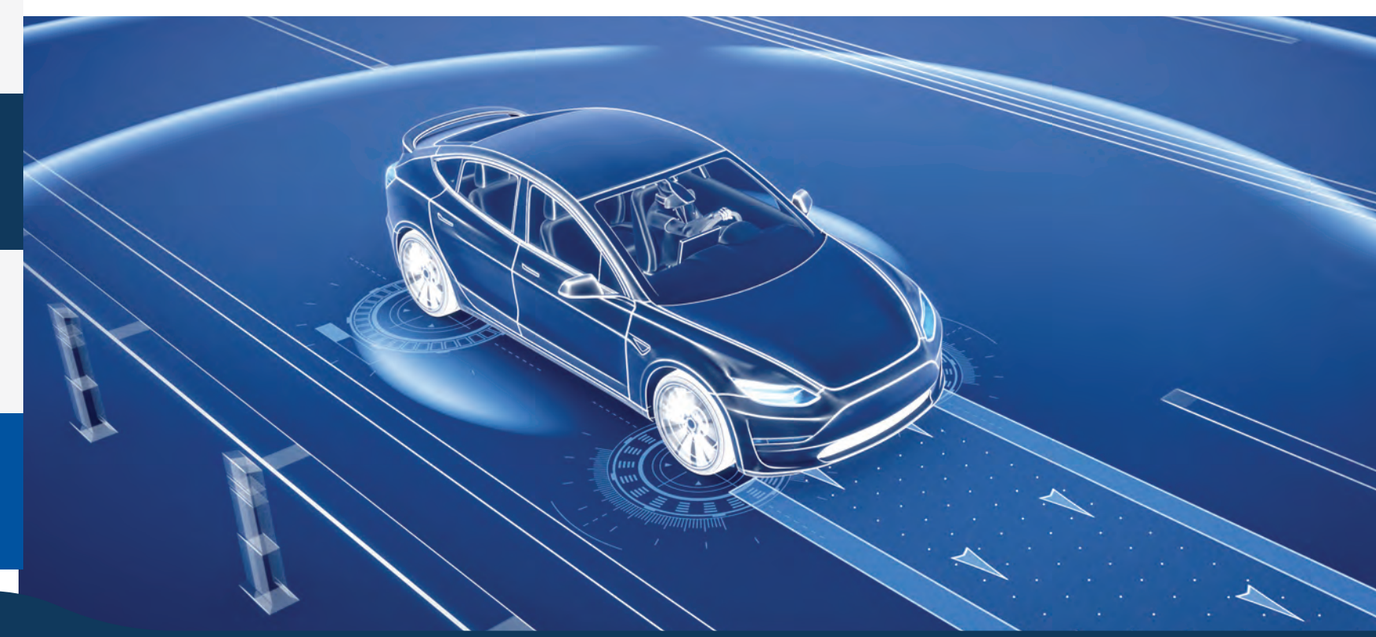
- Micro-mobility
- Telework
- Hyperloop Transport
- Shared Vehicle Trips

Other Smart City Concepts:

Strategies that use data and technology to create efficiencies, improve sustainability, create economic development opportunities, and enhance quality of life for people living or working in a city.

- Vehicle Electrification
- 3D Printing
- Delivery Drones
- Tolling and Pricing Technology
- Dedicated Lanes for CAV

5 Stages of Automation



Eventually, cars and trucks will drive us instead of us driving them, but full automation won't happen all at once. Instead, the technology will evolve over time. This progression begins with fully manual vehicles where the driver handles all functions, similar to what we're used to today. At the ultimate stage of automation, there is no driver needed at all and the vehicle handles everything automatically.