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Federal Transit Administration
1200 New Jersey Ave SE
Washington, DC 20590

> **RE:** **RFI on Transit Bus Automation Research and Demonstrations**
> **FTA-2022-0012**

On behalf of the Transportation Trades Department, AFL-CIO (TTD), I am pleased to respond to the Federal Transit Administration's (FTA) Request for Comments on Transit Bus Automation Research and Demonstrations. TTD consists of 37 affiliate unions representing all kinds of transportation workers, including transit operators, mechanics, and other ground transportation workers whose safety, security, and livelihoods will be impacted by automated technologies. We therefore have a vested interest in making sure that the FTA invests in bus automation research and demonstrations that advance a future for transit and its employees consistent with the pro-worker and pro-union values of this administration.

Background

Transportation labor has long held the position that technological changes in our transportation network must be guided by purpose-driven innovation that is worker-centered and focused on creating and sustaining good jobs and serving everyone. In fact, transportation workers, their unions, and their employers have worked together for more than a century in the United States, bound by labor protections, standards of service, and decades of safety regulations, to adopt and implement the extraordinary technological changes that have been the hallmark of this sector. This is no different with regard to the deployment of automated technologies in public transportation.

As new mobility options and technological advancements, including automated driver assistance systems (ADAS) and automated driving systems (ADS), bring new challenges and opportunities to our transportation network, transportation labor stands ready to adapt and embrace change, as it has for many decades. However, we expect our partners in innovation to uphold the ethos of public transportation that has been established by almost 60 years of federal policy precedent. That is, it must be equitable and accessible to all, affordable, safe, and reliable. We know from experience in other transportation modes that just because some operating tasks can be automated, technology

alone doesn't ensure these other critical objectives will be met without a strong regulatory framework in place. Moreover, the workers who design, build, operate, and maintain this critical public service must be compensated fairly for their labor and not be undermined by investments that threaten their economic well-being and future through labor-replacing technologies or low-road employment models.

New Focus on Technological and Operational Challenges in Public Transportation Automation

A [new report from Carnegie Mellon's Traffic21 transportation research institute](#) brings clearer focus to the challenges of automation in public transportation. It examines a number of factors in human-automation teaming in the transit workforce and finds that the unique demands of public transit will always require a human operator, regardless of the level of driving automation achieved in the future. Moreover, the limitations of the technology and the challenges inherent in human-machine interaction (i.e. skill atrophy, "automation surprise," "authority sharing") mean that our federal transit policies must be updated to include more rigorous training for frontline transit workers. The findings of the Traffic21 policy paper echo what TTD has said in previous policy statements, regulatory filings, testimonies, reports, and other public-facing documents: human drivers will always be necessary to ensure that public transit remains a safe and robust service that is vital to millions of people and their communities.

A Pro-Worker, Pro-Safety Lens for FTA Decision Making

In January 2022, the U.S. Department of Transportation (USDOT) issued [departmental innovation principles](#), which commit the department and its modal agencies to transportation innovation policies that empower workers by expanding access to skills and training, ensuring the free and fair choice of a union, and guaranteeing them a seat at the table in shaping innovation. We believe that these principles bring the department in line with the workforce and safety considerations TTD has been urging for more than a decade with regard to automated vehicle technologies. As a general matter, we encourage the FTA to view each of the following questions through the lens of your own department's innovation principles. That is, the FTA must consider if its investments and participation in innovation research support this administration's definition of innovation by increasing safety and supporting workers.

Transportation labor feels strongly that this standard has been critically overlooked. Terms like labor, workforce, and training are only sparsely mentioned in the existing Strategic Transit Automation Research (STAR) reports, and to our knowledge, workforce impact assessments and general matters of workforce training and transition needs have not been components of any previous FTA-funded and managed transit bus automation demonstrations and pilots.

1. Priority Areas

What topics should be a priority for FTA's transit bus automation research and demonstrations over the next five years? What specific activities or products should be a priority for FTA within these areas?

As previously discussed, TTD believes that research into transit bus automation must be narrowly focused on technologies that make quality of life and safety improvements for transit workers, their passengers, and other road users. By way of example, ADAS – including lane centering, automatic emergency braking and pedestrian collision avoidance systems, parking and docking assistance, and others – have been present for years on passenger vehicles but are still not commonplace on transit vehicles.

However, as highlighted by the Traffic21 policy paper, integration of even lower-level technologies, such as driver assistance or partial automation, carries risks that the FTA must consider in its research. As noted in the report:

> "Although it seems counter-intuitive, increased automation can actually make the task of operating a vehicle more challenging. As automation takes over more routine aspects of driving, operators are left to manage the most challenging situations. Research on this phenomenon shows that reaction time increases as time disengaged from the task of driving increases, regardless of cognitive engagement (Funkhouser and Drews 2016)."

TTD is aligned with the authors of the report and recommends that the FTA focus its research on the added work tasks and potential new stresses placed on transit bus and van operators as autonomy potentially prompts transitions from physical operation to supervision and emergency takeover control.

Further challenges arise from the historical underinvestment in workforce training for frontline workers in the public transportation industry. TTD's broader concerns about workforce training in public transportation are further detailed here and here. Specific to automation, the Traffic21 paper highlights:

> "As a further complication, while automation will likely bring about new and more complex incident situations, a lack of proper training and a shift to operators supervising rather than driving can lead to the degradation of a worker's driving skills when they are needed, also known as skill atrophy (Pettigrew, Fritschi, and Norman 2018)... Added automation and increased cognitive load will require more training and expertise from bus operators so that the benefits of any level of automation can be realized. Without proper training, operators will be unlikely to respond accordingly in a challenging situation, as evidenced by the Uber crash where the minimally trained supervisor was unable to avoid striking a pedestrian (NTSB 2018)."

To that end, we strongly encourage the FTA to bring additional focus to the workforce challenges and opportunities that automated technologies will create for frontline transit workers. The FTA should work closely with frontline workers and organizations, including the newly-created Transit Workforce Center (TWC) and the International Transportation Learning Center (ITLC), and transportation unions and other key stakeholders, including TTD and the AFL-CIO Technology Institute, to evaluate the workforce impacts of lower-level automated technologies on public transportation.

2. Enabling Research

What specific research questions should be addressed by FTA-supported foundational research within the next five years? Possible topic areas for research include, but are not limited to, cybersecurity, equity, standards, and workforce training.

As noted above, workforce training will remain a serious challenge for the integration of even lower-level automated technologies. Challenges for transit operators are discussed previously in this document and in great detail in the Traffic21 policy paper. Unfortunately, due to historic underinvestment in frontline workforce training in this industry, there is no presumption that ADAS or other systems will increase safety. To enable increased safety, these systems must be paired with both research and frontline workforce training. We again recommend that the FTA work closely with partnering organizations, particularly the Transit Workforce Center, in the development of industry training standards, consortia, and other efforts that ensure the safe deployment of these technologies.

Moreover, we have serious concerns about the potential for new technologies to undermine the incumbent and future unionized maintenance workforce through low-road labor models like extended OEM warranties. Ensuring that maintenance jobs in public transit remain good jobs as technology advances on board transit vehicles necessitates better training for mechanics and operators and better decisions by transit agencies, compelled by strong federal policies. Our concerns about similar transitions are detailed in this TTD policy statement on zero emission buses. We strongly encourage the FTA to work with its partners in research and labor to identify the workforce impacts of automated technologies for maintenance employees, including skills gaps and training needs for the incumbent and future workforces.

3. Integrated Demonstrations

The STAR Plan currently identifies five integrated demonstrations: Transit Bus Advanced Driver Assistance System (ADAS); Automated Shuttle; Maintenance, Yard, and Parking Operations; Mobility-on-Demand (MOD) Service; and Automated Bus Rapid Transit.

Are these demonstration areas still needed? What additional or alternative demonstration areas are a priority?

As previously discussed, transportation labor supports technologies, including ADAS, but only when they are pursued with the goals of increasing quality of life, safety and service, and are paired with well-resourced, high-quality workforce training in operations and maintenance to ensure their safe deployment.

Our broader concerns about fully automated transit vehicles and MOD have been detailed in numerous regulatory filings, testimonies, policy statements, reports, and in the press. While we have not argued that these technologies have no place in public transportation, we maintain serious concern that they are being pursued in such a way that undermines the goals of mass public transportation, safety, and the creation and maintenance of good jobs, which have been a hallmark of public transportation for more than half a century.

When pursuing pilot projects, we strongly encourage the FTA to evaluate projects through the lens of TTD and the International Brotherhood of Teamsters' [Joint Principles for Autonomous Vehicle Legislation](#). That is, does the research ensure a voice for workers whose job it may one day impact; will it create good jobs in operations, maintenance, and manufacturing; and does it increase other important outcomes including safety, equity, congestion mitigation, and good air quality? Equally important, does the demonstration project meet the department's own [Innovation Principles](#)? Transportation labor is ready to partner in nearly any "innovative" pilot project, but partnership is critical to earning our support. Workers must not be sidelined when it comes to federal support for new technologies that will impact their workplace safety and livelihoods.

What are the biggest successes or challenges to deploying ADAS or ADS technologies for transit?

Close partnerships or even consultation with the frontline workforce are lacking in the testing and deployment of new technologies in public transportation.

The FTA should prioritize working with partners who include a comprehensive workforce impact assessment (WIA) as a part of their demonstration projects. As discussed, new innovations such as autonomous vehicles and MOD service have the potential to deskill or displace workers if implemented without regard to the workforce. Project sponsors should develop WIAs that evaluate job creation, job loss, job/wage degradation, and skill gaps presented by the introduction of new technologies. The USDOT should use the data collected to identify and prioritize addressing workforce training needs, workforce disruptions, and safety considerations. The agency should also use this information to inform strategic partnerships with other departments and agencies, including the U.S. Department of Labor (USDOL).

4. Stakeholder Engagement and Knowledge Transfer

Are FTA's methods of stakeholder engagement sufficient? What other methods should FTA consider?

Unfortunately, the FTA's methods of stakeholder engagement are insufficient. To date, no serious effort has been made by the USDOT to directly and consistently involve the voice of workers in the transition to increased automation in mobility, whether an agency was funding demonstrations or advancing new research. To be sure, the need for engagement extends far beyond advisory committees and roundtable discussions. For years, transportation labor has been sharing our views and concerns about the impacts of these technologies in policy statements, including our Principles for the Transit Workforce in Automated Vehicle Legislation and Regulations; comments on the Trump administration's ill-advised AV 3.0 and AV 4.0 policies, as well as its so-called Automated Vehicles Comprehensive Plan; our report on the disastrous anti-worker policies and efforts to undermine public transportation by ride-hailing companies; and testimony by the respective former and current TTD presidents Larry Willis and Greg Regan before the House Transportation and Infrastructure Committee. Most recently, we shared our serious concerns with this administration in our comments on federally supported research and development, and President Trump's ADS framework.

Despite all of this, we remain concerned that the USDOT has not, despite the promises outlined in the agency's new innovation principles, taken the necessary steps needed to engage labor in our recommendations or in ongoing dialogue about the deployment of new technologies.

5. Workforce

What activities have agencies undertaken to understand and prepare for the impacts of automation on their workforce? Please be specific and include examples where possible.

Transportation labor is unaware of any serious efforts undertaken by transit agencies to understand or prepare for automated vehicles in their workforce. Rather, they have demonstrated that they are chronically underprepared and continue to underinvest in training even for existing ADAS technologies. TTD has advocated for a suite of policies that should be adopted in statute to ensure transit agencies and their workforces are prepared for the workforce impacts of automation. Those include:

- Providing employees with advanced notice of any planned deployment of automated vehicle technologies and the impact these technologies will have on the current workforce.
- Ensuring that any use of automated technologies by transit agencies be covered through the negotiation of implementing agreements with affected employees and the preservation of current collective bargaining rights.
- Ensuring transit operators remain on-board, available, and well trained to take over operations, regardless of how far autonomous-vehicle technology develops. The presence of an operator ensures that someone is there to respond to emergencies and summon first responders, prevent unattended buses from becoming magnets for crime, and to act as a fallback ready driver when technology fails.
- Transit agencies should prepare and regularly update workforce impact assessments that examine the impacts of any level of ADAS or ADS on the existing and future workforce.

The assessments should include a comprehensive analysis of impacts of automation on existing workers, including workers who may be impacted by the ADAS or ADS; the current skills gaps arising from automation of vehicles or operations; and a comprehensive plan to train or retrain employees within all potentially affected classifications (e.g., bus operators, mechanics, and technicians). Assessments should also include the total amount budgeted for and descriptions of training and retraining programs that includes: types of training in both technical (including OEM provided training) and soft skills and the extent to which the transit agency is collaborating or partnering with other transit agencies; local, state, or federal government partners; and colleges or technical programs.

These recommendations were largely adopted in H.R. 3684, The INVEST in America Act, which was introduced by Congressman Peter DeFazio and passed by the House of Representatives. While not adopted in the final Bipartisan Infrastructure Law, we again encourage the FTA to condition grant funding on the development of WIAs.

The FTA should work with the TWC, ITLC, labor unions, and other key stakeholders in the development of WIAs, and should report publicly on their findings to better understand and prepare for the workforce challenges related to ADAS and ADS.

What types of new skills, training, and resources may be required for transit workforce development and transition? What specific areas of workforce-related research should FTA consider? What types of resources could FTA provide to help agencies and their workers adopt transit bus automation?

TTD believes that these questions must be more closely examined through direct and ongoing partnerships with organizations including the TWC, ITLC, labor unions, the USDOL, and other key stakeholders like Traffic21.

TTD appreciates the opportunity to comment on this docket and look forward to working with FTA in the future.

Sincerely,

Greg Regan
President