AUTOMATED TRANSIT BUS MAINTENANCE AND YARD OPERATIONS DEMONSTRATION PROJECT

AUTONOMOUS BUS YARD PARKING AND RECALL DEMONSTRATION

PINELLAS SUNCOAST TRANSIT AUTHORITY (PSTA)

IN PARTNERSHIP WITH THE BLUE SPACE, UNIVERSITY OF SOUTH FLORIDA, AND UNIVERSITY OF SOUTH FLORIDA CENTER FOR URBAN TRANSPORTATION RESEARCH

U.S. Department of Transportation

Federal Transit Administration

PROJECT SUMMARY

Automation Level(s): 4

The objective of this project is to demonstrate how autonomy can be used in a bus yard setting to enhance safety and efficiency of operations considering staff shortages experienced by transit agencies across the nation. Automated parking and recall will be demonstrated to improve bus yard operations and reallocate staff time. The expected benefits of this project are to:

- Improve driver safety and working environment; and
- Increase efficiency and productivity in the bus yard.

To ensure a safe and effective demonstration, the project will be completed in three phases:

- Phase 1: Hardware and software localization and modification.
- Phase 2: Integration, testing and validation.
- Phase 3: Final demonstration, open to select partners and stakeholders.

PROJECT GOALS

The goals of PSTA's ADS YARD Program include:

- Improved safety for operators and mechanics walking along active bus corridors and present in the bus yard.
- Reduced damage to vehicles resulting from precision parking required to park buses in narrow spaces.
- Increased efficiency and reduced time allotted for pre-trip inspections.
- Better utilization of bus yard space and infrastructure, including tighter parking lanes and better use of spaces outside of maintenance bays and alleyways.

VEHICLE INFORMATION

The autonomous technology can be used on any bus that has a drive by wire and the appropriate sensors. PSTA will choose a vehicle from its new fleet of electric buses for this project. Since the technology does not need to be altered it can even be used to automate bus yards to increase safety, improve efficiency and save cost. Unlike autonomous technology for custom built vehicles that do not come with steering wheels, this demonstration of automating bus parking and recall will serve as an important step towards operating the current fleet of buses more efficiently. The same technology that will be demonstrated in this effort can also then be used to develop other yard operations features, such as: charging, taking buses through the bus wash, etc. It can also be used to develop precision docking capabilities for the SunRunner BRT.

DATA COLLECTION, MANAGEMENT, & SHARING

PSTA will work with the project partners (BlueSpace, USF, CUTR) to develop a data management plan during the development of the project agreement and scope this year. Within this plan, key performance metrics will be identified that will be used to evaluate and summarize the project, and protocols on data collection, management & sharing will be established.

PROJECT STATUS & SCHEDULE

The project will kick off in January 2024.

BUDGET

The total project cost is estimated at $1,122,942, with $892,609 awarded by the FTA and $230,333 in local matching funds.

Federal Amount ($)	Non-Federal Cost Share	Total Amount
$892,609	$230,333	$1,122,942