



FEDERAL TRANSIT ADMINISTRATION (FTA)

Transit Bus Automation Quarterly Update

Q4 2023 Update



U.S. Department of Transportation
Federal Transit Administration

This FTA document identifies and provides information on transit bus automation pilot projects, demonstrations, and tests and consists of:

- Summaries of news items published in Q4 2023 related to automated transit buses, including both domestic and international projects.
- Summaries of U.S.-based activities related to automated vehicle testing projects with transit agency participation. A sub-section lists projects receiving U.S. Department of Transportation (USDOT) funding.

The information in this document is gathered from publicly available sources (e.g., news articles, press releases, and government websites) and may not represent a comprehensive list of all U.S. transit agency automated vehicle activity. Information on additional projects may be sent to transitautomation@dot.gov.

1. NEWS ITEMS (DOMESTIC AND INTERNATIONAL)

The table below contains Q4 2023 news items related to the use of driving automation systems in transit buses and other vehicle types used to provide public transportation.

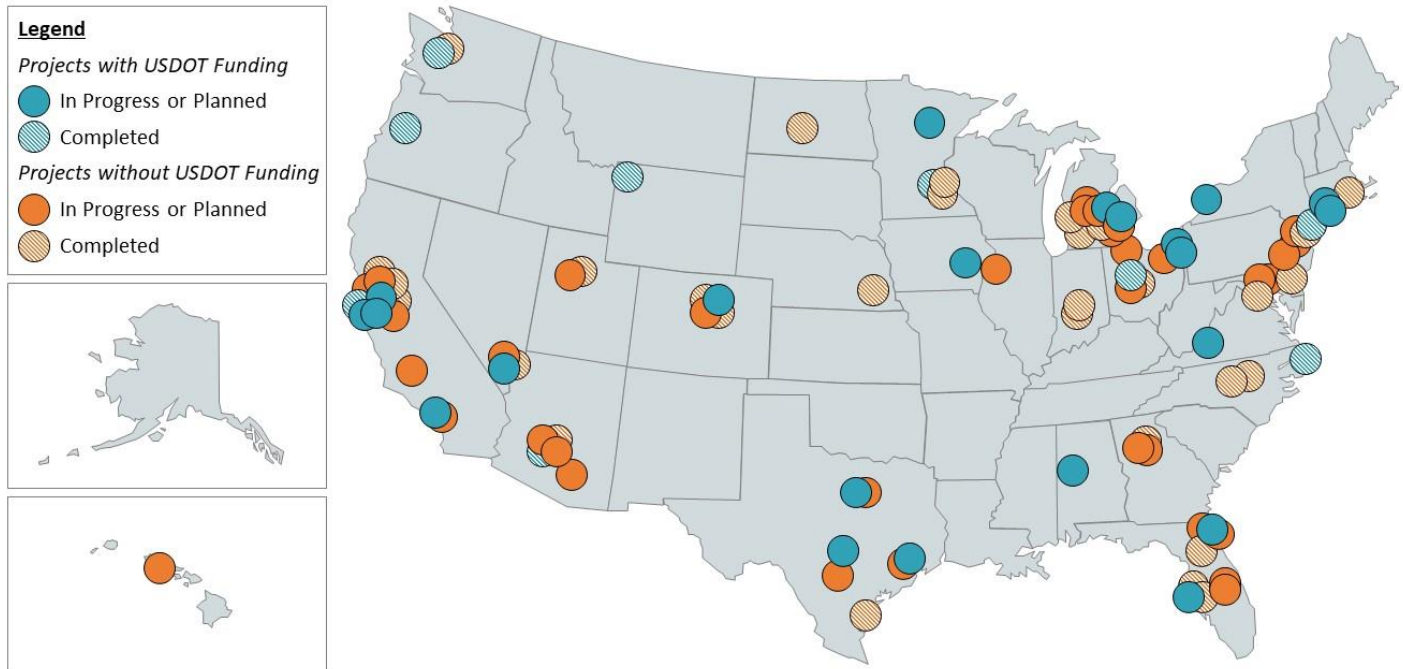
Transit Bus Automation News

Month	News Item
October 2023	<ul style="list-style-type: none"> ➤ ADASTEC announced it would apply its Automated Driving System (ADS) to Vicinity Motor Corporation (VMC) buses (link). It also announced plans to operate those buses in Buffalo, NY (link) and East Lansing, MI (link). ➤ Saitama Institute of Technology, Pacific Consultants, and Keio Bus launched an ADS-equipped bus in Tokyo, Japan (link). ➤ CapMetro announced Perrone Robotics and other partners for its bus yard operations demonstration in Austin, TX (link). ➤ Oxa and eVersum announced a partnership to produce and operate ADS-equipped shuttles (link). ➤ The Automated Connected Electric Shared (ACES) Mobility Coalition launched and announced its initial membership (link). ➤ ZF and Oceaneering expanded their partnership for ADS-equipped shuttle manufacturing (link). ➤ TXAI began operating service with three articulated buses in Abu Dhabi, UAE (link). ➤ Beijing Public Transport Corporation, Foton AUV, and QCraft secured a permit for ADS-equipped buses in Beijing, China (link). ➤ TIER IV certified its unstaffed ADS-equipped shuttle vehicle for operations in Greater Tokyo, Japan (link). ➤ HOCHBAHN announced plans to start service with 20 ADS-equipped shuttles in Hamburg, Germany beginning in 2025 (link).
November 2023	<ul style="list-style-type: none"> ➤ May Mobility tested its ADS response to approaching emergency vehicles in the Research Park area of Ann Arbor, MI (link). ➤ Incheon International Airport Corporation announced plans to test two ADS-equipped shuttles in Incheon, South Korea (link). ➤ Oxa and eVersum announced plans to use ADS-equipped shuttles in Belfast, Ireland as part of the Harlander Project (link). ➤ Aurrigo announced plans to use an ADS-equipped shuttle in Milton Keynes, UK as part of the LivingLAPT project (link). ➤ Beep launched a service management platform to help integrate ADS-equipped vehicles into transit systems (link). ➤ Conigital and Helixx partnered to jointly develop an ADS-equipped novel-design shuttle (link). ➤ May Mobility began evaluation testing to support the project it will launch in Detroit, MI in June 2024 (link). ➤ Contra Costa Transportation Authority announced plans for a ADS-equipped microtransit system in Contra Costa, CA (link). ➤ Dongfeng Sharing launched ten ADS-equipped buses in Shiyan, Hubei Province, China (link). ➤ Ohmio announced it will locate facilities in Riverside, CA and conduct testing there with three ADS-equipped shuttles (link).
December 2023	<ul style="list-style-type: none"> ➤ Seoul announced an ADS-equipped bus service between Dongdaemun Station and Hapjeong Station in South Korea (link). ➤ WeRide began testing ADS-equipped buses in Singapore at One North and National University of Singapore campuses (link). ➤ Houston METRO unveiled its Phoenix Motorcars bus equipped with a Perrone Robotics ADS at an event in Houston, TX (link). ➤ ZF cancelled its plans to produce a new novel-design shuttle (link). ➤ MAN and partners announced plans to operate an ADS-equipped bus in Berlin, Germany as part of the BelIntelli project (link). ➤ Perrone Robotics delivered an ADS-equipped Ford e-Transit van to Philadelphia Navy Yard in Philadelphia, PA (link).

2. AUTOMATED TRANSIT BUS TESTING ACTIVITIES IN THE UNITED STATES

The USDOT has identified many domestic planned, in-operation, and completed automated transit bus testing activities, as well as many transit agencies interested in participating in automated vehicle testing activities. In several cases, these projects have been or are funded through USDOT programs. Some transit agencies have expressed interest in participating in test activities but do not have a formalized project, or there may be limited information available on the project. The locations of automated transit bus testing are shown in the map below, and additional details are contained in the tables on subsequent pages. The projects included in the map and tables focus on testing automation systems for full-size transit buses or smaller transit vehicles (e.g., low-speed automated shuttles and light-duty vehicles).

U.S. Transit Bus Automation Testing Activities



Source: USDOT Volpe Center, January 2024

Projects with USDOT Funding

Many transit agencies have received USDOT funding for automated vehicle test activities. Some of this funding has been provided through Federal Transit Administration (FTA) programs such as:

- [Accelerating Innovative Mobility \(AIM\)](#)
- [Advanced Driver Assistance Systems \(ADAS\) for Transit Buses Demonstration and Automated Transit Bus Maintenance and Yard Operations Demonstration Program](#)
- [Congestion Mitigation and Air Quality \(CMAQ\) Improvement Program](#)
- [Innovative Safety, Resiliency, and All-Hazards Emergency Response and Recovery \(SRER\) Research Demonstrations](#)
- [Integrated Mobility Innovation \(IMI\) Demonstration Program](#)
- [Mobility on Demand \(MOD\) Sandbox Program](#)
- [Public Transportation COVID-19 Research Demonstration Grant Program](#)
- [Safety Research and Demonstration \(SRD\) Program](#)
- [Strategic Transit Automation Research \(STAR\)](#)
- [Vehicle Assist and Automation \(VAA\) Demonstration](#)

Additional projects have been funded by other USDOT modal administrations or by departmental programs, including:

- [Advanced Transportation and Congestion Management Technologies Deployment \(ATCMTD\) Program¹](#)
- [Automated Driving System \(ADS\) Demonstration Grants](#)
- [Better Utilizing Investments to Leverage Development \(BUILD\) Program²](#)
- [Federal Highway Administration \(FHWA\) Office of Federal Lands Highway \(FLH\)](#)
- [Federal Lands Transportation Program \(FLTP\)](#)
- [FHWA Technology and Innovation Deployment Program \(TIDP\)](#)
- [ITS4US Deployment Program \(ITS4US\)](#)
- [Smart City Challenge \(SCC\)](#)
- [Surface Transportation Block Grant Program \(STBG\)](#)

The table below lists many projects with USDOT funding that test automated transit buses and related technologies. Each entry contains information on the transit agency or lead organization, a short description of the project, the funding program supporting the project, and a project status.

The status of “In Planning” indicates projects that are producing planning documents or conducting other activities to prepare for operations. The status of “In Operation” indicates projects that are operating a vehicle (e.g., to map out a route, to verify functionality, on a closed course, in mixed traffic, with or without passengers) or are in the data collection/evaluation phase. Projects with a “Completed” status are no longer in operation, and “Cancelled” projects have been discontinued and are no longer moving forward.

Note: Light teal blue shading and bolded text are used to indicate projects that have been added or have had major updates since the previous edition of this document.

Projects with USDOT Funding

State	Transit Agency / Lead	Description	USDOT Program	Status
AL	University of Alabama	Testing automation technologies for large transit buses using a lab simulation environment and real-world tests to demonstrate cost-effectiveness and equity impacts.	ADAS	In Planning
AZ	Valley Metro Regional Public Transportation Authority (Valley Metro)	Providing service to users of the RideChoice program via Waymo vehicles. The initial phase of testing provided rides to Valley Metro employees. On-road testing was completed in summer 2020. The final report for this effort is available here .	MOD	Completed

¹ In 2022, the ATCMTD Program was renamed as the changed to Advanced Transportation Technologies and Innovative Mobility Deployment Program (ATTIMD) Program, also known as the Advanced Transportation Technology and Innovation (ATTAIN) Program.

² In 2021, the BUILD discretionary grant program was renamed as the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program, and, prior to 2018, it had been known as the Transportation Investment Generating Economic Recovery (TIGER) grant program.

State	Transit Agency / Lead	Description	USDOT Program	Status
CA	Access Services	Testing automated vans to provide shuttle service between a light rail station and Veterans Administration (VA) hospital. Access Services partnered with LILEE Systems for the ADS. Due to the complexity of getting approval from local jurisdictions and time restrictions for the project, the demonstration will take place in a controlled environment rather than public roads. The team has conducted off-site testing.	STAR (Strategic Partner)	In Operation
CA	Contra Costa Transportation Authority (CCTA)	<p>Testing automated vehicles through three real-world demonstration projects. CCTA issued a Request for Proposals (RFP) that closed in April 2022.</p> <p>One portion of the project will use two Navya shuttles operated by Beep. The shuttles are currently undergoing testing at Bishop Ranch in San Ramon, CA. On-site operations are expected to occur in 2024.</p> <p>Another portion of the project will use Toyota Sienna minivans equipped with a May Mobility ADS. The vehicles will be used to provide Via microtransit service to improve access to healthcare in Martinez, CA. Operations are expected to begin in early 2024.</p>	ADS	In Planning
CA	San Francisco County Transportation Authority (SFCTA) and San Francisco Municipal Transportation Agency (SFMTA)	Testing automated shuttles to provide first-last mile circulation on Treasure and Yerba Buena Islands. In October 2022, SFCTA announced that it would work with Beep to operate two Navya shuttles beginning in 2023. Road testing began in June 2023 and passenger service began in August 2023 and ended in December 2023.	ATCMTD	Completed
CA	Santa Clara Valley Transportation Authority (VTA)	Developing accessibility features for an automated Local Motors shuttle and testing it at the VA Palo Alto Health Care System. In early 2022, this work was temporarily paused due to the closure of Local Motors.	CMAQ	In Operation – Temporarily Paused
	Santa Clara VTA	Partnering with the Western Reserve Transit Authority (WRTA) and CALSTART to test an ADS-equipped cutaway bus in Mahoning Valley, OH and Santa Clara Valley, CA. VTA is participating as a member of the Connected and Automated Transportation Users Forum (CATUF) effort. In March 2021, an RFP to procure buses was issued, and in August 2021, VTA announced that it selected First Transit as the successful proposer. VTA has since executed a contract with First Transit (now owned by Transdev).	AIM	In Planning
CO	Colorado Department of Transportation (CDOT)	Demonstrating ADAS technology in three retrofitted vehicles (including a cutaway bus and two motor coaches) that serve critical rural transit routes. The project will incorporate smooth acceleration and deceleration, automated emergency braking and pedestrian collision avoidance, and narrow lane/shoulder operations.	ADAS	In Planning
CT	Connecticut Department of Transportation (CTDOT)	Testing automated, electric New Flyer buses on the CTfastrak bus rapid transit corridor to improve safety for riders with disabilities. Robotic Research Autonomous Industries (RRAI) is the ADS provider.	IMI	In Planning

State	Transit Agency / Lead	Description	USDOT Program	Status
CT	CTDOT	Expanding an existing FTA-sponsored transit automation program along the CTfastrak bus rapid transit corridor. The project will incorporate collision avoidance, precision docking assist, and other ADAS features to enhance safety and accessibility throughout the CTfastrak local bus network.	ADAS	In Planning
FL	Jacksonville Transportation Authority (JTA)	Testing 12-15 automated vehicles and other ITS systems in Jacksonville, FL. In January 2022, JTA signed a deal with a consortium led by Balfour Beatty to design, build, maintain, and operate a service on an at-grade loop along Bay Street from Hogan Street to the Sports and Entertainment District.	BUILD	In Planning
FL	Pinellas Suncoast Transit Authority (PSTA)	Retrofitting a bus to operate autonomously and allow for routine bus yard tasks to be done more efficiently. The agency will implement automated parking and recall to improve bus yard operations and reallocate driver time.	Yard Operations	In Planning
IA	University of Iowa	Testing automated vehicles in a loop from Iowa City through rural areas and small towns, providing an example for how ADS can connect rural populations (focus on connecting rural transportation-challenged populations such as older adults). The project is divided into six phases, and the project team plan completed the final phase of testing in May 2023. The team is still producing the final report for the project.	ADS	In Operation
MI	City of Detroit	Developing a replicable safety evaluation process and deploying vehicles on test tracks and streets in Detroit to evaluate their safety. The project will also work with older adults and persons with disabilities to better understand their mobility challenges. In July 2023, the City of Detroit announced that May Mobility had been selected to provide the service. Validation testing at the Mcity Test Facility in Ann Arbor, MI will occur from November 2023 to February 2024. Then extended high speed testing will occur at American Center for Mobility in Ypsilanti, MI. The service in Detroit, MI is expected to launch in fall 2024.	ADS	In Planning
MI	Michigan Department of Transportation (MDOT)	Installing Q'Straint Quantum automated wheelchair securements on buses operated by Blue Water Area Transit (St. Clair County), the Jackson Area Transportation Authority, Saginaw Transit Authority Regional Services, and Western-Washtenaw Area Value Express. Securements have been deployed at three of the agencies, and the company hired to conduct the independent evaluation has done observations and interviews.	COVID-19 Research and Demonstration Program Grant	In Operation
MN	Minnesota Valley Transit Authority (MVTA)	Equipping buses in MVTA's express bus fleets with GPS-based technology to improve safety and bus service within narrow shoulder lanes along highly congested corridors (a non-automated system). The final report for this effort is available here .	SRER	Completed

State	Transit Agency / Lead	Description	USDOT Program	Status
MN	City of Grand Rapids	Testing May Mobility shuttles (Toyota Sienna vans) for the Minnesota's Autonomous Rural Transit Initiative (goMARTI) pilot, which provides on-demand service in a 17-square-mile area. Service began in late September 2022. Via is providing the booking platform for the service. While the initial phase of this project commenced without USDOT funding, in May 2023, FHWA announced a \$9.3 million Advanced Transportation Technology and Innovation (ATTAIN) program grant to expand the work on this project.	ATTAIN	In Operation
NC	North Carolina Department of Transportation (NCDOT) and National Park Service (NPS)	Testing an EasyMile EZ10 automated shuttle on a route at the Wright Brothers National Memorial. Transdev managed operation of the shuttle. The evaluation report for this effort is available here .	FLTP	Completed
NY	Port Authority of New York and New Jersey (PANYNJ)	Testing lateral lane-keeping and bus platooning to improve operations and reduce headways between buses as they traverse Exclusive Bus Lane (XBL) between the Lincoln Tunnel and New Jersey Turnpike. PANYNJ partnered with Southwest Research Institute (SwRI). The team conducted initial off-site testing in December 2021 and conducted on-facility XBL testing in summer 2022. The final report for this effort is available here .	STAR (Strategic Partner)	Completed
NY	University at Buffalo, Buffalo Niagara Medical Campus (BNMC), and ADASTEC	Testing an ADS-equipped Vicinity Motor Corporation bus at BNMC in Buffalo, NY as part of the "Buffalo All Access" project. The bus is expected to arrive in July 2024.	ITS4US	In Planning
NV	Regional Transportation Commission of Southern Nevada (RTCNS)	Testing an automated circulator shuttle in the Las Vegas Medical District. RTCNS is coordinating with FTA on an approach for procuring ADS-equipped vehicles. It expects to launch service in 2025.	BUILD	In Planning
OH	Western Reserve Transit Authority (WRTA) - Eastgate Regional Council of Governments is the lead	Testing automated shuttles in a dedicated shuttle lane as part of the SMART2 Network in Youngstown, Ohio. In July 2023, the City of Youngstown issued an RFP for the shuttle service.	BUILD	In Planning
OH	WRTA	Partnering with the Santa Clara Valley Transportation Authority (VTA) and CALSTART to test an ADS-equipped cutaway bus in Mahoning Valley, OH and Santa Clara Valley, CA. WRTA is participating as a member of the CATUF effort. In March 2021, an RFP to procure buses was issued, and in August 2021, VTA announced that it selected First Transit as the successful proposer. VTA has since executed a contract with First Transit (now owned by Transdev).	AIM	In Planning

State	Transit Agency / Lead	Description	USDOT Program	Status
OH	Central Ohio Transit Authority (COTA) - City of Columbus is the lead	Testing EasyMile EZ10 automated shuttles for the Linden LEAP pilot, which began in February 2020. Due to COVID-19, the shuttles were repurposed to deliver food boxes to residents in Linden, OH. The shuttles ceased operation in April 2021. The deployment playbook and final report for this effort is available here .	SCC	Completed
OR	Lane Transit District (LTD)	Testing lateral lane-keeping and precision docking on LTD's Emerald Express Bus Rapid Transit. The final report for this effort is available here . The evaluation report for this effort is available here .	VAA	Completed
TX	Capital Metropolitan Transportation Authority (CapMetro)	Integrating vehicle automation in an advanced yard management system and completing heavy-duty vehicle demonstrations at an operations facility in Austin, TX. The project includes a bus automation workforce analysis to address how bus yard automation may impact existing roles and create demand for new positions.	Yard Operations	In Planning
TX	City of Arlington	Integrating automated vehicles from May Mobility into its existing on-demand system operated with the Via ride-sharing service. The service includes four Lexus RX 450h SUVs and one wheelchair-accessible Polaris GEM shuttle. For the initial year of operation, it allowed University of Texas at Arlington students to ride fare free. The initial one-year pilot (March 2021-March 2022) was funded through an IMI grant from FTA. The North Central Texas Council of Governments announced funding to extend the Arlington RAPID service through at least 2024. The funds come from a mix of CMAQ, STBG, and Transportation Development Credits (TDCs). May Mobility has replaced the accessible shuttle with a wheelchair-accessible ADS-equipped Toyota Sienna van, and it plans to replace the rest of the current fleet with ADS-equipped Toyota Sienna vans in the near future. The final report for the FTA-funded portion of this effort is available here .	IMI, STBG, CMAQ	In Operation
TX	Metropolitan Transit Authority of Harris County (METRO)	Testing an automated cutaway bus to provide service to Texas Southern University and Houston's Third Ward community. The service will connect to Metro buses and light rail. Phoenix Motorcars will provide the bus for the project and Perrone Robotics will provide the ADS. The project team held a kickoff meeting in December 2022 and held a ribbon cutting ceremony with its ADS-equipped bus on display in December 2023.	AIM	In Planning
VA	Virginia Polytechnic Institute and State University (Virginia Tech)	Demonstrating and collecting data on a forward automatic braking, pedestrian collision avoidance, and other ADAS features to enhance safety for buses.	ADAS	In Planning

State	Transit Agency / Lead	Description	USDOT Program	Status
WA	Pierce Transit	<p>Testing DCS Technologies' Pedestrian Avoidance Safety System (PASS) automated emergency braking in 30 buses. This project was rescoped to focus on driver assistance technology, and the automation component was not activated when the buses were in revenue service.</p> <p>The final report for this effort is available here.</p>	SRD	Completed
WY	National Park Service (NPS)	<p>Testing two Local Motors shuttles on routes in the Canyon Village area of Yellowstone Park, with shuttle operations managed by Beep.</p> <p>The evaluation report for this effort is available here.</p>	TIDP & FLH	Completed

Source: USDOT Volpe Center, January 2024

Projects without USDOT Funding

The transit agencies listed in the table below are involved in demonstration or pilot activities that are not part of a USDOT-funded program. As with the previous table, cells with light teal blue shading and bolded text indicate updates from the previous version of this document.

Note: Light teal blue shading and bolded text are used to indicate projects that have been added or have had major updates since the previous edition of this document.

Projects without USDOT Funding

State	Transit Agency / Lead	Description	Status
AZ	City of Peoria and Maricopa Association of Governments	Testing Navya shuttles on a fixed route in healthcare district located near Plaza Del Rio Boulevard. The "RoboRide Medical Autonomous Shuttle" service operated Monday through Saturday from 8:00 am - 2:00 pm. The pilot launched in January 2022 and ran through April 2022. Beep managed operation of the shuttle.	Completed
AZ	Sun City	Testing May Mobility shuttles (ADS-equipped Toyota Sienna vans) for on-demand public transit service in the retirement community of Sun City. The service launched in late April 2022. Via is providing the booking platform for the service. The service will operate Monday to Friday from 7:00 am - 5:00 pm.	In Operation
AZ	Sun Tran	Participating as a member of the AECOM Automated Bus Consortium (ABC) effort.	In Planning
AZ	Valley Metro Regional Public Transportation Authority (Valley Metro)	Testing innovative and flexible transportation models aimed at providing turnkey service to the general public using ADS-equipped vehicles operating within the Greater Phoenix metropolitan area. Research Projects will be conducted over a five-year period encompassing fiscal years 2022-2026 for a total cost of \$250,000. Valley Metro issued an RFP in May 2023.	In Planning
CA	Central Contra Costa Transit Authority (CCCTA) and Contra Costa Transportation Authority (CCTA)	Testing two EasyMile EZ10 shuttles at GoMentum Station and Bishop Ranch business park.	Completed
CA	CCTA	Participating as a member of the CATUF effort.	In Planning
CA	CCTA	Installing 28-mile Dynamic Personal Micro Transit (DPMT) system that will use ADS-equipped pods from Glydways. The system will connect Contra Costa County communities, including Pittsburg, Antioch, Brentwood and Oakley.	In Planning
CA	City of Riverside	Operating three ADS-equipped shuttles as part of a two-year pilot program. The pilot is part of an agreement for Ohmio to relocate its headquarters and research and development operations to Riverside, CA.	In Planning
CA	City of San José	Developing a connector between Mineta San José International Airport and Diridon Station. The recommended proposer is San José Connection Partners, a consortium led by Plenary Americas, with other members including Glydways, Webcor/ Obayashi, HNTB, and ACI. Construction is anticipated to begin in 2027.	In Planning

State	Transit Agency / Lead	Description	Status
CA	Golden Empire Transit District (GET Bus)	Participating as a member of the CATUF effort.	In Planning
CA	Livermore Amador Valley Transit Authority (LAVTA), the City of Dublin, the Bay Area Air Quality Management District, BART, and the Metropolitan Transportation Commission	Testing an EasyMile EZ10 automated shuttle and providing service from the Dublin/Pleasanton BART Station to nearby locations. Service began on November 16, 2020 and continued through July 30, 2021. Transdev managed operation of the shuttle. A previous short-term demonstration of an EasyMile EZ10 automated shuttle was conducted in 2018.	Completed
CA	Yolo County Transit District (YCTD)	Demonstrating an EasyMile EZ10 automated shuttle.	Completed
CO	Regional Transportation District (RTD) - Denver	Testing an EasyMile EZ10 automated shuttle to connect the 61st Avenue and Peña Boulevard commuter rail station to nearby areas.	Completed
CO	RTD	Participating as a member of the CATUF effort.	In Planning
CO	Colorado Smart Cities Alliance, EasyMile, Stantec, Colorado School of Mines, City of Golden, Colorado Springs, Greenwood Village, Siemens, Panasonic, NREL, Colorado Department of Transportation (CDOT)	Testing EasyMile EZ10 automated shuttles as part of the "Autonomous Vehicles in Colorado" (AvCo) effort in different communities. In Golden, CO, shuttle service for the Mines Rover project commenced in August 2021 and concluded in December 2021. While operations in Greenwood Village, CO and Colorado Springs, CO had previously been announced, those operations never occurred.	Completed
DE	Delaware Department of Transportation (DelDOT)	Testing two EasyMile EZ10 Gen 3 automated shuttles on a 1.2-mile (22 minute) loop on the DelDOT Campus in Dover, DE.	Completed
FL	City of Altamonte Springs	Testing two Navya shuttles as part of the project "CraneRIDES" service, which began in July 2023. The service operates seven days a week from 10:00-2:00 pm and 5:00-9:00 pm (5:00-10:00 pm on Friday and Saturday) and includes four stops (Altamonte Mall, Renaissance Centre, Cranes Roost, and AMC Theatre) and operates along a fixed route through Uptown Altamonte. Beep is managing operation of the shuttles.	In Operation
FL	Gainesville Regional Transit System (RTS)	Testing an EasyMile EZ10 shuttle in partnership with the City of Gainesville and Transdev as part of the "Gainesville Autonomous Transit Shuttle" (GAToRS) project. Some initial testing took place in May 2018, but the project was on hold until it launched in February 2020. Phase 1 started in downtown Gainesville and extended into the Innovation Square area. Phase 2 began in March 2021 and involved additional stops across the street from University of Florida and communication with traffic signals.	Completed

State	Transit Agency / Lead	Description	Status
FL	Hillsborough Area Regional Transit Authority (HART)	Testing two Navya shuttles on a route between the TECO Line Streetcar and the Marion Transit Center along North Marion Street. The one-year pilot began in October 2020. Beep managed operation of the shuttle.	Completed
FL	Jacksonville Transportation Authority (JTA)	Testing multiple ADS-equipped bus and shuttle models, including those from EasyMile, Navya, Local Motors, GreenPower, and Polaris/Waev (Waev purchased the GEM brand from Polaris). Testing has taken place on a 1/3-mile "Test & Learn" track as part of a project to replace the existing Skyway monorail. In September 2023, JTA and Florida State College at Jacksonville (FSCJ) announced plans to operate an ADS-equipped vehicle from Gaussin Macnica along a one-mile route on the FSCJ campus.	In Operation
FL	JTA	Participating as a member of the CATUF effort.	In Planning
FL	LYNX, City of Orlando	Testing two Navya shuttles as part of the project "Shuttling with Autonomous Navigation" (SWAN) service, which began in August 2023. Service operates during off-peak hours utilizing the existing LYMMO Orange Line and provides service within the Creative Village. The service operates seven days a week from 10:00-2:00 pm and 6:30-10:30 pm. Beep is managing operation of the shuttles. Service will operate until April 2024. The SWAN Shuttle Service operated by Beep was suspended following an incident on November 4, 2023 where the shuttle collided with a LYNX bus.	In Operation – Temporarily Paused
FL	Florida DOT, Pinellas Suncoast Transit Authority (PSTA), and Tampa Bay Area Regional Transit Authority (TBARTA)	Testing two Navya shuttles along Bayshore Drive in St. Petersburg, FL as part of the "Autonomous Vehicle Advantage" (AVA) project. The four-month pilot began in November 2020. Following the initial AVA pilot, shuttle service using a Local Motors shuttle began in Dunedin, FL in May 2021. That service was temporarily paused following an incident in June 2021. In December 2021, the AVA Local Motors shuttle began operating in Clearwater, FL for a six-week pilot. AVA service in Dunedin, FL used a Navya shuttle, and operated from April 28, 2022 until June 12, 2022. Beep managed operation of the AVA shuttles.	Completed
GA	City of Cumberland	Testing a Navya shuttle as part of the project "Cumberland Hopper" service, which is part of the "Cumberland Sweep" effort. Service began in July 2023 and includes operation along two designated routes (Galleria Office Park Route and I-285 Transit & Pedestrian Bridge). Beep is managing operation of the shuttle. Service will operate until March 2024.	In Operation
GA	Metropolitan Atlanta Rapid Transit Authority (MARTA)	Participating as a member of the AECOM ABC effort.	In Planning
GA	City of Peachtree Corners	Testing automated shuttles from Local Motors and Navya as part of the project "Piloting Autonomous Use Locally" (PAUL). Daily service operates from 10:00-4:00 pm and includes seven stops along the "Technology Parkway – Curiosity Lab" route. Beep is managing operation of the shuttles. Other partners include T-Mobile, OVHcloud, Applied Information, and Temple. Use of the Local Motors shuttles was paused due to the closure of Local Motors.	Completed

State	Transit Agency / Lead	Description	Status
HI	Perrone Robotics, Hawaii Department of Transportation (HDOT), University of Hawaii at Mānoa, and Sustainability Partners (SP)	Testing GreenPower Motor Company buses equipped with ADS from Perrone Robotics in the State of Hawaii. Initial testing began in June 2023. In September 2023, the bus began providing service on a route at the University of Hawaii at Mānoa campus as part of the first phase of the pilot. Initially, the shuttle service will operate every 30 minutes from 9:00-3:00 pm. The bus operates on a fixed route and serves eight stops on campus. The second phase will include service Mānoa Valley, the third phase will include service in Kapolei and Kalaeloa, and the fourth phase will connect the University of Hawaii’s Mānoa and Kaka’ako campuses.	In Operation
IL	Quad Cities MetroLINK	Participating as a member of the AECOM ABC effort.	In Planning
IN	Bloomington Transit	Demonstrating an EasyMile EZ10 automated shuttle.	Completed
IN	Toyota Mobility Foundation (TMF), Energy Systems Network (ESN), Indiana Economic Development Corporation (IEDC), and IndyGo	Testing May Mobility shuttles (five Lexus RX 450h SUVs and one wheelchair-accessible Polaris GEM shuttle) as part of the “Together in Motion Indiana Initiative” through two six-month fixed-route services. The first service took place in downtown Indianapolis, IN and Indiana University–Purdue University Indianapolis (IUPUI), from June 2021 to November 2021. The second service took place in Fishers, IN and operated from December 2021 to June 2022.	Completed
MD	Robotic Research Autonomous Industries (RRAI) LLC and New Flyer	Developing a 40’ automated transit bus, with initial development and testing in Clarksburg, MD. The companies had also previously announced plans for additional demonstrations at a New Flyer facility in Anniston, AL.	In Operation
MD	Maryland Transportation Authority (MDTA)	Participating as a member of the CATUF effort.	In Planning
MI	Michigan Department of Transportation (MDOT) and Michigan Office of Future Mobility and Electrification (OFME)	Participating as a member of the AECOM ABC effort. On behalf of the consortium, in January 2022, Michigan issued an RFP to manufacture the full-size, automated, accessible buses. After evaluating submitted proposals, in April 2023, Michigan opted to not make an award but is planning to release a new RFP in 2024.	In Planning
MI	City of Detroit	Participating as a member of the AECOM ABC effort.	In Planning
MI	MDOT, OFME (formerly PlanetM), and Pratt and Miller Engineering	Constructing and testing automated shuttles at Western Michigan University in Kalamazoo.	Completed
MI	MDOT, OFME (formerly PlanetM), and Ann Arbor Area Transportation Authority	Demonstrating the Q’Straint Quantum automated wheelchair securement system in 10 buses in Ann Arbor. The final report for this effort is available here .	Completed

State	Transit Agency / Lead	Description	Status
MI	MDOT	Participating as a member of the CATUF effort.	In Planning
MI	OFME, Michigan State University (MSU), and ADASTEC	<p>Testing an ADS-equipped bus on the MSU campus in East Lansing, MI. Earlier work used a Karsan bus on a seven-mile route and on-campus testing began in late 2021. The bus began providing service to students, staff, and faculty beginning in April 2022 and operating through April 2023.</p> <p>The next stage of this work will use an ADS-equipped Vicinity Motor Corporation bus, and the service will launch in the second quarter of 2024.</p>	In Planning
MI	City of Grand Rapids	Testing May Mobility shuttles (four Lexus RX 450h SUVs and one wheelchair-accessible Polaris GEM shuttle) as part of the “Grand Rapids Autonomous Vehicle Initiative,” which provided on-demand rides in a 4.21-square mile service area. On-demand service began on July 26, 2021 and lasted until April 29, 2022. It followed a previous service that provided fixed-route service on a 3.2-mile route with 20 passenger stops. That previous service began in July 2019 and lasted for one year.	Completed
MI	Ann Arbor SPARK, Mcity, and Michigan Economic Development Corporation (MEDC)	Testing May Mobility shuttles (four Lexus RX 450h SUVs and one wheelchair-accessible Polaris GEM shuttle) as part of the “A2GO” service, connecting Kerrytown, the University of Michigan campus, and the State Street corridor in Ann Arbor, MI. Service commenced in October 2021. May Mobility has announced plans to replace the current fleet with ADS-equipped Toyota Sienna vans.	In Operation
MN	Minnesota Department of Transportation (MnDOT), the City of Rochester, Destination Medical Center, Mayo Clinic, First Transit, and EasyMile	Testing two EasyMile EZ10 shuttles as part of “the Med City Mover” service in downtown Rochester, MN. Operations were scheduled to occur from 9:00-3:30 pm on Monday through Friday and 9:00-5:00 pm on Saturdays and Sundays, from September 2021 through August 2022.	Completed
MN	MnDOT and the City of White Bear Lake	Testing a Navya shuttle as part of a yearlong “Bear Tracks” service. The route is 1.5 miles and connects a number of residential facilities (including PAI, The Boulders, and Willow Wood Apartments) to the community YMCA. The project concluded in June 2023.	Completed
NC	NCDOT and the Town of Cary, NC	<p>Testing a Navya shuttle as part of a three-month service called “Connected Autonomous Shuttle Supporting Innovation” (CASSI). Beep is managing shuttle operations. Service began in early March 2023 and concluded in early June 2023.</p> <p>The next phase of the CASSI shuttle provides service on the campus of University of North Carolina at Charlotte. The shuttle follows a six-stop, 2.2-mile route that connects to a LYNX Blue Line light rail station. The shuttle runs on weekdays 8:30-11:30 am and 1:30-4:30 pm. Operations launched on July 12, 2023 and are scheduled to continue until December 22, 2023.</p>	Completed

State	Transit Agency / Lead	Description	Status
NC	North Carolina Agricultural and Technical State University (N.C. A&T)	Testing ADS-equipped shuttles in downtown Greensboro, NC (one-mile fixed route from the Harold L. Martin Sr. Engineering Research and Innovation Complex to the Miriam P. Brenner Children’s Museum). Rides were open to students, faculty, staff and members of the community. Operations are scheduled to occur from 11:00-1:00 pm on weekdays, from September to October 2023.	Completed
ND	Capital Area Transit	Demonstrating an EasyMile EZ10 automated shuttle.	Completed
NE	StarTran (City of Lincoln)	Demonstrating a Navya automated shuttle. The demonstration was conducted in 2018.	Completed
NJ	New Jersey Governor’s Office, New Jersey Department of Transportation (NJDOT), the City of Trenton, and Princeton University	Testing 100 automated shuttles as part of the “Trenton Mobility & Opportunity: Vehicles Equity System” (Trenton MOVES) project. In December 2021, New Jersey released a Request for Expressions of Interest (RFEI) for the project, and the RFEI closed in February 2022. The project solicited competitive contracting proposals in 2023, but the Trenton City Council did not make a selection, and it decided to revise the specifications and re-advertise the procurement process.	In Planning
NJ	New Jersey Transit (NJ Transit)	Participating as a member of the AECOM ABC effort.	In Planning
NJ	PANYNJ	Testing an ADS-equipped shuttle van at Newark Liberty International Airport in Newark, NJ. The month-long pilot project was conducted in partnership with STV and Perrone Robotics.	Completed
NV	Regional Transportation Commission of Southern Nevada (RTC of Southern Nevada)	Testing a Navya shuttle in Las Vegas near the Downtown Container Park. The shuttle was operated by Keolis.	Completed
NV	RTC of Southern Nevada	Participating as a member of the CATUF effort.	In Planning
OH	Central Ohio Transit Authority (COTA) - City of Columbus is the lead	Testing May Mobility shuttles on Scioto Mile.	Completed
OH	COTA	Participating as a member of the CATUF effort.	In Planning
OH	Stark Area Regional Transit Authority (SARTA)	Participating as a member of the CATUF effort.	In Planning
OH	Toledo Area Regional Transit Authority (TARTA)	Participating as a member of the CATUF effort.	In Planning

State	Transit Agency / Lead	Description	Status
PA	Southeastern Pennsylvania Transportation Authority (SEPTA), Philadelphia Industrial Development Corporation (PIDC), Philadelphia Navy Yard, and Delaware Valley Regional Planning Commission (DVRPC)	Testing an ADA compliant automated electric bus equipped with an ADS from Perrone Robotics at the Philadelphia Navy Yard. Initial testing began in late 2022. In December 2023, Perrone Robotics delivered an ADS-equipped Ford e-Transit van to Philadelphia Navy Yard, and it will begin operations in January 2024.	In Planning
RI	Rhode Island Public Transit Authority (RIPTA) - Rhode Island Department of Transportation (RIDOT) is the lead	Testing May Mobility shuttles in downtown Providence.	Completed
TX	Corpus Christi Regional Transportation Authority (CCRTA)	Testing an EasyMile EZ10 shuttle (called "SURGE") at Texas A&M University-Corpus Christi began in January 2020. CCRTA partnered with MV Transportation to manage operations.	Completed
TX	Dallas Area Rapid Transit (DART)	Participating as a member of the AECOM ABC effort.	In Planning
TX	Metropolitan Transit Authority of Harris County (METRO)	Participating as a member of the AECOM ABC effort.	In Planning
TX	Southwest Research Institute (SwRI)	Testing a 14-passenger automated shuttle bus on the SwRI campus in San Antonio, TX. The shuttle runs regularly on weekdays and makes routine stops on a regular route around SwRI's campus as well as supporting ad hoc tours and demonstrations for visitors.	In Operation
UT	Utah Transit Authority (UTA) - Utah Department of Transportation (UDOT) is the lead	Testing an EasyMile EZ10 automated shuttle in several different communities in Utah. The project began in April 2019.	Completed
UT	UTA	Participating as a member of the CATUF effort.	In Planning
VA	Virginia Department of Rail and Public Transportation (DRPT), Fairfax County, and Dominion Energy	Testing EasyMile EZ10 shuttle (called "Relay") between the Dunn Loring-Merrifield Metro station and the Mosaic District. Initial testing began in August 2020, and passenger service began in October 2020. The shuttle operates Monday to Thursday from 10:00-2:00 pm. Transdev is managing operation of the shuttle. In September 2022, Relay expanded its route from two stops to four stops. Service ended in late June 2023.	Completed

State	Transit Agency / Lead	Description	Status
WA	King County Metro, Kitsap Transit, Community Transit, Pierce Transit, Intercity Ctransit, C-Tran, Ben Franklin Transit, Spokane Transit Authority	Testing of driver assistance systems—Mobileye Shield+ (a non-automated collision avoidance system)—on 38 buses from several transit agencies.	Completed

Source: USDOT Volpe Center, January 2024

Contact

The information in this briefing was compiled by the John A. Volpe National Transportation Systems Center in support of the FTA’s Office of Research, Demonstration and Innovation (TRI). For more information, or to provide information on transit bus automation projects that were not included in this document, send an email to transitautomation@dot.gov.

Cover Image Description

The cover image shows a large transit bus from Pierce Transit, which is parked at the Virginia Tech Transportation Institute (VTTI) Smart Road test track. A member of U.S. Department of Transportation staff took the photo, and staff from Pierce transit and VTTI provided permission for its use.