



Exploring the Future of Public Transportation Research: A National Online Dialogue

Final Summary Report

November 20, 2023 – January 12, 2024



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Executive Summary

From November 20, 2023, to January 12, 2024, the Federal Transit Administration (FTA), in collaboration with the U.S. Department of Labor Office of Disability Employment Policy's (ODEP) ePolicyWorks initiative, hosted "Exploring the Future of Public Transportation Research: A National Online Dialogue." During that time, the dialogue could be accessed at ExploringFutureTransit.IdeaScale.com.

The mission of the FTA is to improve America's communities through public transportation, which, today, is facing key challenges and opportunities in the United States. Technology is reshaping transit operations, whether agencies are implementing new low- or no-emission buses, utilizing predictive data analytics, improving safety through artificial intelligence, implementing integrated cashless payment systems, or exploring other emerging areas. Further, the COVID-19 pandemic reminded us that transit provides essential access to many critical activities for people who do not or choose not to drive, including people with disabilities. Transit facilitates access to jobs, school, health care, recreation and leisure, and social connections. As travel patterns in America continue to shift, the FTA seeks to ensure that research investments effectively target the most pressing issues facing transit agencies and provide leadership to help agencies leverage new transformative technologies.

ODEP, the only non-regulatory federal agency that promotes policies and coordinates with employers and all levels of government to increase workplace success for people with disabilities, focuses its efforts on developing and influencing policies and practices that enhance the number and quality of employment opportunities for people with disabilities. This includes employment supports designed to assist individuals in achieving and maintaining employment, such as accessible technology, communications access, emergency preparedness, flexible work arrangements, healthcare, housing, personal assistance services, and transportation.

Together, FTA and ODEP hosted the "Exploring the Future of Public Transportation Research: A National Online Dialogue," to gather insights, experiences, and suggestions from a broad group of subject matter experts and stakeholders, including people with disabilities. This input will contribute to a five-year FTA strategic research plan that addresses the most pressing public transportation challenges and advances the highest impact transformations.

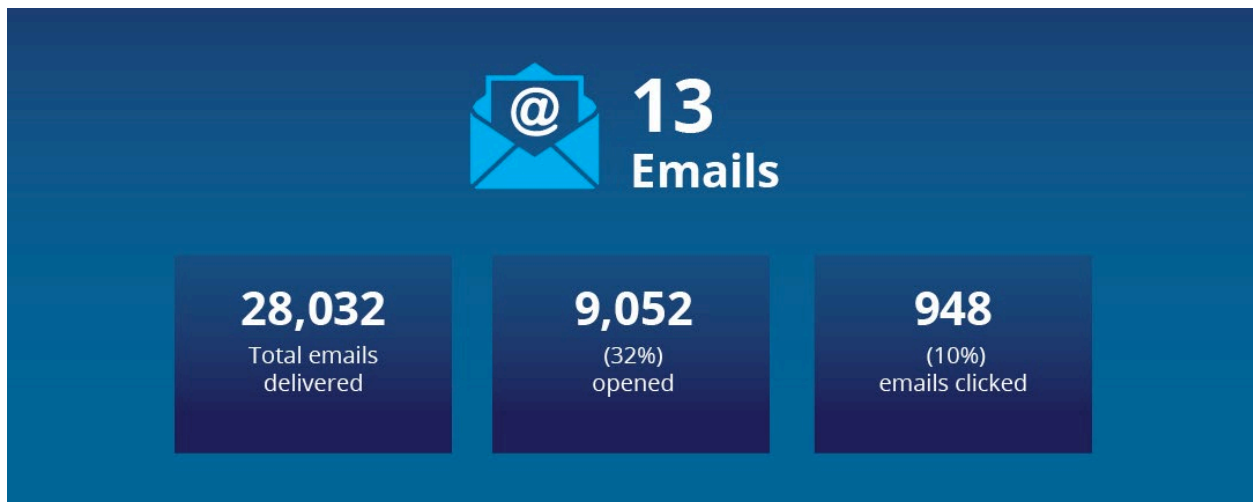
This report summarizes the dialogue process and metrics, as well as the key themes and takeaways gleaned from the participants in the online dialogue.

Outreach Efforts

To ensure a wide range of viewpoints and experiences, FTA, along with ODEP, promoted the online dialogue through numerous channels and tactics to engage a diverse group of participants. These efforts included targeted e-blasts, announcements in widely distributed federal publications, such as the White House Office of Public Engagement Disability Community Newsletter and DOL newsletters, and social media posts promoting the dialogue from various organizations. In addition, ePolicyWorks conducted its own outreach via the @ePolicyWorks X social media account and through emails to targeted groups, such as registrants of previous transportation-focused ePolicyWorks online dialogues, research institutions, disability advocacy groups, state and local transportation officials, support services, and other key stakeholders, including other members of the disability community.

ePolicyWorks Email and Social Media Outreach

ePolicyWorks conducted 13 distinct email campaigns, distributing more than 28,000 targeted emails to promote conversation over the 53 days the dialogue was open for participation. Thirty-two percent of outreach emails were opened, and individuals who opened an outreach email clicked on at least one link in the email 10% of the time. For more details on email outreach see [Appendix A](#).



In addition to email distribution, ePolicyWorks posted 36 posts to its X social media account promoting the dialogue. The 36 posts resulted in 1,398 impressions and 68 engagements (likes, clicks, replies, reposts, or quotes).

Online Dialogue Participant Summary

“Exploring the Future of Public Transportation Research: A National Online Dialogue” opened on November 20, 2023, and closed at the end of the day on January 12, 2024. The conversation was divided into five topic areas that aligned with different areas of interest for FTA and ODEP. Each topic is listed below along with the associated prompt:

1. **Safety**
How can research, technology, and innovation be used to reduce safety events, fatalities, and injuries involving public transportation?
2. **Equity**
How can research, technology, and innovation be used to actively advance equity, particularly for people and communities that have historically been poorly served, including people with disabilities?
3. **Climate**
How can research, technology, and innovation be used to reduce greenhouse gas emissions from public transportation and create more resilient transportation systems?
4. **Economic Growth**
How can research, technology, and innovation help the public transportation industry grow the economy and provide people without personal vehicles, especially people with disabilities, access to good paying jobs?
5. **Connecting Communities**
How can research, technology, and innovation expand high quality public transportation service, improve mobility options, and connect communities to opportunities?

Below is detailed information on contributions to the dialogue organized by topic including ideas, comments, and likes. You also can find the number of online dialogue views and registrants, participation rates, and profile information provided by registrants during the registration process.

Contributions to the Online Dialogue



150

Ideas in the online dialogue

41

Ideas in the
Safety Topic

31

Ideas in the
Equity Topic

22

Ideas in
the *Climate
Topic*

17

Ideas in
the *Economic
Growth Topic*

39

Ideas in the
*Connecting
Communities
Topic*



216

Comments in the online dialogue

41

Comments
in the
Safety Topic

45

Comments
in the
Equity Topic

36

Comments
in the
*Climate
Topic*

29

Comments in
the *Economic
Growth Topic*

65

Comments in
the *Connecting
Communities
Topic*



701

Likes in the online dialogue

156

Likes in the
Safety Topic

186

Likes in the
Equity Topic

130

Likes in
the *Climate
Topic*

66

Likes in
the *Economic
Growth Topic*

163

Likes in the
*Connecting
Communities
Topic*

Visitors, Registrants, and Participants in the Online Dialogue

From November 20, 2023, until January 12, 2024, the dialogue could be viewed by visiting ExploringFutureTransit.IdeaScale.com. Visitors to the website were able to access all ideas, comments, and likes in the online dialogue. Visitors could also access detailed information on each topic concerning how ePolicyWorks dialogues work and details on FTA's efforts.

While all the dialogue content could be accessed at ExploringFutureTransit.IdeaScale.com, active participation, such as adding an idea, commenting, or liking an idea submitted by another, required individuals to complete a registration process. This process involved filling out an online form, which requested information such as the stakeholder group, role in the organization, geographic area served, and consent for further contact. All registration questions were mandatory.

For the following dialogue metrics, "visitors" are defined as all individuals who visited the dialogue website, whether they chose to complete the registration process or not. As mentioned above, during the dialogue, all visitors to the website could view all ideas, comments, likes, and resources available. "Registrants" are those who successfully verified their email and created a password. "Participants" include anyone who submitted an idea, commented, or liked an idea submitted by another.

- Total number of visits to the online dialogue: 6,001
- Total number of registrants in the dialogue: 262 (257 completed the registration process)
- Total number of registrants who participated by contributing an idea, comment, or like: 147 (56.11%)
- Total number of registrants who contributed ideas: 79 (30.15%)
- Total number of registrants who contributed comments: 30 (11.45%)
- Total number of registrants who contributed likes: 140 (53.44%)

When compared to other online dialogues led by ODEP, the FTA Research online dialogue showed a greater depth of engagement by the registrants. Below is a chart comparing key statistics to the ePolicyWorks Online Dialogue average. Though the FTA Research dialogue has almost half as many participants, there were more ideas, nearly as many comments, and almost as many likes. Applying some analysis to the data, there were .57 ideas per registrant for the FTA online dialogue versus an average of .25 ideas per participant for all ePolicyWorks dialogues to date. The discussion and input for ideas was significant. When adding comments and likes together, there were 3.5 actions per registrant in response to ideas for the FTA Online Dialogue versus 2 actions per registrants for the overall ePolicyWorks Online Dialogue average.

Category	Online Dialogue Average	FTA Research Online Dialogue
Registrants	448	262
Ideas	114	150
Comments	219	216
Likes	770	701

Online Dialogue Registration Questions

When registering for “Exploring the Future of Public Transportation Research: A National Online Dialogue,” registrants were asked to share information about stakeholder groups, their role in their organization, geographic area, and whether they would consent to being contacted by the dialogue hosts. Registrants were given prepopulated choices. For the stakeholder group question, registrants were able to select only one category, which included a choice of “Other or None of the Above.” Below is a summary of the responses from the 257 dialogue registrants who successfully completed the registration questions.

Stakeholder Group:

- Advocate: 74
- Transportation Organization Representative: 66
- Researcher: 41
- Technology Manufacturer: 14
- Other or None of the Above: 62

Role in your Organization:

- Management/Leadership: 118
- Subject Matter Expert (non-management): 83
- Other: 56

Geographic Area:

- Large city (over 200,000 in population): 106
- Multiple areas within a state or statewide: 57
- Small city (between 50,000 and 200,000 in population): 39
- Small town or rural area (under 50,000 in population): 19
- Other (e.g., a national organization): 36

Review and Analysis of Online Dialogue Contributions

Over the course of the online dialogue, participants from across the U.S. shared thought-provoking and innovative ideas and suggestions on ways research, technology, and innovation can help make public transit safer, cleaner, greener, more resilient, and more equitable. Importantly, they shared ways to improve public transportation and access to jobs for people with disabilities.

The range and depth of the ideas submitted and discussed during the online dialogue demonstrate the immense value of engaging citizens in collaboration efforts. Public transportation agencies, disability advocacy organizations, transit research institutions, state departments of transportation, metropolitan planning organizations, tribal nations, labor unions, city and county governments, individuals with disabilities, and other stakeholders collectively contributed 150 ideas, 216 comments, and 701 likes, along with various links, images, and reports. All submitted resource links are listed in [Appendix C](#).

Key Themes and Takeaways

Based on a preliminary analysis of the 150 ideas and 216 associated comments submitted by dialogue registrants, the following key themes and takeaways emerged. The insights below are not recommendations, but rather a summary of dialogue responses. A list of the top and trending ideas overall and the top ideas by topic are listed in [Appendix B](#).

1. [Accelerate the Adoption of New Transit Technologies](#)
2. [Address Transportation Challenges in Underserved Communities](#)
3. [Adopt a Disability-Forward Approach to Create a More Inclusive and Accessible Transportation System](#)
4. [Conduct Research to Understand and Address Transit Demand](#)
5. [Encourage Standardization, Simplification, and User-Centric Design](#)
6. [Ensure Safety in Public Transit](#)
7. [Explore the Potential of Autonomous Electric Vehicles](#)
8. [Investigate Zero Emission Buses and Other Ways to Lower Emissions](#)
9. [Involve Diverse Perspectives in Transit Innovation](#)
10. [Leverage Emerging Technologies and Sustainability Efforts](#)
11. [Optimize Existing Railroad Infrastructure](#)
12. [Prioritize Accessibility and Safety in Transportation Design and Implementation](#)
13. [Support Collaboration Among Agencies and Innovative Funding Approaches](#)
14. [Utilize Data to Inform Future Research and Innovation](#)

Accelerate the Adoption of New Transit Technologies

Many of the ideas submitted to the dialogue stressed the importance of considering life-cycle costs, prioritizing durability and maintenance in vehicle design. The importance of implementing effective asset management practices and investing in testing facilities to accelerate the adoption of new transit technologies and components were also mentioned. The dialogue participants felt that these efforts are essential for improving transit operations, reducing costs, and advancing sustainability in the transportation sector.

Specific ideas submitted by some participants included the following:

- **Life-Cycle Costing and Maintenance:** Transit agencies should consider equipment procurements with a life span of less than 25 years as operating costs rather than capital investments. This encourages the deployment of life cycle costing when selecting equipment and budgeting for maintenance. Durability and ease of maintenance should be prioritized, especially in the design of smaller transit buses.
- **Technology Procurement and Accessibility:** Technology procurements should focus on desired functionality and accessibility, with the expectation of updates as new technologies are tested and become available. This approach ensures that transit systems remain adaptable and responsive to evolving needs and technological advancements.
- **Asset Management:** Implementing asset management at the enterprise level is emerging as a priority for transportation agencies. Developing guidelines and processes for practical implementation requires research of best practices both nationally and internationally, to ensure effective management of transit assets.
- **Low or No Emission Component Assessment Program:** The Fixing America's Surface Transportation (FAST) Act's establishment of Low or No Emission Component Assessment Program (LoNo-CAP) led to the creation of two bus testing centers offering independent evaluations for zero-emission bus components. These centers are crucial due to the faster product development cycles of zero-emission buses and the rapid iteration of certain components. Continued investment in these centers is encouraged to accelerate the adoption of newer components, reduce testing time for transit bus manufacturers, and boost industry engagement and federal investment.
- **Testing and Validation of New Components:** Transit agencies and original equipment manufacturers (OEMs) advocated for more testing of new components to be performed and brought to market faster. Further component testing and validation benefit the entire industry by speeding up time-to-market for advanced components, enhancing product confidence, and reducing the likelihood of full bus test failures due to component issues.
- **Redesigning Transit Vehicles:** While significant efforts have been made to enhance transit vehicle propulsion systems, there is an opportunity for substantial innovation in redesigning vehicles to better support the safety of drivers, passengers, and pedestrians.

Leveraging insights from successful programs like the National Fuel Cell Bus Program and adopting a consortia model can foster market competition and innovation.

Address Transportation Challenges in Underserved Communities

The ideas and comments submitted to the dialogue also stressed the importance of prioritizing equity and accessibility in transportation planning and decision-making processes—as well as infrastructure development, community engagement, and research initiatives. This is to ensure the equal distribution of benefits and costs associated with transportation technologies, particularly in underserved communities.

Specific ideas submitted by some participants included the following:

- **Enhancing Transportation Infrastructure:** Focus on developing mobility solutions and improving transportation infrastructure to alleviate access barriers in underserved communities, including creating professionally designed pedways, walkways, and bikeways linking to transit stations and airports.
- **Local Government Involvement:** Encourage local governments to address challenges such as constructing sidewalks on private properties and maintaining sidewalk infrastructure. Demonstration projects can explore the benefits of pedestrian and bike connectivity to gain public acceptance.
- **Community-Based Mobility Needs Assessment:** Engaging the community on its terms and conducting mobility needs assessments can help understand equity needs and implications, as well as operational and funding considerations for developing an equitable and accessible fleet across shared modes of transportation.
- **Research and Transit Equity:** Focus research on developing mobility solutions and enhancing transportation infrastructure to alleviate barriers in underserved communities. Provide practical guidance on how communities can be included in the transportation planning and decision-making processes to ensure the equal distribution of transportation technologies' potential benefits and costs. Emerging data methods can inform planning and policy decisions that advance transit equity, with the FTA having a responsibility to make public transit work best for historically underserved people by deploying these methods or encouraging transit providers to apply them as appropriate.

Adopt a Disability-Forward Approach to Create a More Inclusive and Accessible Transportation System

Several ideas suggested addressing transit staffing shortages by hiring people with disabilities. In addition, ideas emphasized the importance of better reporting of disability self-identification data and valuing the expertise of individuals with disabilities in transportation planning for a more inclusive approach.

Specific ideas submitted by some participants included the following:

- **Addressing Staffing Shortages:** Many ideas emphasized the lack of staff in transportation systems, and some suggest hiring people with disabilities to fill these vacant positions. This approach not only helps address staffing shortages but also promotes diversity and inclusion within the workforce.
- **Disability Self-ID and Inclusion Initiatives:** Disability self-identification is a requirement for all federal contractors and is considered good practice for diversity hiring initiatives. However, this data is often not reported publicly, which can hinder efforts to measure progress and address gaps in disability inclusion. Studying disability inclusion across transportation companies and startups can help identify best practices, address gaps, and support the business case for disability inclusion in the workforce.
- **Valuing Disability Experience and Expertise:** There is a need to recognize and value the lived experience of people with disabilities in future transit research. This involves ensuring that people with disabilities are actively involved in decision-making processes and viewed as valuable contributors rather than passive recipients. Efforts should prioritize the inclusion of people with disabilities and their perspectives, viewing their life experiences as valuable contributors to labor and skill sets.
- **Disability-Forward Approach:** There is a need for a disability-forward approach in transportation planning and decision-making. This means centering the needs and perspectives of people with disabilities and ensuring that initiatives are developed in collaboration with them, rather than being designed solely by non-disabled planners and leaders. This approach is essential for creating inclusive and accessible transportation systems that meet the needs of all individuals.

Conduct Research to Understand and Address Transit Demand

Several ideas focused on data utilization, transportation budget allocation, and understanding transit demand. Overall, these ideas highlighted the importance of leveraging data-driven approaches to enhance transit operations, advocating for budget allocations that prioritize public transportation, and conducting comprehensive research to understand and address transit demand effectively. Many participants promoted these efforts as crucial for improving transit efficiency, sustainability, and overall service delivery in transportation systems.

Specific ideas submitted by some participants included the following:

- **Data Utilization in Transit Operations:** Modern transit bus operations generate vast amounts of complex data from various sources such as fueling/charging infrastructure, dispatch, operations, as well as the vehicles themselves. Integrating and interpreting these disparate data sources poses a significant challenge for transit agencies. Efforts by the FTA, particularly through programs like the Transit Vehicle Innovation Deployment Centers (TVIDC) Program, support research on data reliability, availability, and standardization. These efforts are crucial for enhancing transit efficiency, reducing

operational costs, and improving overall service delivery. Long-term investment and commitment to such programs are essential to address these challenges effectively.

- **Shift in Transportation Budgets:** It is important to fund research that evaluates the full spectrum of benefits, including the cost benefits, of shifting federal, state, and local transportation budgets to prioritize public transportation. Metrics for analysis should include health and environmental costs, personal vehicle costs, equity costs, and local tax and economic benefits. The analysis should also consider potential savings from other budgets, such as health care and social services, and assess the impact of investments in safe street and transit priority infrastructure.
- **Understanding Transit Demand:** To improve transit ridership, it is crucial to understand which individuals are more likely to switch from driving to transit and the reasons behind this switch. Traditional efforts to increase transit frequency have not always yielded significant increases in ridership, indicating the need for more robust data collection methods, such as artificial intelligence (AI) and machine learning, to understand underlying causes better. Comprehensive mathematical models can then be used to develop evidence-based policies to address transit demand effectively.

Encourage Standardization, Simplification, and User-Centric Design

Many participants stressed the importance of standardization, simplification, and user-centric design in transit systems to enhance accessibility, usability, and overall user experience.

Specific ideas submitted by some participants included the following:

- **Standardization of Transit Regulations:** There is a need for standardized regulations across the country for transit design, including vehicle dimensions, boarding platforms, and propulsion types. This standardization would enable seamless integration between different modes of transit, such as buses, trains, light rail, and subways, allowing them to utilize the same platforms and infrastructure.
- **Unified Payment Systems:** Riders should be able to use a single card or payment method for all transit boardings, regardless of the transit agency or mode of transportation. Simplifying the payment process enhances the user experience and encourages more people to utilize public transportation.
- **Eligibility Requirements for Transit Benefits:** Individuals eligible for federal benefits should be automatically enrolled in reduced fare transit programs. To address the variability of disabilities, the FTA can standardize disability classification and mandate regulations specifying a doctor's endorsement for short-term (1 to 12 months), mid-term (1 to 5 years), or long-term (6+ years) eligibility periods.
- **Modification of Planning Codes:** Federal planning codes related to road size should be modified to discourage the construction of overly large roads, which can deter walking and biking. This shift in planning codes can promote more pedestrian and cyclist-friendly urban environments.

- **Standardization of Transit Apps:** Transit apps should be fully accessible, standardized, and adopted on a regional basis to simplify and streamline the user experience. This can be achieved through regional procurement initiatives, ensuring consistency in features such as real-time information, payment options, and voice commands.
- **Consistent Signage and Directional Information:** There is a need for consistent signage and directional information in transit areas to improve user navigation and accessibility. Signage should utilize words and images to provide clear guidance, especially in complex transit hubs where multiple modes of transportation intersect.

Ensure Safety in Public Transit

Participants in the dialogue agreed that ensuring safety in public transit requires a multi-faceted approach, including technological innovation, infrastructure investment, community engagement, and collaboration.

Specific ideas submitted by some participants included the following:

- **Crowdsourced Incident Reporting:** There is a need for a comprehensive incident reporting platform that is Americans with Disabilities Act (ADA) compliant, multilingual, and accessible through various channels (mobile app, webform, QR, texting) to ensure safety and accessibility for all transit users.
- **Utilization of Technology:** Technologies such as Lidar and AI can be leveraged to enhance safety on rail and bus systems, improving monitoring and responses to potential incidents.
- **Investment in Safety:** Funding for safety and security measures is crucial, including the addition of security personnel, dash cams on buses, and collision avoidance systems. Collaboration with vendors and OEMs, as well as increased funding from organizations like the FTA, can expedite the implementation of these measures.
- **Perception of Safety:** Perceptions of safety significantly impact transit usage. Investments in infrastructure and design elements, such as proper lighting, transparent shelters, real-time information displays, and green spaces, can improve both perceived and actual safety.
- **Social and Cultural Factors:** Safety concerns can be influenced by various social and cultural factors, including gender and race. It is important to consider these factors in safety discussions and involve community members in designing transit environments.
- **Partnerships for Safety:** Transit agencies can form partnerships with community-based organizations and social services nonprofits to address safety concerns effectively, particularly for vulnerable populations such as unsheltered riders or those struggling with mental health or substance abuse issues.

Explore the Potential of Autonomous Electric Vehicles

Several ideas discussed the potential role autonomous electric vehicles (AEVs) can play in improving transportation accessibility, along with the importance of supportive policies and

government initiatives to facilitate their integration into public transportation systems. The ideas emphasized the importance of fully accessible AEVs in improving transportation options for people with disabilities, especially those in rural areas with limited access to public transit.

Specific ideas submitted by some participants included the following:

- **Potential Benefits of AEVs for People with Disabilities:** Research suggests that AEVs can significantly enhance employment and financial outcomes for people with disabilities and their families. These vehicles offer accessible transportation options, which are particularly valuable in rural communities with limited public transit access.
- **Policy Suggestions for AEV Implementation:** Policy-minded suggestions should be implemented to promote the adoption and accessibility of AEVs. These suggestions include grant programs for non-profits and governments, transportation incentives for AEV adoption, establishment of accessibility standards and training, data collection and monitoring efforts, community engagement mechanisms, and fostering public-private partnerships.
- **Role of the Federal Government:** The Federal Government can play a crucial role in fostering inclusive, accessible, and efficient transportation solutions for people with disabilities, especially in rural communities. By implementing suggested policies, the government can contribute to better employment and financial outcomes for individuals with disabilities.

Investigate Zero Emission Buses and Other Ways to Lower Emissions

Several ideas related to the continued deployment of zero-emission buses (ZEBs) and the challenges associated with transitioning transit agencies to zero-emission fleets. Other ideas addressed the importance of vanpools and saturation carpooling in reducing last-mile issues.

Specific ideas submitted by some participants included the following:

- **Workforce Training and Standardization:** There is a recognized need for trained personnel in sourcing, deploying, and managing ZEBs. However, the current training lacks standardization and ongoing support. Collaboration with expert organizations is encouraged to evaluate workforce needs and develop new training programs, bridging any existing gaps in the industry.
- **Saturation Carpooling Concept:** The concept of saturation carpooling aims to address last-mile issues by efficiently sorting loads and dropping passengers off at their employment with minimal dispersion time. To facilitate widespread adoption, there should be carpooling apps that can work seamlessly across different locations, with optional features such as insurance and electric vehicle (EV) support.
- **Vanpooling as Cost-Effective Transit:** Vanpooling is one of the most cost-effective public transportation modes, particularly for long-distance commuters. However, there

are specific data needs that must be addressed to expand vanpooling programs to more communities effectively.

- **Transition to Zero Emissions:** To transition locally operated transit agencies to zero-emission fleets, federal funding is necessary to subsidize the transition and cover annual capital costs. ZEB plans should be mandatory, with funding allocation based on a formal analysis of fleet needs. Moreover, there should be a direct annual infusion of funds to ensure a successful transition, as discretionary funding may not always reach local operators.
- **National Bikeways System:** A National Bikeways System should be established, similar to the National Highways System, promoting walking travel and improving connectivity within cities.
- **Holistic Trip Planning:** It is essential to consider trips holistically, with attention to other shared modes of transportation such as bikeshare, carshare, ride-hailing, and on-demand microtransit. Accessible microtransit options can act as feeders to main bus routes and other mass transportation services, reducing the costs of paratransit services and achieving equity in the transportation system.

Involve Diverse Perspectives in Transit Innovation

The dialogue participants stressed the importance of inclusive collaboration and diverse perspectives in driving innovation and creating transit solutions that meet the needs of all users, regardless of background or ability.

Specific ideas included the following:

- **Industry Advisory Panels:** Industry advisory panels, such as those facilitated by the FTA through programs like the TVIDC, play a crucial role in conceptualizing and sharing solutions for the continued innovation, development, and adoption of zero-emission transit technologies. Outcomes from these panels have been instrumental in informing legislation and FTA guidance. Continued use of industry advisory panels, with regular in-person meetings, bring together industry leadership and provide a feedback mechanism for ongoing research initiatives in areas such as component testing, vehicle design, and workforce development.
- **Involvement of Diverse Perspectives:** Equitable and accessible transit systems require an understanding of the experiences and needs of diverse individuals, including those with disabilities and from underserved communities. Involving these individuals in research, technology evaluation, and design testing is essential for creating inclusive solutions. Policies and programs should ensure that marginalized communities are included in transportation planning and decision-making processes.
- **Sensitivity Training:** Working with local Centers for Independent Living (CILs) for disability sensitivity and passenger assistance driver training, as well as inviting

individuals with disabilities to beta-test new designs, help ensure the effectiveness and inclusivity of transit innovations.

Leverage Emerging Technologies and Sustainability Efforts

Many contributed ideas underlined the importance of leveraging emerging technologies and sustainability efforts to enhance infrastructure and transit development while ensuring economic viability and effective integration with asset management practices. Collaboration between government agencies and ongoing research efforts are crucial for advancing these initiatives and achieving sustainable transportation solutions.

Specific ideas submitted by some participants included the following:

- **Utilization of Additive Manufacturing:** Leveraging emerging developments in additive manufacturing, particularly 3-D printing, for the construction and maintenance of infrastructure systems can be used across all modes of transportation. Research will focus on factors such as production efficiency, geometry customizability, mechanical performance, and long-term fatigue life to evaluate the feasibility of using 3-D printing for manufacturing structural elements.
- **Resiliency Planning:** Resiliency planning for critical assets is becoming increasingly important for transportation agencies. However, mitigation strategies must be economically viable. Research is needed to develop effective integration with asset management at the enterprise level to ensure that resiliency planning makes economic sense.
- **Hydrogen Fuel Cell Technologies:** Hydrogen fuel cell technologies provide reliable long-range zero-emission propulsion, offering an alternative to battery electric propulsion. Both technologies are deemed necessary for achieving zero emissions in the transportation industry. However, current fuel cell propulsion systems operate as series hybrids, which come with performance limitations and high complexity and cost. Ongoing efforts to improve fuel cell propulsion, such as reducing the size of propulsion batteries in favor of larger, load-following fuel cells, are underway, but federal support for these programs is deemed insufficient. Collaboration between agencies such as the FTA and Department of Energy (DOE) can help advance the commercialization of fuel cell technology in transit through follow-up demonstration projects.
- **Timely Review of Technological Advancements:** There is a need for a more frequent and transparent review of new technological advancements to ensure policies and regulations keep pace, benefiting all stakeholders and spurring economic growth.

Optimize Existing Railroad Infrastructure

Several of the ideas discussed existing railroad infrastructure, advancing passenger rail technologies, and promoting collaboration between transit agencies and freight railroads to enhance the efficiency, sustainability, and safety of passenger rail services. In addition, several

participants explored the topic of utilization of underused railroad capacity and the advancement of passenger rail technologies.

Specific ideas submitted by some participants included the following:

- **Optimizing Railroad Capacity:** There is a significant underutilization of railroad miles by freight railroads, suggesting that transit agencies should have legal access to this spare capacity at an affordable rate. The goal is to allow transit agencies to utilize existing infrastructure while safeguarding realistic plans for freight service expansion. The implementation of technology can enable heavy freight and passenger trains to safely share tracks, with appropriate separations to ensure passenger services are not disrupted.
- **Successful Overseas Examples:** While the RiverLine in New Jersey serves as a limited example in the U.S., there are numerous successful overseas examples in which heavy freight and passenger trains coexist safely and reliably. These international examples demonstrate the feasibility and benefits of integrating passenger rail services onto existing freight rail infrastructure.
- **Advancement of Passenger Rail Technologies:** There is a need to develop and adopt advanced passenger rail technologies, which requires the exploration of hybrid (diesel-battery electric), all-electric, and fuel cell passenger locomotives for both heavy and light rail transit units. These advancements are expected to yield cost savings, reduce fuel consumption, lower greenhouse gas emissions, and decrease pollution, aligning with broader sustainability goals.
- **Rail Corridor Utilization:** Railway corridors parallel to interstate highways should be acquired by state DOTs and utilized for freight, commuter, and limited access railways. In addition, the definition of "Interstate" should be expanded to include rail corridors accessible to all operators, which can mitigate traffic congestion, address climate concerns, and improve connectivity and equity.

Prioritize Accessibility and Safety in Transportation Design and Implementation

Many ideas highlighted the importance of integrating accessibility and safety considerations into all aspects of transportation design and implementation. This is to ensure equitable access and a safe traveling experience for all individuals, including those with disabilities and their caregivers.

Specific ideas submitted by some participants included the following:

- **Improving Accessibility in Transit:** Creating multi-jurisdictional transit passes for people with disabilities and requiring efficient lifts on all trains would make transit more accessible for everyone.
- **Training for Disability Access:** Targeted education and training, including safety and security measures, at ILCs can empower individuals with disabilities to use public transit.

The FTA can compile materials from transit agencies to create a national virtual toolkit, offering comprehensive resources for transit accessibility and safety, including tools for staff training on ramps, restraints, and communication techniques.

- **Infrastructure Improvements:** Infrastructure enhancements, especially in rural areas, are crucial for improving accessibility and safety. This includes accessible and walkable sidewalks and curb cuts, and addressing safety concerns like uneven sidewalks and utility poles.
- **Transportation Staff Training:** Transportation staff should receive disability training to ensure safe and respectful interactions with people with disabilities.
- **Affordable On-Demand Transportation:** Affordable on-demand transportation services for persons with disabilities can increase access to job opportunities, shopping, and entertainment, thus fostering economic growth.
- **Comprehensive Accessibility Standards:** Public transit and associated facilities should adhere to relevant accessibility guidelines and comprehensive accessibility standards, including accessible fare machines and restrooms.
- **Support for Caregivers:** Attention should be given to the transportation needs of caregivers, who play a vital role in supporting individuals with disabilities. Providing free or affordable and safe transportation options for caregivers can alleviate barriers and ensure access to care.
- **Ensuring Safety in Transportation:** Ensuring safety features, such as proper securing mechanisms for wheelchairs in taxis and livery services, and simplifying lifts on buses, are essential to guarantee the safety of passengers with disabilities and the drivers themselves.
- **Infrastructure Development:** Incentivizing local governments to mandate sidewalks and bikeways for new developments and fill gaps in existing networks is crucial for safety and mobility.

Support Collaboration Among Agencies and Innovative Funding Approaches

Many ideas emphasized the need for coordinated efforts, policy reforms, and increased funding to improve transportation infrastructure, promote sustainability, and enhance safety and accessibility across all modes of transit. Collaboration among agencies and innovative funding approaches can help address existing challenges and drive positive change in the transportation sector.

Specific ideas submitted by some participants included the following:

- **Integration of Safety Efforts:** Better integration of safety-related research, innovation, and technology efforts between DOT agencies such as the FTA and Federal Railroad Administration (FRA) are needed. Currently, these efforts are separately funded, leading to duplicated outcomes and inefficient use of resources. Increased collaboration

between DOT agency groups can help maximize federal budget funds and improve research outcomes.

- **Transportation Funding Policies:** Transportation funding policies need to prioritize public transportation by requiring all states to have comprehensive transportation plans with dedicated funding sources for public transportation before allocating funds for highway expansion. This shift in funding allocation can lead to better public transit infrastructure and reduce reliance on single-occupant vehicles, thus promoting sustainability and equity.
- **Technology Accessibility for Small Transit Agencies:** Access to modern technology, such as Computer-Aided Dispatch/Automatic Vehicle Location (CAD/AVL) systems, is essential for transit agencies of all sizes. However, smaller agencies in rural states or with limited political support often face barriers to adopting such technology due to budget constraints and lack of technical expertise. Funding should be made available to assist smaller agencies in overcoming these barriers and upgrading their systems to improve operational efficiency and customer experience.
- **Priority for Transit Improvements:** Funding should focus on improving transit speed and reliability through dedicated right-of-way, signal priority, and other measures to prioritize transit over single-occupant vehicles. This approach aligns with climate goals, enhances network efficiency, and addresses issues of fairness and equity in transportation access.
- **Collaborative Grant Pursuit:** To mitigate concerns about limited resources, public agencies (local and state) are encouraged to collaborate and combine resources when pursuing federal grant funds for safety research and demonstrations. Collaborative efforts among agencies, such as those observed with New York City Transit/Metropolitan Transit Authority, can help distribute costs and resources more effectively. Collaborative efforts can also promote knowledge sharing and collective engagement in research and development initiatives.

Utilize Data to Inform Future Research and Innovation

Data was a consistent theme throughout many of the ideas. Contributors noted the importance of collecting and utilizing data in advancing transit systems, improving equity and accessibility, and addressing emerging challenges, such as pedestrian safety and emissions reduction.

Specific ideas submitted by some participants included the following:

- **Shared Mobility and Mobility Hubs:** Shared mobility options, such as e-bikes, scooters, microtransit, carshare, and Transportation Network Companies (TNCs), offer opportunities to enhance transit systems by improving accessibility and reducing congestion. In addition, integrating mobility hubs into public transit systems as key connection points between transit and last-mile shared mobility options is crucial for enhancing connectivity and expanding transit usage. More data is needed to understand

the effectiveness, economic impacts, deployment models, and unintended consequences.

- **Collaborative Partnerships:** Successful transit system improvements, such as partnerships between municipalities and counties, offer valuable models for enhancing connectivity including collaborative efforts to connect smaller communities to urban centers. Exploring funding for research to assess cost benefits of these models could involve metrics covering health, environmental costs, equity, local tax implications, and economic benefits.
- **Maintenance and Capital Planning:** Pairing sensor data with artificial intelligence can provide valuable insights and early detection of infrastructure and vehicle defects, thereby enabling proactive maintenance and capital refurbishment projects. Implementing this approach facilitates real-time updates to maintenance plans and capital funding requests, enhancing efficiency and reliability in transportation systems.
- **Equity and Community Engagement:** Integrating equity metrics into mandatory FTA evaluations and grant considerations will be invaluable. To bolster this initiative, the FTA should encourage ongoing collaboration between transit providers and community organizations or members. This engagement will enhance equity evaluations by incorporating diverse perspectives and insights. Furthermore, aligning annual environmental assessments with accessibility impacts in the National Transit Database would further support these endeavors.
- **Open Data Systems:** Sharing information about the accessibility features of transit stations and sidewalk conditions is critical for someone using an assistive device. Moreover, the availability of this information extends benefits to all users, enabling all to safely plan their public transportation journeys. FTA can help by backing research to better understand how these open data solutions impact transportation and how the government can effectively and efficiently support them.
- **Travel Information and Pedestrian Safety:** Through data collection and research, the FTA can play a pivotal role in advancing wayfinding technologies, including improved rider alerts, more accurate GPS systems, and increased utilization of open-source coded products to support accessible applications that enhance independent mobility for individuals with disabilities. Research is needed to develop non-technological means of wayfinding for riders who do not use smartphones or mobile technologies. Additionally, FTA can invest in research that improves pedestrian safety, specifically systems that detect pedestrians, including those using wheelchairs, guide and service animals, and individuals with darker skin tones. There is a concern about the use of personal data, highlighting the need for continued attention to data privacy issues in transportation.
- **Heavy Rail Emissions:** Accurately tracking emissions from heavy rail systems beyond simple metrics like miles traveled versus fuel usage can be complex. Dwell and idling times, as well as operational factors like short turns and flips within a trip, need to be accounted for in emissions analysis.

Appendix A: Outreach and Promotion

ePolicyWorks Email Outreach

ePolicyWorks conducted 13 distinct email campaigns to promote the online dialogue. In total, 28,032 emails were delivered to ePolicyWorks stakeholders promoting the dialogue, with an open rate of more than 32%, which is more than nine percentage points better than recent ePolicyWorks dialogue outreach campaigns and 15 percentage points higher than the industry average of 17%. In addition, 10% of individuals who opened an outreach email clicked on at least one link in the email.

- Total emails delivered: 28,032
- Total emails opened: 9,052
- Total number of individuals who clicked on a link in email: 948

The ePolicyWorks direct email campaigns included the following:

- General Dialogue Launch Announcement to Transportation Contacts (November 22, 2023)
 - Total emails delivered: 918
 - Emails opened: 364
 - Clicked: 34
- General Dialogue Launch Announcement to Disability Community (November 22, 2023)
 - Total emails delivered: 3,553
 - Emails opened: 859
 - Clicked: 48
- Targeted Dialogue Announcement to Past Transportation Dialogue Registrants (November 29, 2023)
 - Total emails delivered: 708
 - Emails opened: 200
 - Clicked: 16
- Targeted Dialogue Announcement to Transportation Contacts (December 5, 2023)
 - Total emails delivered: 3,953
 - Emails opened: 1,013
 - Clicked: 53
- Reminder to Dialogue Registrants (December 6, 2023)
 - Total emails delivered: 91
 - Emails opened: 60
 - Clicked: 13

- Targeted Dialogue Announcement to University and College Transportation Programs (December 6, 2023)
 - Total emails delivered: 238
 - Emails opened: 101
 - Clicked: 11
- General Dialogue Mid-Way Reminder (December 12, 2023)
 - Total emails delivered: 7,336
 - Emails opened: 2,438
 - Clicked: 95
- Registrants "Last Chance" Dialogue Reminder (January 3, 2024)
 - Total emails delivered: 122
 - Emails opened: 68
 - Clicked: 17
- General "Last Chance" Dialogue Reminder (January 3, 2024)
 - Total emails delivered: 2,710
 - Emails opened: 1,067
 - Clicked: 230
- Registrants Dialogue Extension Announcement (January 8, 2024)
 - Total emails delivered: 137
 - Emails opened: 71
 - Clicked: 14
- Dialogue Extension Announcement to Transportation Contacts (January 8, 2024)
 - Total emails delivered: 1,291
 - Emails opened: 440
 - Clicked: 35
- Dialogue Extension Announcement to Disability Community (January 8, 2024)
 - Total emails delivered: 1,414
 - Emails opened: 414
 - Clicked: 23
- General "Last Day" Reminder (January 12, 2024)

- Total emails delivered: 5,561
- Emails opened: 1,957
- Clicked: 357

Independent Promotion

ePolicyWorks, DOL and FTA actively promoted the dialogue to subject matter experts and stakeholders through listservs, email delivery services, social media platforms, and newsletters. Other public and private organizations and news outlets also promoted the online dialogue through Facebook, LinkedIn, X, emails, blogs, newsletters, and action alerts. Below is a sampling of the independent organizations that disseminated details about the online dialogue:

- @AskEARN - Employer Assistance and Resource Network on Disability Inclusion
- @CSG_CAPEYouth - Council of State Governments Center for Applied Public Engagement
- Advancing States
- Alvaro Villagran, AICP, Shared Use Mobility Center
- Environmental Technical Assistance Program Newsletter
- Employer Assistance and Resource Network on Disability Inclusion (EARN) Newsletter: December 2023
- Federal Transit Administration (FTA)
- National Center for Mobility Management
- National Conference of State Legislatures (NCSL) Disability Employment Update
- National Disability Institute
- nTide Webinar
- ODEP News Brief - Office of Disability Employment Policy
- Paralyzed Veterans of America
- Southeast ADA Center
- Tennessee Disability Pathfinder
- White House Disability Community Engagement Newsletter

Appendix B: Top, Trending, and Popular Ideas

Ideas by Likes

Below are the five ideas that received the most likes during the “Exploring the Future of Public Transportation Research: A National Online Dialogue.”

Please note that the ideas listed in the following section were submitted by participants and may include minor typographical corrections. These corrections have in no way impacted the substance or the intention of the original posts.

1. Support Workforce Development for Zero Emission Technologies

Topic: Safety

23 Likes

Comments: 0

The continued deployment of zero-emission buses (ZEBs) requires a workforce of transit operators, technicians, engineers, and planners who are trained in the sourcing, deployment, and management of vehicles and supporting infrastructure with considerably different operational characteristics from diesel and compressed natural gas (NG) buses. Transit agencies currently rely on original equipment manufacturers (OEMs) to provide high-level training for the operation and maintenance of the vehicles and infrastructure equipment they sell. While this training and technical support are critical to successful deployments, they are not designed to provide ongoing training after the initial introductory period, especially as new employees onboard. Moreover, this training lacks standardization across the industry, with varying approaches from OEM to OEM and no certification mechanism.

The Center for Transportation and the Environment CTE recommends the FTA continue to collaborate with and support expert organizations, such as the California Transit Training Consortium (CTTC), Transportation Learning Center (TLC), National Transit Institute (NTI), labor unions, and nonprofits to thoroughly evaluate workforce needs, existing training programs, and resources for new initiatives. Subsequently, the FTA should partner with these groups to develop new resources and programs, effectively bridging any training gaps in the industry.

2. Develop Next Generation Hydrogen Fuel Cell Propulsion

Topic: Climate

22 Likes

Comments: 2

Hydrogen fuel cell technologies provide reliable long-range zero emission propulsion and offer a much-needed alternative to battery electric propulsion. Both technologies are absolutely necessary to move the industry to zero emissions. Current fuel cell propulsion systems operate as series hybrids, requiring heavy and expensive propulsion

batteries. This vehicle design results in significant performance limitations at high speeds and sustained grades, driving up the complexity and cost of owning and operating these vehicles. Ongoing efforts to improve fuel cell propulsion by removing or reducing the size of propulsion batteries in favor of larger, load following fuel cells are underway, but the federal support of these programs is not yet enough to bring this technology to market.

Once the technology is established, the FTA should support and manage follow-up demonstration projects to advance the commercialization of fuel cell technology in transit. It could be beneficial for the FTA to collaborate with the Department of Energy (DOE) on this demonstration to combine resources and expertise from both agencies.

3. Continue to Leverage Industry Advisory Panels for Zero Emission Technologies

Topic: Climate

20 Likes

Comments: 0

Industry Advisory Panels provide tremendous capacity to conceptualize and build consensus on solutions to the challenges of continued innovation, development, and adoption of zero-emission transit technologies. FTA-run panels through the Transit Vehicle Innovation Deployment Centers (TVIDC) program have produced a number of actionable recommendations, many of which were incorporated into subsequent legislation and FTA guidance. CTE recommends continued use of this panel with 3-5 in-person meetings a year. This would bring together industry leadership and provide an important feedback mechanism for ongoing research initiatives in component testing, vehicle design, workforce development, and other important topics. Research recommendations from previous panel meetings that could be included in the FTA's five-year research plan can be found in a TVIDC Advisory Panel Report published in January 2021.

4. Increase Zero Emission Bus Component Testing Capacity and Utilization

Topic: Climate

20 Likes

Comments: 0

The Fixing America's Surface Transportation (FAST) Act's establishment of the Low or No Emission Component Assessment Program (LoNo-CAP) led to the creation of two bus testing centers that offer independent evaluations for zero-emission bus (ZEB) components. These test centers are needed because ZEBs have faster product development cycles than conventionally fueled transit buses, and certain components iterate more rapidly. These facilities will save time for transit bus manufacturers—reducing the amount of full-bus testing required—and accelerate adoption of newer components. To date, some funding constraints and unclear roles have limited industry engagement and federal investment.

Transit agencies and OEMs want to see more testing of new components performed and brought to market faster. Further component testing and validation is valuable to the entire industry, as it can speed up time-to-market for advanced components, boost product confidence, and reduce the likelihood of failing a full bus test at the Altoona test center due to component failure. CTE recommends continued investment in the centers with a focus on capital to develop testing capabilities and industry education about the advantages of using these resources.

5. Modernize Data Management Resources

Topic: Climate

20 Likes

Comments: 0

Modern transit bus operations generate vast amounts of data that can be complex and challenging to interpret. Whether these data are from fueling/charging infrastructure, dispatch and operations, or the vehicles themselves, they are critical to decision making. Currently, there are no available resources documenting what signals are available and how trustworthy they are. Effectively integrating data across these disparate sources poses a significant challenge for transit agencies. Consequently, FTA research efforts supporting data reliability, availability, and standardization, many established through the Transit Vehicle Innovation Deployment Centers (TVIDC) Program, provide ways for transit agencies to develop modern approaches to enhancing transit efficiency, reducing operational costs, and improving overall service delivery. Long-term investment and commitment to the success of the TVIDC program is essential to address challenges in this topic area and others.

Trending Ideas

Below are the three ideas that were trending at the end of the “Exploring the Future of Public Transportation Research: A National Online Dialogue.” The trending ideas are based on the number of views over the course of the dialogue with more recent views weighted higher. A view is counted when an individual clicks on an idea to see it in its entirety.

Similar to the [Ideas by Likes section](#), the three ideas listed in the following section include minor typographical corrections, which have in no way impacted the substance or the intention of the original post.

1. High Quality Transportation That Is Available and Reliable

Topic: Connecting Communities

5 Likes

Comments: 3

High quality transportation that is reliable and flexible for meeting the needs of all people who have disabilities or seniors.

2. When Does It Make Sense to Transition from Diesel to Zero Emission Buses?

Topic: Climate

2 Likes

Comments: 5

Transit is inherently a better environmental option than using a personal car. However, there has still been a big push for ZEB. While ZEB conversion is an important goal, with limited capital funding, fully transitioning to ZEB can require a lot of fiscal and political capital. Considering an environmental point of view, what is the tipping point for agencies to transition to ZEB without hurting them too much financially? This is also important because there are still a lot of questions around hydrogen and the range of electric buses still leaves a lot of agencies with reason to hesitate.

3. Ensuring Blind Adults Who Are Self-Sufficient Have Ability to Travel Flexibly Even If Living with Additional More Debilitating Disabilities.

Topic: Safety

4 Likes

Comments: 1

I am a totally blind woman in my late 30s living with multiple conditions including late diagnosed level 1 autism no intellectual disability, ADHD, chronic Post Traumatic Stress Disorder with dissociative symptoms, Ehlers - Danlos Syndrome, arthritis, digestive trouble, acquired hearing damage, post sepsis effects due to multiple critical infections, carpal tunnel syndrome, and non-24-hour sleep-wake disorder. I do not use a wheelchair or walker, only white guidance cane. Many of us who independently shop, take items to others in need, work, care for someone else, run our own errands, and attend our own medical, supplemental benefit, or other appointments without a companion must be able to schedule multiple stops in one day whether we use para transit, taxi cabs, or ride shares such as Uber and Lyft. This must be affordable as much of our population survives on some form of limited or fixed income with extra expenses for specific technologies, mobile applications providing visual assistance, accessible medical equipment, as well as common household expenses, subscriptions, and cost of living. Ride shares are known for refusing service to blind riders with guide dogs and now, white canes. Those who use other types of mobility aids are also at greater risk of refusal. The Department of Justice, police, courts, disability rights advocacy organizations, independent living centers, legislators, and other legal authorities are vital in taking action for our right to travel safely, affordably, and cost affectively as anyone would. These two important related topics are a daily battle for us as a collective community. We as individuals with lived experience often feel as if we are getting nowhere and having no impact when advocating for our direct plight.

Most Popular Ideas by Dialogue Topic

Below are the top three most popular ideas from each of the online dialogue's five topic areas. "Most popular" is determined based on the idea's total number of likes, comments, and followers at the conclusion of the dialogue.

The ideas listed in the following section include minor typographical corrections, which have in no way impacted the substance or the intention of the original posts.

Most Popular Ideas from the Safety Topic

1. Support Workforce Development for Zero Emission Technologies

(The full description of this idea can be found under [Ideas by Likes](#))

2. Develop Next Generation Transit Vehicle

18 Likes

Comments: 1

Significant efforts have been made over the past 15 years to enhance transit vehicle propulsion systems to be cleaner and more efficient. However, aside from a few exceptions, the remainder buses themselves have not seen substantial innovation over the past 30 to 40 years. There is a significant opportunity to redesign vehicles to better support the safety of drivers, passengers, and pedestrians, while also aligning with current transit trends. In conceptualizing the FTA's "Bus of the Future" program, CTE recommends leveraging insights from the successful National Fuel Cell Bus Program, which employed a non-profit led consortia model. The consortia model enhances innovation by fostering market competition, enabling various businesses to equally propose bus designs and innovations. This approach benefits both funders and project teams, ensuring federal funds and resources are used efficiently for project goals. When a non-profit leads a consortium, it adds value through its independence and objectivity, as it isn't influenced by stockholder interests. This structure allows for a more unbiased and focused approach to advancing project objectives. Historically, the consortia model has been effectively used by the Department of Defense in Defense Advanced Research Projects Agency's Electric and Hybrid-Electric Vehicle Program, leading to significant technological advancements in civilian medium and heavy-duty platforms.

3. Disability Awareness

11 Likes

Comments: 2

Transportation staff need to receive disability training on how to safely interact with people with disabilities.

Most Popular Ideas from the Equity Topic

1. Data Collection on Accessible Complete Streets

13 Likes

Comments: 1

There is insufficient data on complete streets, meaning fully accessible sidewalks that connect pedestrians to all walkways. Without complete streets, pedestrians with disabilities may be forced to use the main thoroughfare. A complete street may include more than just the accessible sidewalks, research can also review the availability of accessible public transportation stops, crosswalk islands, curb ramps, and more. Just the lack of complete sidewalks means that people with disabilities, such as wheelchair users, pedestrians with intellectual and developmental disabilities, and pedestrians with sensory disabilities, must use the main thoroughfare.

FTA should work collaboratively with the Bureau of Transportation Statistics to develop a pedestrian and accessible routes dataset that helps transit agencies, cities, and states understand the accessibility of sidewalks and other pedestrian routes to transit stops and facilities. Many people with disabilities do not use transit or use it less when the route from their home to a transit stop or from the transit stop to an unfamiliar location is inaccessible. Better data collection about how sidewalk availability and quality affect people with disabilities could improve transit agency route planning and provide encouragement to localities to build out reliable pedestrian systems that are connected to transit networks. Notably, low-cost innovations and technologies that help localities track the condition of sidewalks on a frequent basis will improve the quality of this data and reduce upkeep burdens.

2. Improved Accessibility

12 Likes

Comments: 3

Public transit of all types needs to be accessible for all. In addition to simply being able to get onto the transit system conveyance, facilities provided in conjunction with them should be accessible as well. This means that toilet rooms on ferries and aircraft and buses should be accessible. fare machines should be accessible to people who cannot reach high as well as for people who are blind (touch screens are very difficult). Guidance for how to make these things accessible should be based on the International Code Council American National Standards Institute A117.1 Standard. The Federal 2010 Standards for Access Design include the 2004 ADA Accessibility Guidelines which are based in large part on the 2003 A117.1 standard. This makes them 20 years out of date. It's time for everyone to be able to use public transit, especially those in the community who have enough barriers to face. And they deserve the best guidance.

3. Accessibility Needs to Be Beta-Tested

13 Likes

Comments: 4

Best practice is to invite individuals with a variety of disabilities to beta-test new designs - including apps & vehicles. Invite your local Center for Independent Living (directory is at NCIL.org) to partner on the testing. I know someone with a doctorate in Human

Factors of Engineering (and a power-chair user) who helped us both solve and avoid design issues.

Most Popular Ideas from the Climate Topic

- 1. Develop Next Generation Hydrogen Fuel Cell Propulsion**
(The full description of this idea can be found under [Ideas by Likes](#))
- 2. Continue to Leverage Industry Advisory Panels for Zero Emission Technologies**
(The full description of this idea can be found under [Ideas by Likes](#))
- 3. Increase Zero Emission Bus Component Testing Capacity and Utilization**
(The full description of this idea can be found under [Ideas by Likes](#))

Most Popular Ideas from the Economic Growth Topic

- 1. OnDemand Transportation for Persons with DisAbilities**

11 Likes

Comments: 2

In order to enhance more economic growth, there is need for affordable On Demand Transportation for Persons with disAbilities as they will be able to freely access more job opportunities, shopping and more entertainment.

- 2. Hiring People With Disabilities In the Transportation and Transit Industry: Equal Employment Opportunity Compliance**

9 Likes

Comments: 1

The transportation and transit industry also needs to hire, promote and have people with disabilities participating at all levels of an organization. The FTA mandates transit agencies to report on EEO matters and agencies are to maintain underutilization tables per job category. Perhaps, working in conjunction with the Department of Justice (to ensure proper compliance with all laws and regulations) reporting should include how many people in each category are people with disabilities. The work force needs to represent the community that it serves, however presenting data on how many of the work force is disabled and in which area and/or hierarchy level they are is not mandated. Getting proper data is the beginning to set proper hiring, retention and promotion goals. Since disclosing a disability is voluntary, perhaps employers can use third party vendors to collect the information and maintain the employee disability information confidential. The third-party vendor can be the one creating the utilization tables as related to disability matters.

- 3. Hiring Individuals with Disabilities to Help Fill the Staffing Gaps**

9 Likes

Comments: 2

There are many qualified individuals with disabilities that could fill the voids in the hiring needs of transportation fields. Public and private Transportation companies should tap into this valuable resource.

Most Popular Ideas from the Connecting Communities Topic

1. Coordination Between Pedestrian Access and Transit

12 Likes

Comments: 3

Having accessible transportation facilities and services does little good if people can't access the services because of challenges in sidewalks and pedestrian navigation. Future research could identify practices that facilitate connections between those professionals who address sidewalk issues and community planners, and transit operators. When facilities and services are made more accessible - so should the paths of travel outside of the facility - it has to be someone's responsibility and considered in a holistic way.

2. Micro-transit as Feeders to Massive Public Transportation Systems

10 Likes

Comments: 4

Accessible micro transit options can act as feeders to main bus routes, BRT services or other massive transportation services (provided that they do have all the accessibility features) available in a particular region. Reducing the costs of paratransit services while at the same time providing the same level of service to all members of the community and therefore achieving equity in the transportation system. The existing software and technology adequately support micro transit operations in a selected area, however, dedicated funding to this fairly "new" concept can help incentivize transit agencies, municipalities and other key players to pilot or implement a micro-transit/feeder concept.

3. Research on How Accessible, Affordable Transportation Can Connect People with Disabilities for Community Engagement

10 Likes

Comments: 2

Research and innovation should be taken to develop new ways to integrate people with disabilities into the community. The lack of public transportation and disjointed public rights of way currently keep people with disabilities isolated in certain geographic areas. They may not have the ability to leave their homes or are segregated to very specific regions of their communities. Research needs to be done to build up safe streets and sidewalks so pedestrians with disabilities can travel more safely from one area to another. The public rights of ways should seamlessly connect to public transportation. If safe streets lead to usable forms of public transportation, people with disabilities can

participate more freely in civic life. This will better connect members of the community. Research should be done on what major civic locations should be connected. Obviously, people need to have easy access to their homes, places of employment and education, medical and social services, and grocery stores. However, research should go further to consider about what other civic locations will better connect people with disabilities to their communities, preventing them from being segregated to specific areas. For instance, can the disability community easily access places of worship, community centers, or city parks. The final destinations of public transportation should be assessed.

Research could also analyze the advancement in public transportation with the advancement in civic engagement. In other words, research could measure the growth of public transit with the growth in public involvement. One important example of civic engagement would be more involvement in local politics by persons with disabilities. The disability community is woefully underrepresented in all levels of government. If more forms of transportation are available, persons with disabilities can then travel to townhall meetings and other civic engagements. Research can assess the impact of transportation access on the greater involvement of people with disabilities in their communities, including civic engagement.

FTA can also research and innovate programs and policies that improve transportation options across jurisdictional boundaries. A common complaint from people with disabilities is that jurisdictional boundaries create challenging situations where individuals must disembark from one transit service, walk a distance, then board another transit service to travel through a single metropolitan region. These boundaries create barriers for people with disabilities that people with private transportation do not encounter, especially if transit riders are using paratransit services that require advance planning and waiting periods or if there are no accessible sidewalks connecting the jurisdictions. Using better software and collaboration among agencies could mitigate the impacts on riders as they attempt to move freely across jurisdictional boundaries.

Appendix C: Resources Submitted to the Dialogue

Articles/Reports/Graphics:

- [2023 Disability Health Equity Report](#)
- [An Update on Public Transportation's Impacts on Greenhouse Gas Emissions Report](#)
- [Analysis of Safety and Security Concerns for Automated Small Vehicle Transportation on a University Campus Report](#)
- [Brightline Service from Miami to Orlando International Airport: Complete Timeline of Events Article](#)
- [Commercialization of An Intelligent Transportation Network System, ITNS, LLC](#)
- [Community-Based Organization Partnering Strategy Report](#)
- [Comprehensive, Integrated Mobility Graphic](#)
- [Deaths in Car Accidents by the States of USA Graphic](#)
- [Denver Moves: Pedestrian and Trails Plan](#)
- [Economic Impacts of Removing Transportation Barriers to Employment for Individuals with Disabilities Through Autonomous Vehicle Adoption Study](#)
- [Evaluating Funding for Public Transit to Advance Michigan's Climate Goals Report](#)
- [Future of Public Transportation Suggestions Report](#)
- [Humatics Focus Delivers Real-Time Track Condition Monitoring with New Jersey Transit Report](#)
- [LoopWorks BART Burrow Flyer](#)
- [LoopWorks Business Plan Report](#)
- [Michigan's Path to a Prosperous Future: Health Challenges and Opportunities Report](#)
- [Milpitas Transit Graphic](#)
- [Minimal MicroRail Presentation Practical Measures for Advancing Public Transit Equity and Access Report](#)
- [PowerPoint Presentation by OTTOBAHN GmbH, Tölzer Strasse 30, 81379 München](#)
- <https://wp-cpr.s3.amazonaws.com/uploads/2020/12/RTD-Residential-TOD-Parking-Study.pdf>
- [Self-Driving Cars: The Impact on People with Disabilities Report](#)
- [Technical Specifications for ITNS Technology \(Intelligent Transportation Network System\) Report](#)
- [Transit Mode Share Percent Graphic, LoopWorks](#)
- [Transit Vehicle Innovation Deployment Centers \(TVIDC\) Advisory Panel Overview and Conclusions](#)
- [Transportation Options for Greenville Study](#)

Campaigns:

- [Bay Area Rapid Transit \(BART\) Not One More Girl Campaign](#)

- [Southeastern Pennsylvania Transportation Authority \(SEPTA\) Safety, Cleaning, Ownership, Partnership, Engagement \(SCOPE\) Program](#)

Organizations:

- [Autoren/Modutram Website](#)
- [Bay Area Rapid Transit \(BART\) Website](#)
- [California Transit Training Consortium Website](#)
- [Communication Disabilities Access Canada Website](#)
- [Conveyal Website](#)
- [Dallas Area Rapid Transit \(DART\) Website](#)
- [Flexride Milwaukee Website](#)
- [Glydways Website](#)
- [Massachusetts Bay Transportation Authority \(MBTA\) Website](#)
- [METRA Website](#)
- [National Council on Independent Living \(NCIL\) Website](#)
- [National Transit Institute Website](#)
- [Sacramento Regional Transit \(SACRT\) Website](#)
- [Southeastern Pennsylvania Transportation Authority \(SEPTA\) Website](#)
- [Swyft Cities Website](#)
- [Transportation Learning Center Website](#)
- [VIA's Remix Website](#)

Webpages:

- [A Ride of the Future, 1977 YouTube Video](#)
- [About LoopWorks Webpage](#)
- [Accessibility Observatory Webpage](#)
- [Advocate: Regional Transit Funding Webpage](#)
- [AllTransit Metrics Webpage](#)
- [Brightline Florida: A Model for Intercity Regional Rail Webpage](#)
- [Capital Costs Webpage](#)
- [Case Study: Brightline Rail, Florida](#)
- [Comment on Regulations.com - Transportation Division of the International Association](#)
- [Cybertran International Website](#)
- [Electric Buses are the Future. Agencies are Still Right to be Cautious Blog Post](#)
- [Experience Riding the Skycube in Suncheon! YouTube Video](#)
- [Fares v2 Webpage](#)
- [Gigaton Reductions in Carbon Emissions Webpage](#)
- [Governance Webpage](#)
- [London Heathrow Pods \(Personal Rapid Transit\) Timelapse YouTube Video](#)
- [LoopWorks Website](#)

- [Microsoft Personal Rapid Transit Study](#)
- [National Fuel Cell Bus Program Website](#)
- [New Silicon Valley Transit: Airport Connector and Future Expansion Webpage](#)
- [Next Modular Vehicles Website](#)
- [Operations & Maintenance \(O&M\) Webpage](#)
- [Personal Rapid Transit Vendors Webpage](#)
- [Personal Rapid Transit Wikipedia Page](#)
- [Ridership Webpage](#)
- [Service Level for Personal Rapid Transit and Other Transit Options Website](#)
- [SMART, the International Association of Sheet Metal, Air, Rail and Transportation Workers](#)
- [Sustainable Mobility System for Silicon Valley Webpage](#)
- [The Real Case for Driverless Mobility Webpage](#)
- [TransitCenter Equity Dashboard Website](#)
- [University of California Berkeley and CyberTran International Join Forces to Help Solve Traffic Congestion and Other Auto-Related Problems Article](#)