

FTA Bus Compartment Redesign and Bus of the Future Listening Session

**Safer Vehicles
Safer People**



Agenda

Welcome/Opening Remarks

Mary Leary, FTA Office of Research Demonstration & Innovation (TRI) Associate Administrator
Veronica Vanterpool, FTA Deputy Administrator

Overview of the Day

Maria Roell, Office of Infrastructure, Safety and Asset Innovation (TRI-20) Program Analyst

Transit Vehicle Challenges Needs, and Opportunities

Mohammed Yousuf, Office of Infrastructure, Safety and Asset Innovation (TRI-20) Director
Dawn Sweet, Office of Civil Rights (TCR) Director of Policy and Engagement

Bus Compartment Redesign – Research and a Case Study

International Transportation Learning Center- Bus Compartment Redesign Research Program

- Jack Clark, Executive Director

New Orleans Regional Transit Authority- Bus Compartment Redesign Research Program

- Mike Smith, Chief Safety, Security, and Emergency Management Officer

Toronto Transit Commission- Case Study

- Bem Case, Executive Director for Innovation
- Mike Farhoud, Manager Streetcar Maintenance and Vehicle Overhaul

Listening Session - Four main topic areas will be covered

- Operator Compartment, Safety, Protection and Health
- ADA Compliance, Universal Design and Accessibility
- Passenger Compartment, Safety, Comfort and Convenience
- Customization and Emerging Technologies

Written comments will be accepted through the [Federal Register Notice Docket](#) until July 24, 2023

Transit Bus Research Directions



Mohammed Yousuf
Director, Office of Infrastructure, Safety &
Asset Innovation, TRI FTA

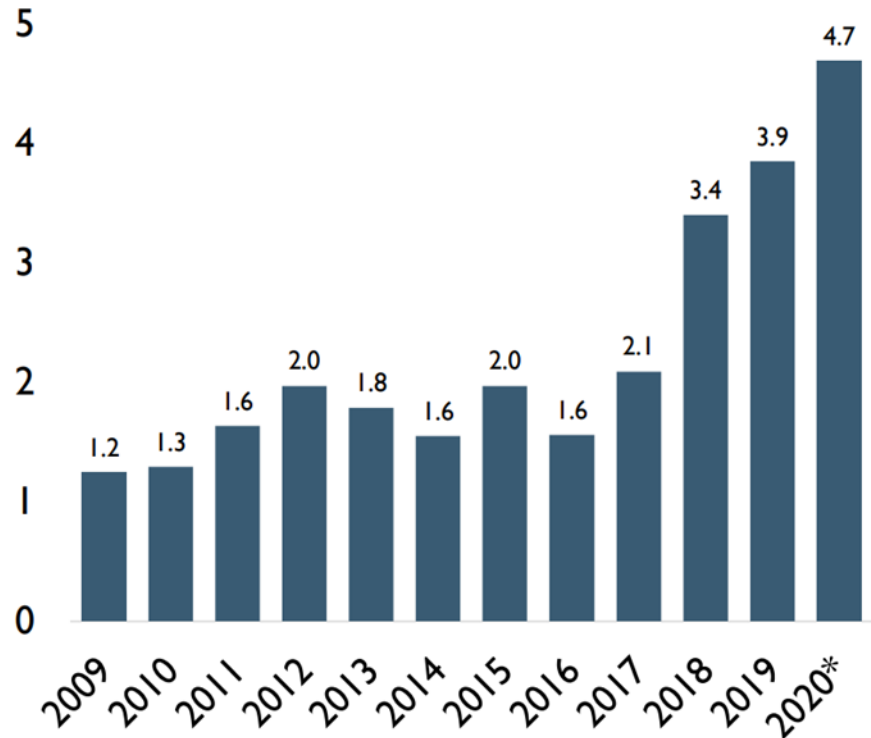
June 22, 2023



Transit Vehicle Challenges, Needs, & Opportunities

- Increase in operator assaults
- Operator visibility inside and outside of bus
- Rider expectations
 - Convenience & comfort
 - Internet access etc.
- Enhance accessibility features
- Passenger feelings of safety
- Reduce bus weight
- Zero-emission propulsion
- Reduce bus customization
- Bus automation and bus testing
- Use of new and emerging technologies

Transit Operator Assault Events Reported to the NTD per 100M UPT **



* Projected data through November 2020

** Unlinked Passenger Trips

Bus Compartment Redesign Program (BCP)

- Phase I of the Bus Compartment Redesign Program is ending.
- In October 2020, FTA awarded \$1.6M in competitive grant funds to develop a draft design:
 - **International Transportation Learning Center (ITLC)** awarded \$1M to redesign a transit bus compartment to improve safety for operators. Final report expected June 2023.
 - **New Orleans Regional Transit Authority (NORTA)** awarded \$.6M to study the addition of shields and barriers on its bus fleet to protect bus operators. Final report expect August 2023.

Building upon BCP Findings

Launching a new Notice of Funding Opportunity (NOFO)

- Finalize and build prototypes for bus compartment designs that improves bus operator and public safety.
- Improve bus operator access to vehicle instruments and controls without hindering the accessibility of passengers.
- Vision and design a bus of the future focusing on reducing customization, continuing to increase safety, improving rider satisfaction and comfort, ensuring standards for charging systems and increasing accessibility.

Next Steps

- Gather and categorize input from this listening session and any written comments.
- Ensure we understand the perspectives of all stakeholder groups.
- Use feedback to develop and release Bus Compartment and Bus of the Future NOFO
 - Enhance safety for operators, workers, riders, pedestrians, bicyclists, and all vulnerable road users.
 - Reduce customization and part proliferation.
 - Offer state of the art safety, convenience and comfort.

FTA Transit Bus Accessibility



Dawn Sweet
Director of Policy and Engagement,
Office of Civil Rights, FTA

June 22, 2023



Americans with Disabilities Act Requirements

- Bus redesign and technology present an opportunity to increase access beyond minimum requirements
- Riders with mobility, sensory, cognitive disabilities have different needs
- DOT ADA regulations set specific requirements at 49 CFR Parts 37 & 38.
Examples:
 - Sufficient circulation paths for wheelchair users
 - Wheelchair securement area(s) with securement device
 - Personnel assistance with wheelchair securement and ramps/lifts
 - Other reasonable assistance to riders with disabilities
 - Effective communication with riders
 - Stop announcements
- Goal of ADA = independent use of fixed route transit

ADA Considerations – Examples

Requirement	Considerations
<ul style="list-style-type: none">Buses must have 30 x 48-inch wheelchair securement area(s) with securement device that limits wheelchair movement to no more than 2 inches under normal operating conditions. 49 CFR 38.23(a),(d)	<p><i>One securement area/device must be forward-facing. (Buses over 22 feet in length require 2 areas, one of which can be backward-facing.)</i></p>
<ul style="list-style-type: none">Buses must have “sufficient clearances to permit a wheelchair or other mobility aid user to reach a securement location.” 49 CFR 38.23(a)	<p><i>“Wheelchairs” include “mobility scooters,” which usually have wider turning radiuses. Compartment or other design may not interfere with the passage of a 30 x 48-inch wheelchair.</i></p>
<ul style="list-style-type: none">Personnel must assist with wheelchair securement (and ramps/lifts). 49 CFR 37.165(f)	<p><i>Operator will need to leave any compartment twice for securement (unless other personnel provided).</i></p>
<ul style="list-style-type: none">Personnel must provide other reasonable assistance; e.g., “handle fare media” when a rider can’t use the farebox. 49 CFR 37.173, Appendix E	<p><i>Potential design/technological solutions to reduce driver assistance and promote independent travel by people with disabilities.</i></p>

ADA Considerations – Examples

Requirement	Considerations
<ul style="list-style-type: none">Personnel must engage and communicate with riders on the bus and at the bus stop to respond to their request for assistance. 49 CFR 37.173	<p><i>Compartment or other design or technology must allow the operator to communicate effectively with riders with a variety of disabilities (e.g., blind/low-vision, deaf/hard of hearing, cognitive).</i></p>
<ul style="list-style-type: none">Personnel or an automated system must announce upcoming stops (e.g., transfer points) and the route for people waiting at bus stops. 49 CFR 37.167(b),(c)	<p><i>Access Board bus/van guidelines (which DOT must adopt) will require “large transit entities” (i.e., 100 buses operating) to have automated stop and route ID announcement systems on all buses over 22 feet.</i></p>

Bus Compartment Redesign – Research and a Case Study

International Transportation Learning Center

Jack Clark, jclark@transportcenter.org

New Orleans Regional Transit Authority-

Mike Smith, mjsmith@rtaforward.org

Toronto Transit Commission- Case Study

Bem Case, bem.case@ttc.ca

Mike Farhoud, mike.farhoud@ttc.ca



Listening Session – 4 topics (15 minute each)

1. Operator Compartment, Safety, Protection and Health
2. ADA Compliance, Universal Design and Accessibility
3. Passenger Compartment, Safety, Comfort and Convenience
4. Customization and Emerging Technologies

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FTA Questions

1. What key safety features are needed in a bus operator compartment/barrier?
2. What features are important for operator health and comfort?
3. What safety features would be important for vulnerable road users such as pedestrians and bicyclists? For example, cameras on the outside of the bus.
4. Are there any additional safety features that should be considered? For example, blind spot detection and advanced driver assistance automation such as automatic braking.
5. What accessibility features and functions are critical to improve access to buses by people with a variety of disabilities?

FTA Questions (Continued)

6. How can we facilitate better bus cabin designs for wheelchair securement and access?
7. How can bus interiors be designed for greater passenger comfort and convenience?
8. How can we reduce bus customization? For example, more than 60 different intelligent transportation system devices can be added or major components like HVAC systems can be changed. increasing costs and manufacturing time.
9. Do you see your organization investing in emerging technologies in the future, such as transit bus automation, driver assist and lane departure systems, etc.? What are the potential drawbacks or challenges that need to be considered?

Thank you

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