Future connected vehicle pilots will be made possible by using satellites and other linked technology platforms and computer systems.

T-5 Connected and Autonomous Transit Vehicle Pilots

Initiative: Explore partnerships with regional transportation stakeholders to develop agency capacity in implementing connected and autonomous transit vehicle applications.

implement now | implement later | FURTHER INVESTIGATE

Supports Goals:
Accessibility, Equity, Productivity, Responsiveness, Safety, Adaptability, Collaboration, Environmental Stewardship, Fiscal Solvency, and Integrity

ACTION ITEM 1 Connected Vehicle Pilots

For Pace service to benefit from Connected Vehicle (CV) enhancements, infrastructure and data communication systems must be provided along service corridors. Developing and testing safety, mobility, and environmental applications for transit vehicles is expensive and time consuming.[20] Nonetheless, Pace's leadership and regional partnerships with vehicle communication technologies and roadside applications provides a good foundation to work with.

[20] Intelligent Transportation Systems - Transit Vehicle-to-Vehicle (V2V) www.its.dot.gov/research_archives/safety/transit_v2v_progress.htm

Looking ahead, Pace will explore partnerships with IDOT and the Illinois Tollway, and seek federal funding to harness CV technologies to support Bus on Shoulder, Express Bus, and Pulse lines. CV technologies will help bus operators be more aware of traffic flow and potential obstructions in the shoulder and operations space. As Pace develops and retrofits new facilities, CV technologies will help bus operations staff have a better understanding of vehicle location, maintenance, and performance specifics.

Visualization of connected transit, vehicles, and infrastructure (US DOT ITS).

ACTION ITEM 2 Autonomous Vehicle Pilots

Combining the disruption expected by fully autonomous vehicles and the promise of cheap on-demand fleets, the transit systems 20 years from now may be dramatically different than the transit service we see today. Autonomous transit could promise safer and more inexpensive service operations in the future. While Pace seeks to understand how these nascent technologies can immediately support transit, it will also monitor advancements to these technologies and ensure safe operations are consistently proven before considering any larger-scale implementation.

While such large-scale autonomous transit solutions are still in the experimental stage, in many North American cities, such as Austin, Ann Arbor, Columbus, Houston, Las Vegas, Providence, and others, Low-Speed Autonomous Vehicles (LSAVs) are gaining experience in limited shuttle applications and pilot projects. Typically, these slow autonomous mini-buses (≈6 seats) operate in contained environments such as campuses, airports, and employment centers. LSAVs utilized for public transit must be inclusively designed and fully compliant with ADA access guidelines.

With an eye on exploring options to reduce operations costs and increase service frequency, Pace may wish to study LSAV options for complementing or replacing less productive Connector routes. Pace may seek new partnerships to sponsor a pilot-deployment of this service in a supportive community. This would provide Pace an opportunity to learn about LSAVs and could highlight future potential benefits and challenges of using this vehicle form-factor for real transit service.

[21] University of Michigan, The Michigan Engineer Newsletter. 2018 news.engin.umich.edu/2018/06/mcity-driverless-shuttle-launches-on-u-ms-north-campus

[22] University of Houston, Houston Public Media. *Houston's First Self-Driving Shuttle Rolls Out At Texas Southern University.* 2019.

[23] SmartCitiesWorld. Austin to run US' largest autonomous bus pilot. 2018. www.smartcitiesworld.net

The transit systems 20 years from now may be dramatically different than the transit service we see today.

Top-left photo - *Texas Southern University tested autonomous buses during a 6-month pilot project operated by First Transit as part of a contract operated by Houston METRO.*[21]

Top-right photo - *The Mcity Driverless Shuttle, a research project at the University of Michigan, which operates in the Northern Campus, operated in partnership with U-M Logistics, Transportation and Parking, with the specific aim of assessing customer behavior and acceptance of the technology.*[22]

Bottom photo - *CapMetro, the City of Austin and RATP Dev USA are working together to test autonomous vehicle (AV) technology, one of the largest pilots in the United States.*[23]