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The Future of Payment

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for Mass Transit PAGE 30

MASS TRANSIT

BEST PRACTICES FOR INTEGRATED MOBILITY

2023

Mobility OUTLOOK

A LOOK AHEAD

This annual survey provides a glimpse of budgets, technology adoption, as well as vehicle and equipment procurement expectations. PAGE 14

TRAIN CONTROL

Transitioning from
Hardware Displays to
Electronic screens

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FEATURES

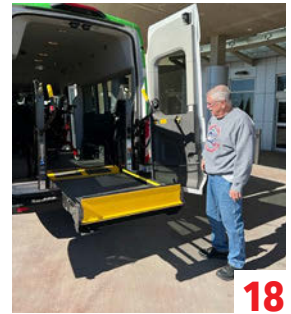
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2023 Mobility Outlook

A LOOK AHEAD

This annual survey provides a glimpse of budgets, technology adoption, as well as vehicle and equipment procurement expectations for the year ahead.

On the cover: 942607194 | 1143045815 | Getty Images, 198440685 | Dreamstime



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The Coming Transition from Traditional Hardware Displays to Electronic Screens for Train Control

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26 Fare Collection: How we pay for public transit is critical to securing its future

The future of public transit can't be solved by high-tech hardware or super sophisticated software alone – but delivering seamless and equitable fare payments solutions will be central to securing a new deal for public transit.

30 Unifying security systems for Mass Transit

The power of a unified system is its ability to bring data together from disparate systems and departments and present it intuitively.

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► As EVs and HVs are introduced into public transport, risks need to be addressed and the risks require completely different assessments.

[MassTransitmag.com/21293050](https://www.masstransitmag.com/21293050)

Data proves microtransit is connecting underserved riders to public transit in Washington state

► Ben Franklin Transit's CONNECT has experienced ridership growth in the last two years despite the community's unpredictable travel needs during COVID-19.

[MassTransitmag.com/21294072](https://www.masstransitmag.com/21294072)

Meeting the next big challenge for public transportation in 2023

► With more connected systems and a greater push toward integration, standardization of on-board systems will simplify routines for maintenance, update or upgrade systems and devices quickly and offer greater flexibility.

[MassTransitmag.com/21291406](https://www.masstransitmag.com/21291406)

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What does ChatGPT have to say about transit equity?

The AI platform includes all the main points of more equitable transit from accessibility to community engagement, but there is an added twist to its answer.

As the *Mass Transit* team finished the content for the February issue, and I sat down to write this column, equity appeared to be the appropriate topic to cover with this issue featuring articles on Oklahoma's PICK Transportation, a column partially covering fare equity and the industry's annual observation of Transit Equity Day on Feb. 4.

I had an outline of points I wanted to make about transit equity covering affordability, multimodality, integration of service options, reliability and rider engagement, but then my husband asked me a question out of left field that changed my approach to this column: Had I ever used ChatGPT?

I had not but thought using the collective knowledge of the internet might give me a different angle to cover the topic. The first answer regarding transit equity resulted in something like my own outline, but then I requested the answer be produced in the style of Shakespeare. I was delighted with the result; an edited version of which I would like to share:

To make the means of travel just and fair,
For all, both rich and poor, doth us ensnare,
To see the roads of progress open wide,
For each and every soul who doth take the ride.

First, accessibility must be our prime concern,
That those with disabilities may not return,
To homes that they may leave, but cannot join,
Due to transit's lack of aid and coin.

And affordability is next in line,
So that the purse-pinched masses need not pine,
For means to reach their work or market square,
But may journey with ease, without a care.

Reliability doth come in at third place,
So that the journey is not a race,
Against the clock, but a calm and steady pace,
Where one may reach their goal with timely grace.

And last, but not least, let us give voice,
To those who use the transit, and rejoice,
In having a say in its planning and design,
So that the people's needs are met, aligned.

Thus, with these steps taken, we shall see,
Transit made equitable for all to be,
A means of progress, for both young and old,
And a brighter future, with its stories untold.

While the concept of transit equity is easily understood, the work required to deliver equitable systems is more complex and will take efforts and answers beyond any provided on an AI platform. Many thanks to those who are working every day to break down barriers.

“

The first answer regarding transit equity resulted in something like my own outline, but then I requested the answer be produced in the style of Shakespeare.

”

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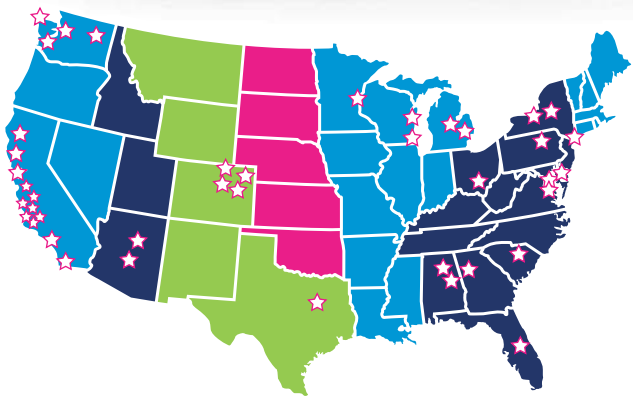
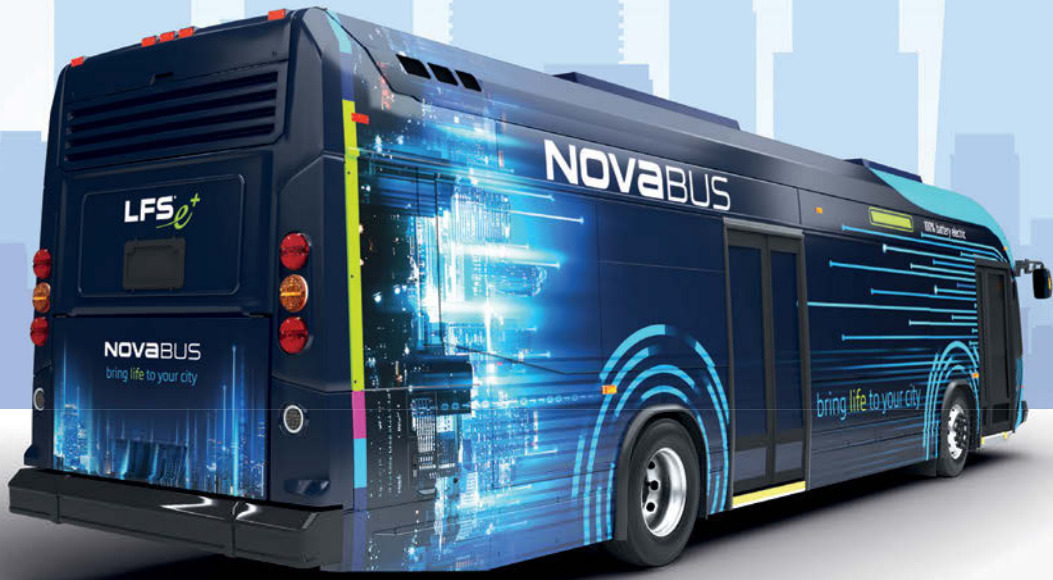


Mischa Wanek-Libman

Mischa Wanek-Libman,
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The Zero-Emission Bus taking America by storm

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People & Places



U.S. Secretary of Transportation Pete Buttigieg speaks at a Jan. 31 event highlighting Amtrak's Mega grant for the Hudson River Tunnel project.

WhiteHouse.gov

USDOT awards nearly \$1.2 billion in Mega grants

The U.S. Department of Transportation has awarded nearly \$1.2 billion to nine infrastructure projects through the National Infrastructure Project Assistance (Mega) discretionary grant program. The Mega Program was established under the Infrastructure Investment and Jobs Act to fund large, complex projects. This first round of funding through the Mega Program includes more than four passenger rail and transit projects that will benefit from more than \$517 million awarded through the program, including Amtrak for the Hudson Yards Concrete Casing, Section, Metra for the Metra UP North Rebuild: Fullerton to Addison project, the city of Philadelphia for the Roosevelt Boulevard Multimodal Project and the California Department of Transportation for the Watsonville-Cruz Multimodal Corridor Program.

[MassTransitmag.com/21294330](https://www.masstransitmag.com/21294330)

WMATA holds groundbreaking ceremony for Northern Bus Garage

► Work has begun to transform Washington Metropolitan Area Transit Authority's (WMATA) Northern Bus Garage, which was built in 1906, into a facility that will serve the authority's future zero-emission fleet. The garage is listed in the National Register of Historic Places, and the \$471 million project will preserve the exterior of the 14th St. building while rebuilding the interior to be a modern, environmentally friendly

facility that will support zero-emission buses, which will be the only vehicles to operate out of the new facility. The facility will also see retail space added, streetscape improvements made and a community room built for local meetings. WMATA plans to fully transition its bus fleet to zero emissions by 2045 and will begin purchasing only low or zero-emission vehicles by 2023, as part of the WMATA Board approved phased transition plan. All new buses entering service will be zero-emission by 2030.

[MassTransitmag.com/21293695](https://www.masstransitmag.com/21293695)

B&P Tunnel Replacement Program gets state funding boost

► The Baltimore and Potomac Tunnel (B&P Tunnel) Replacement Program advanced on Jan. 30 with a new funding commitment from the state of Maryland and a project labor agreement (PLA) between Amtrak and North America's Building Trades Unions (NABTU). The state of Maryland intends to commit \$450 million to support the \$6 billion program, which includes the construction of the new Frederick Douglass Tunnel, and Amtrak intends to commit \$750 million toward the project. The PLA between Maryland and the Baltimore-DC Building and Construction Trades Council, a local affiliate of NABTU, covers the replacement of the Warwick Bridge, which is the first phase of the B&P Tunnel Replacement Program. It is a collective bargaining agreement that will govern terms and conditions of employment for workers constructing the bridge replacement and will serve as a model for additional Amtrak projects.

[MassTransitmag.com/21294099](https://www.masstransitmag.com/21294099)



President Joe Biden speaks at an event in front of the north portal of the B&P Tunnel in Baltimore, Md.

WhiteHouse.gov

MBTA/RIPTA Pawtucket-Central Falls Transit Center opens

► More than a decade of work and planning was celebrated Jan. 23, 2023, with the opening of the Pawtucket-Central Falls Transit Center in Pawtucket, RI. The new transit center will be served by Massachusetts Bay Transportation Authority's Providence rail line, as well as the statewide bus network operated by the Rhode Island Public Transit Authority. The transit center's rail hub includes dedicated plat-



A ribbon cutting ceremony held on Jan. 23 marked the opening of the Pawtucket-Central Falls Transit Center.

RIPTA

forms for northbound and southbound service, a glass-enclosed pedestrian bridge, elevators, ramps and stairs. Its elegant design utilizes state-of-the-art composite panels with covered waiting areas. The train station also has a separate drop off area and set of stairs and ramps to the platform on the Barton Street side of the rail corridor. The bus hub includes five berths with covered shelters for passengers, with arrivals and departures every two to five minutes during peak hours.

[MassTransitmag.com/21293404](https://www.masstransitmag.com/21293404)



The government of Canada will help fund OC Transpo's transition to a fully zero-emission fleet. City of Ottawa

Government of Canada invests C\$350 million in Ottawa's zero-emission transit fleet

► The government of Canada is providing the city of Ottawa, Ontario, with C\$350 million (US\$260 million) in federal funding through the Zero-Emission Transit Fund. The federal funding will help the city's transit entity, OC Transpo, purchase up to 350 zero-emission buses and supporting charging infrastructure. The new vehicles will replace diesel-powered buses, and the city will install the required charging infrastructure, build a new vehicle storage facility, upgrade two existing ones and purchase other related infrastructure

PEOPLE IN THE NEWS

CapMetro



Dottie Watkins, a native of Austin, Texas, who began working for CapMetro as a part-time bus driver, has been named president and CEO of the agency following approval by the CapMetro Board of Directors on Jan. 30. Watkins has been serving as interim president and CEO since June 2022, and her appointment is effective immediately. Watkins is credited with leading the effort to maintain transit operations and to continue serving the community, even during the ensuing staffing shortage crisis throughout the COVID-19 pandemic.

[MassTransitmag.com/21294098](https://www.masstransitmag.com/21294098)

Kansas City Area Transportation Authority (KCATA)



The Kansas City Area Transportation Authority (KCATA) appointed **Frank White III** as the permanent president and CEO. In August of 2022, White was unanimously named to the interim CEO position by the 10-member KCATA Board of Commissioners. White was hired at KCATA in 2016 as a senior marketing manager and ascended the agency ranks, including roles of chief marketing officer, director of strategic planning and development and vice president of the RideKC Development Corporation.

[MassTransitmag.com/21293881](https://www.masstransitmag.com/21293881)

Central Florida Regional Transportation Authority (LYNX)



The Central Florida Regional Transportation Authority (LYNX) Board of Directors selected **Tiffany Homler Hawkins** to lead the agency as chief executive officer. Hawkins has been serving as interim CEO since August 2022 when James E. Harrison unexpectedly died. Hawkins has worked with or for the agency for more than 20 years, most recently as chief administrative officer overseeing the planning, marketing, grants and government affairs teams. The board credited her with bringing a calming presence during the interim period.

[MassTransitmag.com/21293877](https://www.masstransitmag.com/21293877)

Valley Regional Transit (VRT)



The Valley Regional Transit Board of Directors voted to hire **Elaine Clegg** as the agency's chief executive officer. Clegg began her new role Feb. 13 and replaced Kelli Badesheim, who retired after 22 years leading the Treasure Valley's regional public transportation authority. Clegg previously served as president of the Boise City Council, where she held various leadership positions on the VRT Board of Directors and Executive Board.

[MassTransitmag.com/21292016](https://www.masstransitmag.com/21292016)

to maintain and operate the battery-electric buses. The first of four zero-emission buses entered service on OC Transpo's network in early 2022, about six months after the Ottawa City

Council approved the transit provider's plan to procure solely zero-emission buses, with the goal of having a fully zero-emission fleet by 2036.

[MassTransitmag.com/21293129](https://www.masstransitmag.com/21293129)

Cincinnati's first BRT corridors will be along Hamilton Avenue and Reading Road

► Southwest Ohio Regional Transit Authority (SORTA/Cincinnati Metro) will bring the region's first bus rapid transit (BRT) corridors to Hamilton Avenue and Reading Road and enhance corridors along Glenway Avenue and Montgomery Road as part of the project. Cincinnati Metro says the selection of the two BRT corridors came after months of data collection and public engagement to understand the community's preferences and priorities. The Hamilton Avenue Corridor will run for approximately 12 miles between Mount Healthy to downtown Cincinnati and will serve eight neighborhoods. The Reading Road Corridor is also approximately 12 miles and will operate between the intersection of Reading Road and SR 561/Seymour Avenue to downtown. It will serve 11 neighborhoods, and its plans include a multimodal center.

[MassTransitmag.com/21292843](https://www.masstransitmag.com/21292843)



A rendering of the Mayan Train that will operate around the Yucatan Peninsula in southeast Mexico.

Government of Mexico

Mexico's Mayan Train will have a staggering number of security personnel

► The Mexican government plans to use 6,583 security personnel from the Mexican Army, Air Force and National Guard to ensure both the infrastructure security and operational safety of the intercity train project. They will provide security at the project's 34 railway facilities, an administration building, yard, maintenance facility, garage, warehouses, substations and fuels storage tanks.

[MassTransitmag.com/21292839](https://www.masstransitmag.com/21292839)

MORE NEWS AT A GLANCE

► Arcadis and Mott MacDonald will provide construction management support services for Los Angeles County Metropolitan Transportation Authority's progressive design-build delivery team for the East San Fernando Valley Light Rail Transit Project.

[MassTransitmag.com/21292825](https://www.masstransitmag.com/21292825)

► The New Jersey Transit Board has authorized the agency to enter a contract with Foley-Caterpillar to overhaul 70 engines to maintain their current EPA Tier III emissions standards.

[MassTransitmag.com/21290135](https://www.masstransitmag.com/21290135)

► Hayden AI completed the first phase of expansion for the Metropolitan Transportation Authority's automated bus lane enforcement program.

[MassTransitmag.com/21291202](https://www.masstransitmag.com/21291202)

► MTM Transit has partnered with the County of Hawai'i Mass Transit Agency to operate its Hele-On Kako'o Island-Wide paratransit services.

[MassTransitmag.com/21292660](https://www.masstransitmag.com/21292660)

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The Rail Transit Seminar is devoted to examining wheel/rail, vehicle/track interaction on rail transit systems. This cross-disciplinary seminar includes presentations from experts in vehicle/track

dynamics, noise and vibration, vehicle/track design and maintenance, friction management, and State of Good Repair. Join a unique group of transit professionals, researchers and suppliers at this seminar to examine recent developments in research and technology, to participate in lively discussion and gain a better understanding of the complex interaction at the rail transit wheel/rail interface. Sample topics include:

- Asset Management/State of Good Repair
- Controlling Wheel/Rail Noise & Vibration
- Friction Management



The Principles of Wheel/Rail Interaction Course is an intensive, full-day course that provides fundamental coverage of the primary aspects of wheel/

rail, vehicle/track interaction. Drawing from both theory and practical application, the course covers contact mechanics, track geometry, vehicle suspension systems, vehicle/track dynamics, wheel/rail profile design, friction management, measurement technologies and more—all the elements that are required to promote a more complete understanding of vehicle/track dynamics and wheel/rail interaction. Typical topics include:

- Wheel-Rail Contact Mechanics
- Track Structures, Components and Geometry
- Vehicle Types, Suspensions and Components
- Vehicle-Track Measurement Technologies



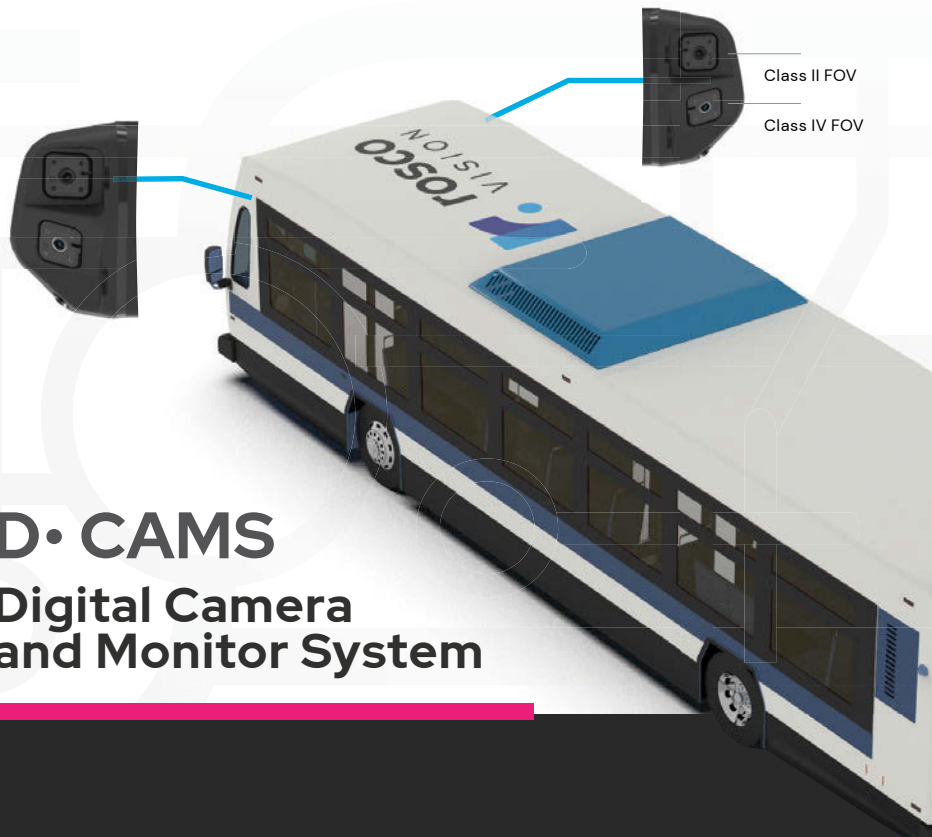
The Heavy Haul Seminar is devoted to examining wheel/rail, vehicle/track interaction on rail freight and shared-track passenger systems. The Seminar brings together track

and mechanical users, researchers and suppliers in a positive, educational setting like no other in the industry. Information on where and how the latest technology is being used to improve wheel/rail interaction and overall performance on freight and passenger railways is presented by some of the best minds in railroading. Information is presented through a combination of seminar sessions, panel discussions, dedicated Q&A periods and "InfoZone" sessions. Sample Heavy Haul topics include:

- Effects of Rail Hardness on Rolling Contact Fatigue
- Track Geometry's Effect on Vehicle/Track Interaction
- Friction Management: Lessons from a Closed-Loop
- System Advancements in Rail Grinding

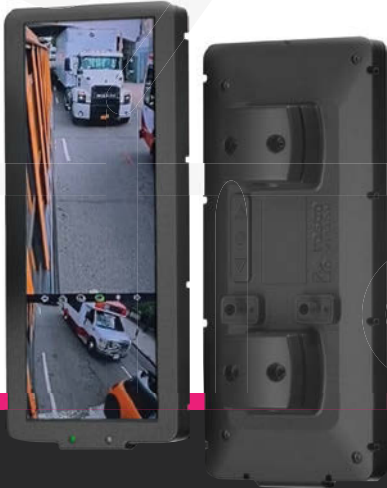
Questions: Contact Brandon Koenig, Director of Operations 847-808-1818 or Brandon@wheel-rail-seminars.com

For more information, visit www.masstransitmag.com/10066147



D•CAMS

Digital Camera and Monitor System

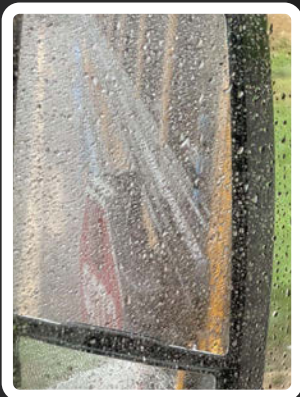


The new mirrorless camera system! Offering better visibility around the vehicle, the Rosco D•CAMS has been engineered to replace exterior rear vision mirrors on commercial vehicles.

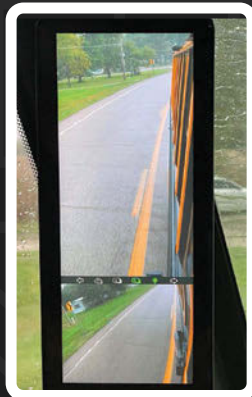
The digital cameras cover views shown in both the flat lens and convex lens of rear view mirror heads.

- Wider and deeper Field-of-View (FOV)
- Smaller blind zones
- Better visibility and brighter images during the day and night
- Clearer images in all weather conditions
- Aerodynamic design offers fuel savings and efficient operations
- Small camera profiles and high mounting locations to lessen impacts with objects.

Low light conditions



TRADITIONAL MIRROR VIEW WHEN RAINING



HIGHLY IMPROVED VISIBILITY WHEN USING ROSCO'S DCAMS



Driver side

Door side

Nashville Public Transit Attracts Riders through Tourism Partnerships

WeGo offered locals staycations with discounts to some of Nashville's hottest attractions.

By Renuka Christoph

▶ The primary objective of WeGoCation was to attract current and new riders to QuickTicket, our new digital ticketing system.



A bus wrap promoting one of WeGo Public Transit's WeGoCation's partners, the Country Music Hall of Fame and Museum.

WeGo Public Transit

CREATIVE CONNECTIVITY is a powerful conductor in making great things happen. For WeGo Public Transit, linking with diverse businesses and organizations citywide is one of the ways we are attracting new riders and improving access for current riders.

This past year, we launched the Community Impact Partnership program (CIP), an initiative where we work with organizations to cross promote one another on our communication channels, so it is mutually beneficial for both parties to achieve the desired goals.

How locals can save money during staycations

Our WeGoCation initiative originated from this, offering locals a staycation to some of Nashville's hottest attractions at a discounted rate. As part of the total experience, we wanted to showcase to locals how they can relax and ride while saving money without the added hassle of parking.

The primary objective of WeGoCation was to attract current and new riders to QuickTicket, our new digital ticketing system. The goals were to demystify riding the bus and overcome transit biases.

We identified five local attractions to become CIPs for WeGoCation:

- Nashville Zoo
- National Museum of African American Music
- Frist Art Museum
- Country Music Hall of Fame and Museum
- Bavarian Bierhaus restaurant

From June 14 to Aug. 15, 2022, riders showed their QuickTicket phone app or reloadable card and received half-off admission or, in the case of the restaurant, half-off an entrée. In exchange, WeGo provided each of these partners publicity on our owned assets (i.e., bus wraps and ads on shelters and benches).

We also promoted one another through each other's communication channels, including newsletters, social media and media.

The result was greater awareness of public transit, as riders coupled transit as part of the overall experience while enjoying the destination. They were able to avoid the hassle of navigating crowded streets or paying for parking. Larger groups appreciated being able to be accommodated comfortably and economically.



About the author

Renuka Christoph is chief communications officer for WeGo Public Transit and founder of Christoph Communications, LLC, a certified DBE.

How we have grown and also connected with Uber

In addition to the launch of WeGoCation, WeGo celebrated a few other milestones for improved access. We opened the Hillsboro Transit Center, which was a collaboration between WeGo, Metro Nashville Public Schools, the Tennessee Department of Transportation and Nashville Department of Transportation. We also worked with neighborhood organizations and businesses.

In order to attract riders, we launched a shop-and-hop campaign, encouraging shoppers at The Mall at Green Hills to board on routes 7 Hillsboro Pike or 17 12th Ave. South for a convenient ride downtown.

We also held a groundbreaking in November for the Dr. Ernest Rip Patton, Jr., North Nashville Transit Center, an investment in the North Nashville community that will elevate the transit experience in this historic neighborhood while honoring a local trailblazer and Freedom Rider.

Additionally, we added more WeGo-Link zones, where riders can catch an Uber for \$2 to their nearest bus stop. This first-mile, last-mile service links riders in neighborhoods to the nearest bus stop.

For employers seeking applicants, they can provide employees transit as a perk through the WeGo Ride program. This is also available to all schools, colleges and universities for their students and staff.

Increased daily bus ridership

Riders can download the QuickTicket™ app or get a reloadable card. Aside from easier boarding and not having to worry about exact change, riders earn free rides with fare capping. This means the cost to ride will never exceed \$4 a day or \$65 a month. We saw an increase of one of five riders to one in three now using QuickTicket.

Additionally in 2022, WeGo saw an average increase in ridership from 20,000 to 25,000 a day. Ridership exceeded 100 percent over pre-COVID levels on weekends and select routes, including 18 Airport; 23 Dickerson Pike; 52 Nolensville Pike; and 55 Murfreesboro Pike.

With our WeGo Ride program, we doubled in size. Lastly, for New Year's

Eve, we had 10 times more ridership on our post-midnight service, as we offered extended hours.

In 2023, we look forward to an even more impactful year through strategic outreach and partnerships as we continue to engage with and connect our diverse communities. As our city continues to grow, we evolve with the changes and look forward to engaging with our riders, business, educational and community leaders, as well as elected officials. **L**

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BendPak Model
PCL-18B-4
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2023 Mobility Outlook

This annual survey provides a glimpse of budgets, technology adoption, as well as vehicle and equipment procurement expectations for the year ahead.

BY MASS TRANSIT STAFF

In the fourth iteration of *Mass Transit's* annual Mobility Outlook survey, the industry remains in a state of transformation. Lingering impacts from the pandemic, such as reduced ridership remain, but survey respondents from transit agencies report ample opportunities for services to expand and shift to better serve their respective communities.

The majority of agency respondents reported increased budgets in 2023 but slightly less than half, 46 percent, anticipate budget shortfalls within the next two years. On the private side of the industry, suppliers, manufacturers, consultants and other non-agency entities also report budgets that are up or significantly up in 2023.

Top challenges cited among transit agency respondents include recruitment, supply chain and inflation issues while the private side of the industry's top concerns (in order) were inflation, recession concerns and staff retention issues.

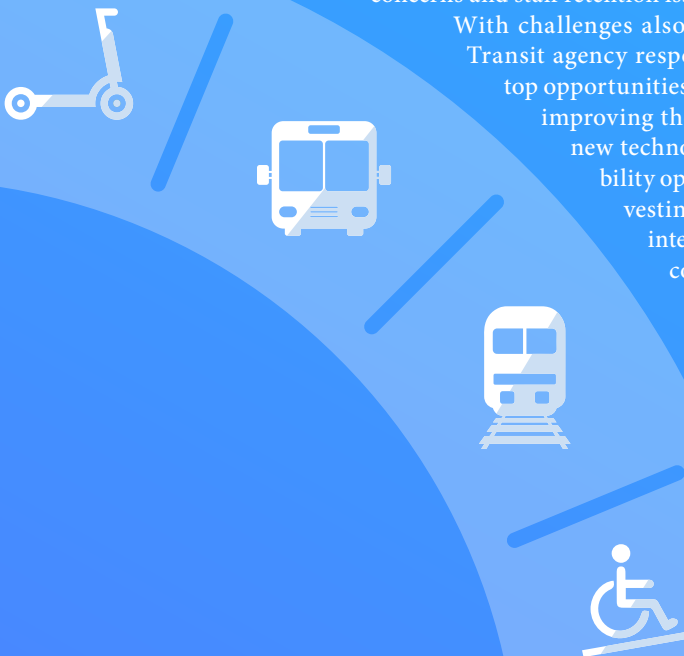
With challenges also comes opportunities. Transit agency respondents reported their top opportunities of the next year will be improving the rider experience with new technologies, improving mobility option integration and investing in new technology for internal efficiencies. Private companies are looking to harness opportunities to improve customer experience, find and develop new collaborations and invest in technology upgrades.

How was this information gathered?

Mass Transit queried transit agency subscribers, as well as representatives from private companies during a two-week period in January 2023. The survey received 157 responses, with 115 from transit professionals and 43 from non-transit agency professionals. The survey included intelligence with separate questions being asked of the two groups. For example, the survey only asked transit providers if they planned to purchase vehicles in 2023.

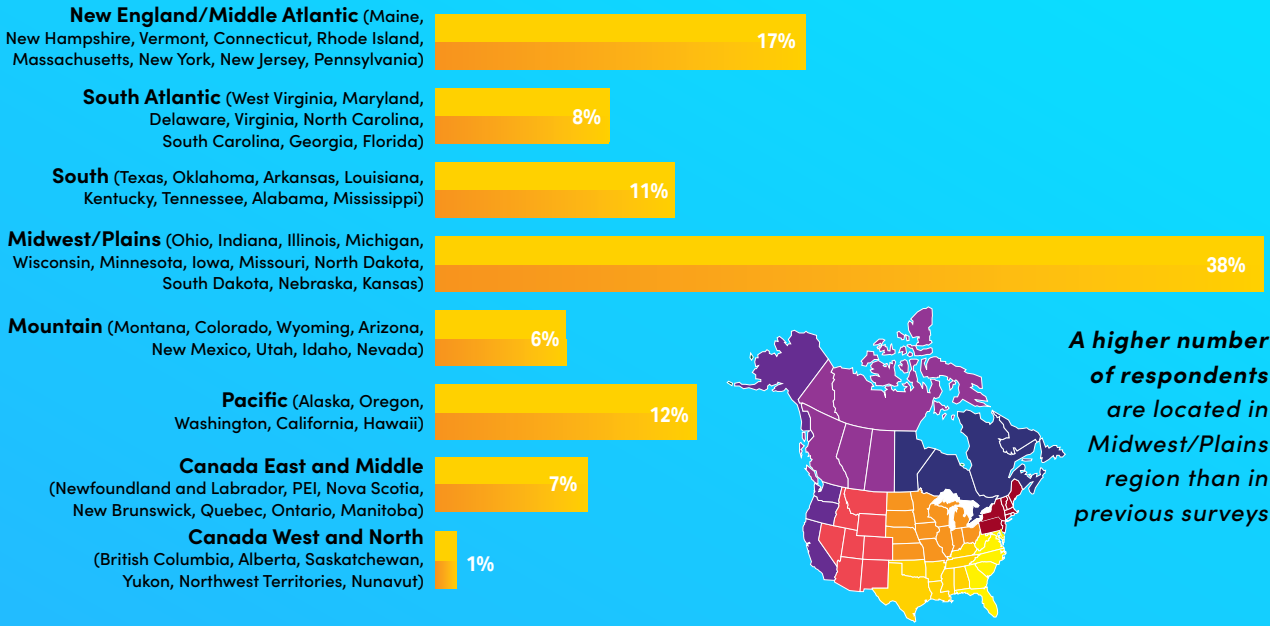
An ideal world would allow the survey to be answered by every transit provider in North America, but this is not practical. We do believe the data found within this survey offers valuable insight as the industry continues to emerge from under the umbrella of the pandemic.

The following pages are a sample of the full report, which can be viewed at [MassTransitmag.com/21294425](https://www.masstransitmag.com/21294425).

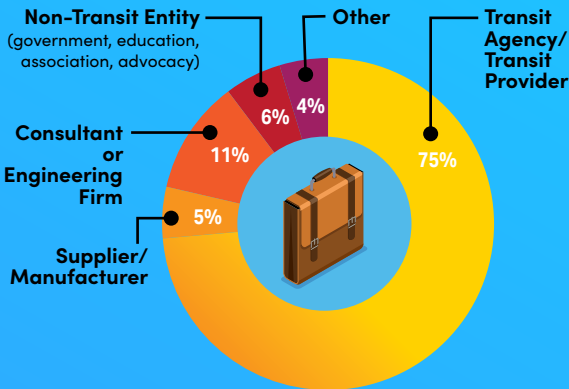


Demographics: Geographic, size and services offered

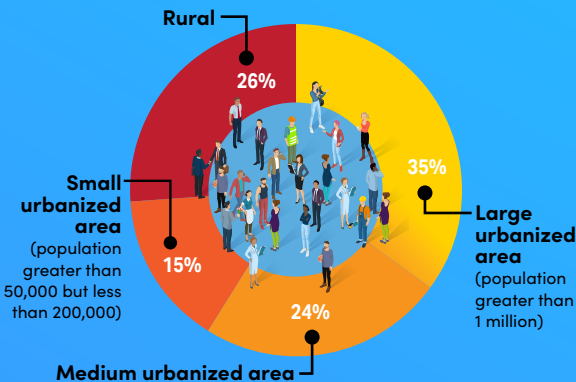
Where responding agencies are located



For which type of entity do you work?

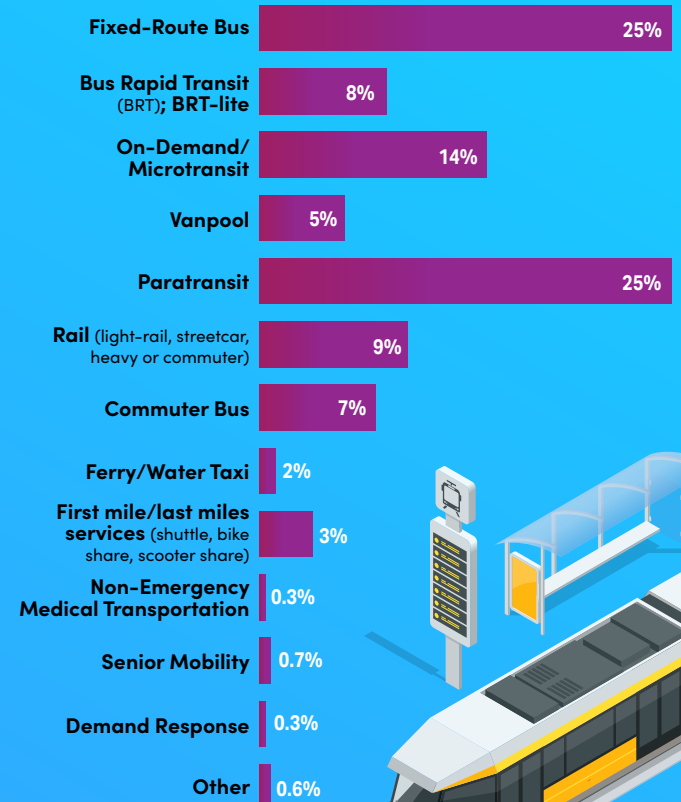


What is the population of your service area?



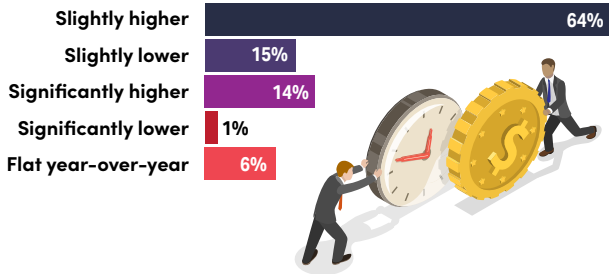
What services does your agency provide?

(select all that apply)



Budgets: 2023 budgets compared to 2022

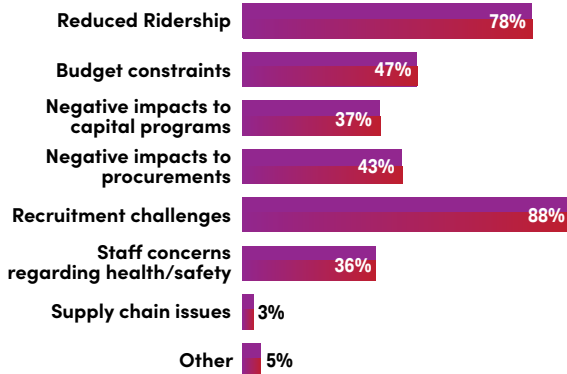
TRANSIT AGENCIES: How does your anticipated 2023 budget, both operating and capital, compare to 2022?



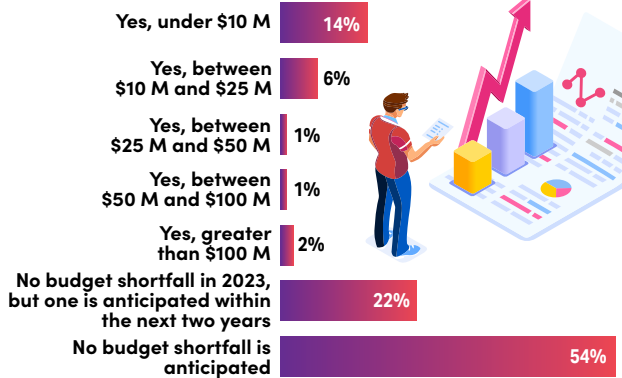
While 78% of respondents report higher budgets in 2023, 46% anticipate budget shortfalls within the next two years.

Nearly two-thirds of respondents operating systems in South Atlantic states reported continued negative impacts to capital programs - the highest of any region.

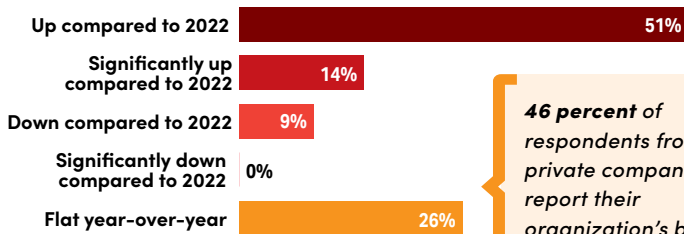
TRANSIT AGENCIES: What residual impact does the pandemic still have on your agency?



TRANSIT AGENCIES: Is your agency facing a budget shortfall in 2023? (in millions)

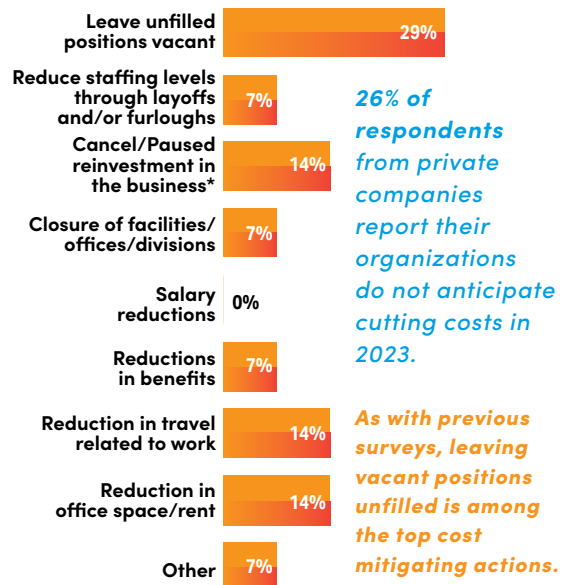


PRIVATE COMPANIES: Where do you believe revenues will be in 2023?

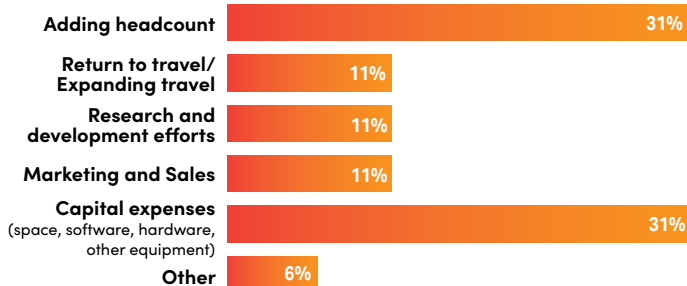


46 percent of respondents from private companies report their organization's budget has increased in 2023.

PRIVATE COMPANIES: Where will any cost savings be realized in 2023?



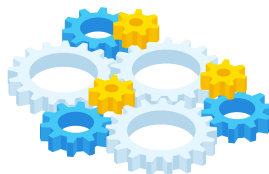
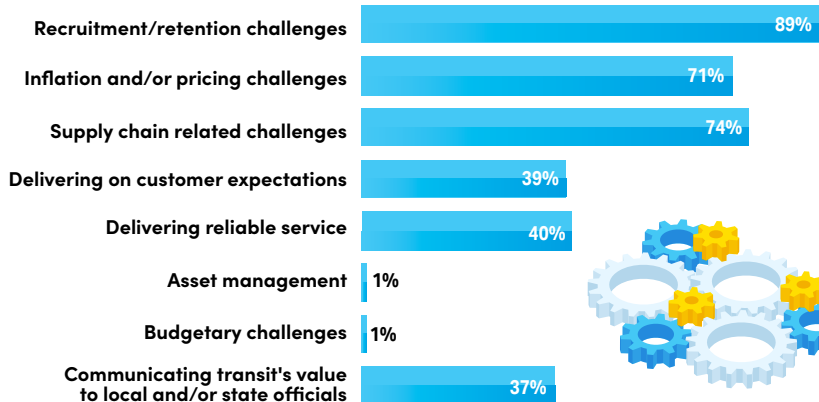
PRIVATE COMPANIES: For anticipated budget increases in 2023, where will the increase be seen?



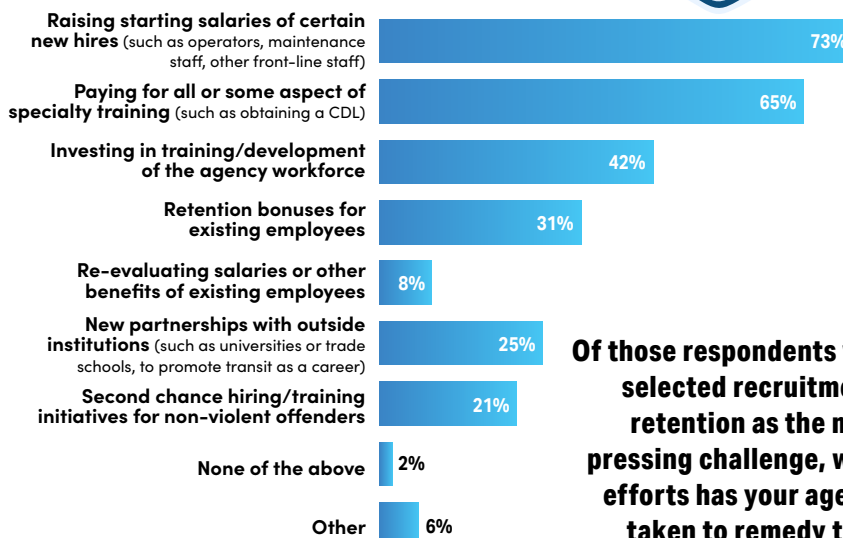
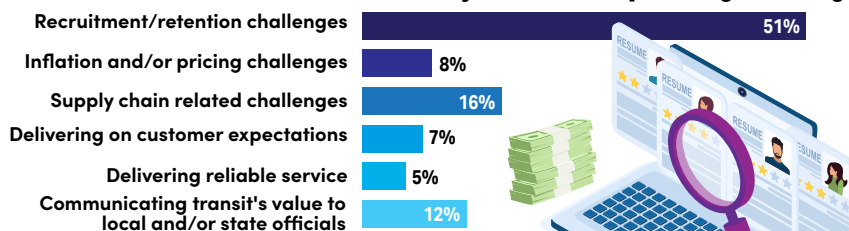
*For example through facility expansion, pausing technology upgrades, etc.

Operations: Challenges and opportunities foreseen in 2023

TRANSIT AGENCIES: What challenges are anticipated in 2023?

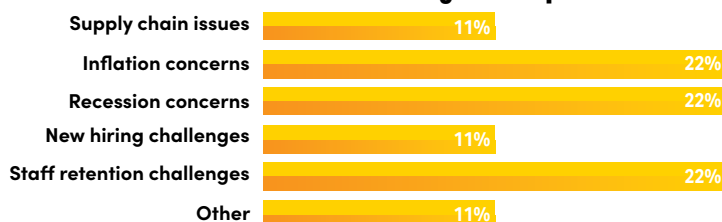


TRANSIT AGENCIES: Which would classify as the most pressing challenge?



Of those respondents who selected recruitment/retention as the most pressing challenge, what efforts has your agency taken to remedy this?

PRIVATE COMPANIES: What is the main challenge anticipated in 2023?



TRANSIT AGENCIES:

Where do you see opportunities for your agency in 2023?



42%

More contactless ways to pay for transit fare

44%

Investing in new technologies to deliver internal efficiencies

17%

Exploring zero fare options

45%

More or improved integration of mobility options or regional services

15%

New fare structures

40%

Delivering reliable service

7%

Other

57%

Investing in new technologies for improved rider experience

PRIVATE COMPANIES:

Where does your organization see opportunities in 2023?

20%

New collaborations

5%

Adding headcount

5%

The launch of new products/services

10%

Building resilience into the supply chain

10%

Improving processes

25%

Improving client/customer experience

15%

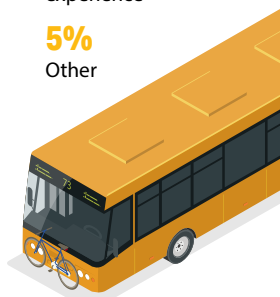
Investing in technology upgrades

5%

Other

5%

Investing in staff training/development



Oklahoma Pilot Program Providing Reliable Door-to-Door Public Transit Service

Five transit agencies in Oklahoma teamed up to form PICK transportation, a door-to-door transit service that is fully ADA compliant, operates after typical business hours and provides reliable service.

BY BRANDON LEWIS, ASSOCIATE EDITOR

For individuals who rely on public transit to go to and from work, doctor's appointments and other personal needs, finding reliable, door-to-door public transit can be a challenge. In less urban areas, such as parts of Oklahoma, transit dependent individuals faced limited booking options for service, a lack of service that was fully compliant with the Americans with Disabilities Act (ADA) and an inability to be spontaneous with their travel plans.

However, a pilot program, PICK Transportation, is aiming to resolve those challenges. In late 2018, leaders from transit agencies across the rural part of Oklahoma, including Cimarron Transit, JAMM Transit, the KI BOIS Area Transit System and Pelivan Transit, came together to create an on-demand service developed with rider input to address the challenges individuals said they faced while using public transit.

The pilot program started in the middle of the COVID-19 pandemic in 2021 with a \$1.5 Integrated Mobility Innovation grant from the Federal Transit Administration (FTA). The pilot will run until 2023.

Kendra McGeady, the transit director for Pelivan Transit, said every leader working on the PICK project wanted to make sure PICK truly stood out from other door-to-door transit agencies around the country. To successfully complete their goal, PICK leaders sent surveys out to

riders of their own agencies to see what their dream transportation system would look like.

"Almost all rural providers operate in a pre-book environment, which is how myself and the other partners operate our separate agencies as well," McGeady said. "Our riders wanted to see a more quick and on-demand service with more service hours after the typical 9-5, Monday-Friday hours that most services operate under."

Laura Corff, the transit director for Cimarron Transit, has worked in the transit industry for 24 years. In her two-plus decade career, she said her main goal has been to work with individuals with disabilities and



A PICK van.

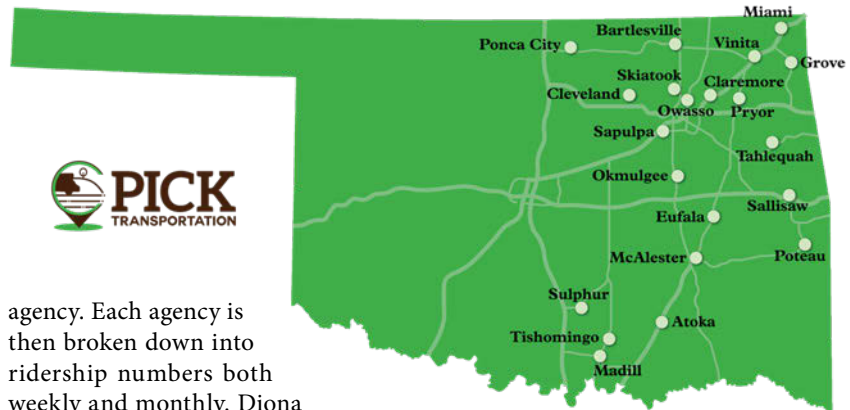
Images by PICK Transportation

those without vehicles to provide door-to-door reliable service, and that was her main goal with the PICK project.

“It has always frustrated me that an individual with a disability or without a vehicle is stuck at home if they don’t have reliable transportation,” Corff noted. “What makes PICK so unique is we are fully ADA compliant, unlike Uber or Lyft. With paratransit, there could be a lot of wait time. With us, there’s only a seven-minute wait time.”

PICK Transportation currently serves just under 23,000 square miles, which covers nearly all of eastern and southern Oklahoma and runs from 5 p.m. to 10 p.m. on weekdays and 10 a.m. to 2 p.m. on Saturdays, giving residents with irregular schedules the ability to use public transit to commute to wherever they need to go late at night and on the weekends.

Patricia Diona, the mobility manager for the PICK project, reviews the data behind each of PICK’s partners weekly. The data shows trends in ridership by



agency. Each agency is then broken down into ridership numbers both weekly and monthly. Diona compares the numbers from when the pilot program first started to the current day.

“There’s no data that suggests more riders use the service more on a certain day of the week or weekend because of the spontaneous nature of the service,” Diona said. “Some months may see an increase in ridership on a Tuesday, and then the next month, Tuesday may be the lowest day of ridership.”

Diona added the peak of ridership each weekday occurs between 5 p.m. and 6 p.m., and the two most common places people request to be taken for rides is work and shopping centers.

One of the biggest data points Diona is currently looking into is the service lines in the JAMM Transit area.

“We’re analyzing the ridership in that area to see if all the service area they are included in is exactly where it needs to be, or if we need to possibly stop serving certain areas and start changing the boundaries of the service area depending on the riders’ needs,” Diona noted.

In a world where everybody seems to have access to a smart device with an app, PICK Transportation realized that would not be the case with riders using its

A map of the counties PICK Transportation serves.

services, including older adults and people with disabilities. While PICK has an app users can download and use, there's also a universal phone number individuals can call that connects to the program's call center.

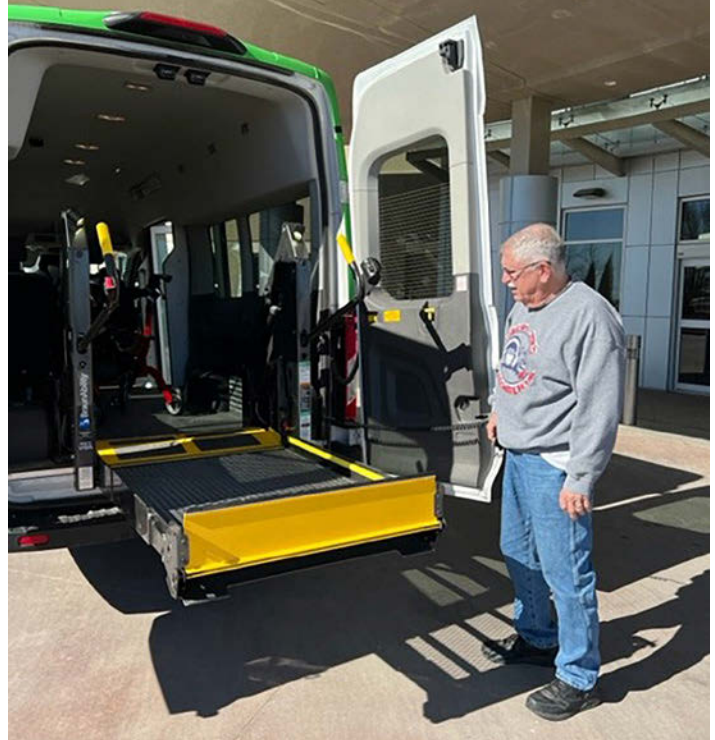
McGeady believes the call center is vital to the service's success.

"There's one number for the entire region of Oklahoma, and we have staff on hand that can assist individuals with booking rides," McGeady points out. "Between the app and the call center, there's a number of different ways people can book trips."

Corff said she is surprised at how many riders use the call center over the PICK app.

"When we first started the program, I assumed most people would have used the app to schedule their rides even though we had the call center available as another option, but we've seen people are used to calling for their rides, and so they have a level of comfort," Croff said. "If there's a problem with their ride, they can call the call center back, and they'll know it's coming because they have heard the ride has been accepted. It's definitely a peace of mind thing for sure."

PICK passenger
Kathy Sawyer.



PICK driver Larry Wilson
deploying the ramp.

Diona believes PICK is successful because of the way the agencies communicate with each other.

"Sometimes, there is an intersection of service areas because two areas are so close together," Diona noted. "The beauty of this program is the transit agencies communicate so well, and they don't have anything that prevents the other transit agency from going into their area to pick up a rider if necessary. Our goal is to move people. We want them to go where they want to go, and if it is necessary that another transit agency comes in and picks up that rider to take him or her to their destination, they will do it."

"Since day one, when me and the other transit agency leaders started this project, we set the ground rules," Diona continued. "We communicate with each other and our agency's so well. If there are any problems, we talk about them at our monthly meetings. There's a lot of pilot programs out there that feature one program and one transit agency. We

have one program and four transit agencies, so that communication is what makes PICK successful."

The current fare for trips is \$3 each way, which the program developers recognize can become expensive, especially for riders who use the service multiple times daily. McGeady says PICK does not have a specific program in place to help pay for funds, but the service does pull from her fare support experience at Pelivan Transit.

"At Pelvan Transit, we are fortunate we have a 501 (c) (3) through the Grand Gateway Economic Development Association Foundation. We also have some private funders who help us kick in money for our veteran's program, but we have certain funders who will just give a certain amount every month, and we do pull from our foundation to help people who can't meet because public transit is expensive," McGeady acknowledged.

While the current program is operating as a pilot, the leaders behind the PICK Program are willing to adjust, expand or add more partners to ensure the proj-

ect can remain successful beyond March 2023. McGeedy notes she's looking forward to seeing the door-to-door public transit service expand throughout the entire state of Oklahoma.

"In the next six months to a year, I'm hoping we can add around five new partners and new transit systems added to the service area," McGeedy said.

Corff is hoping to expand PICK's hours into the daytime.

"After the pilot portion ends in March, most of our services are looking to expand into the day," Corff stated. "Not necessarily as an all-day transportation system, but we're looking at high-volume times, which could mean starting at 3 p.m. on the weekdays instead of 5 p.m."

Corff would also like to expand services to let agencies cross county lines, which would

be a big feature for PICK, as not many agencies across the U.S. cross county lines. She knows that could be a challenge due to city limits and restrictions.

In terms of how the leaders of the project are going to continue to fund PICK after the pilot program concludes, Corff admits it's been weighing on all of her colleagues.

"That's been the cause of some sleepless nights," she said while noting the project does have funds from the FTA's Formula Grants for Rural Areas Program (Section 5311).

"There's going to be a bit of a transition," Corff added. "We'll probably have to share expenses, and we may have to switch to a new app that has a lesser cost to operate, but the call center will remain the same."

The PICK leaders know they have a bright future ahead of them

“ After the pilot portion ends in March, most of our services are looking to expand into the day. Not necessarily as an all-day transportation system, but we're looking at high-volume times, which could mean starting at 3 p.m. on the weekdays instead of 5 p.m.”

Laura Corff, transit director, Cimarron Transit

once the pilot program concludes in March. While they believe the pilot has been successful, they know the work has just begun to make PICK a top transit option in Oklahoma. With the PICK project, they feel they have accomplished their goal of making a reliable transit option for people with all different types of transportation needs. L

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The Coming Tra

from Traditional Hardware Displays
to Electronic Screens for Train Control

While North America is lagging, globally, train control HMIs have transitioned to TFT screens with buttons and full touch screen technology.

**BY BLAKE KOZOL,
CONTRIBUTOR**

Train control systems interface to operators via a device which communicates signal aspects, speeds and provide various system information in texts and graphics. Different suppliers and systems use various names for such devices such as aspect display unit (ADU) or cab display unit (CDU). In the past 20 years, there has not been significant technological change in these devices. Many are still being installed with toggle switches, manual push buttons and light arrays in trains across North America.

In the rest of the world, however, train control human machine interfaces (HMIs) have changed significantly in the past years, with many systems transitioning to TFT screens with buttons and, more recently, full touch screen technology like ones used on smart phones.

nsition

While this evolution has an obvious aesthetic appeal, the primary advantages of migrating to software-driven devices boil down to lower life-cycle costs and additional functional capabilities.

The older style HMIs contain many subcomponents – all of which must be wired together, often by hand. Deployments are sometimes a project-specific application with – for example – screen masks being custom silkscreened for each customer or application. This customization adds cost. Utilizing a software-driven display allows for a standardized hardware approach while decoupling functionality from hardware. Together, this makes the initial hardware deployment much less costly.

Life-cycle costs are also impacted in other ways. Beyond the upfront material cost improvements, the design flexibility provides for relatively easy modifications. Oftentimes, systems are changed after they have been placed in service. With traditional hardware-based HMI devices, changes to applications in the field can take years to deploy. Design modifications must be laid out and wiring and panels modified in the field or replaced entirely. For larger fleets, this is a lengthy effort and necessitates running mixed operations (with both the old and new configurations) for a considerable period of time. Software-based panels reduce the entire process time down to weeks. Software upgrades can be installed on dozens of trains per day with no hardware modifications required at all. Mixed fleet running is minimized, and the total cost of executing changes is a fraction of that associated with hardware-based devices.



Utilizing a software-driven display allows for a standardized hardware approach while decoupling functionality from hardware

Deuta America, Corp.

The functional capabilities of these newer devices are also significant. Multiple screens can be shown on the same hardware, allowing for the provision of diagnostic or maintenance data, messaging, etc. Graphics or even photos can be used to provide context, mimicking the HMI designs seen in other industrial areas such as automation and the automotive field. This can greatly improve the human factor or “cognitive ergonomics” of system design and improve operational reliability and safety.



A Heads-Up Display (HUD) for train control systems.
Deuta America, Corp.

Importantly, displayed screens, operator selections and actions can be recorded with software-based devices. This allows for important post-incident investigations and can greatly improve operator training and operational rule making design.

Both input and output functions can achieve a SIL2/3 safety level with modern devices. While most traditional hardware-based train control HMIs are not considered “fail-safe”, some do include functions which are. Being able to replicate that level of safety with software can be an important cost savings.

Maybe most importantly, as smart phones and tablets have forced almost everyone to interface with touch-screen technology, there is less objection and mistrust than in the past. Most users have a familiarity with the technology in their everyday lives.

These are among the reasons why Europe and Asia have largely transitioned to software-driven train control HMIs - a trend that is also well established in many other areas from industrial automation to the automotive environment. With such significant advantages, why has the technology not been widely adopted in North America?

Signaling and train control systems are often the most conservative and slowly evolving subsystems (such

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software displays are already used for TCMS, CCTV, etc.). People who are not familiar with using such electronics will often first question its robustness. In fact, the newer screens are more durable than hardwired devices. Capable of operating at temperatures so extreme no human operator can be expected to be present, one device type currently in service is reporting field mean time between failure values exceeding 600,000 hours, which equates to approximately 70 years. With the latest optical bonding technology, and the removal of physical keys, these devices are even more incredibly robust and reliable.

Another concern in the early years of deployment was screen brightness and the ability to read displays accurately in various light conditions. Modern train control displays offer a brightness in excess of 1,000 nits and automatically detect and adjust brightness based on ambient light sensors (just like a smartphone).

Cybersecurity concerns extend to any software-based component, and train control HMIs are no different. Modern products have native cybersecurity mechanisms such as TPM modules and secure boot processes. They are fit for deployment in the most stringent cybersecurity environments.

The historical objections to software-based train control HMIs have been overcome. Indeed, 2023 will see the first fully touchscreen train control HMIs enter revenue service in the United States in a major mass transit system. Several other projects are in the delivery stages and will be commissioned in the next years. Operators can expect the technology to continue to be deployed.

Innovations continue of course. The emerging technologies, presented at the Innotrans Trade Show in Berlin in September 2022, include a Heads-Up Display (HUD) for train control systems. These systems – currently being deployed in automobiles and heavy haul equipment – project images in the line of sight of operators, either directly on a windshield or on a transparent screen called a combiner. The advantages of HUD technologies are that critical information can be communicated without the operator having to take their eyes off of the operational field of view. Current speed, for example, can be seen without looking down or away and is projected into a field of view, which appears some distance in front of the train.

As electronic train control screens and HUD technologies are introduced into the field of train control, they will reduce costs, increase operator efficiency and comfort and, ultimately, support a better and safer experience for the traveling public. **L**

About the author



Blake Kozol is CEO of DEUTA AMERICA, Corp.

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Fare Collection:

How we pay for public transit is critical to securing its future

The future of public transit can't be solved by high-tech hardware or super sophisticated software alone – but delivering seamless and equitable fare payments solutions will be central to securing a new deal for public transit.

BY LEE BIERNBAUM, CONTRIBUTOR

The future of fare payments isn't really about fares specifically, but the future of public transit broadly. Multiple external forces are screaming as loudly as they can that public transit is a key component of the solutions the industry needs for the next 100 years. Public transportation is the glue that will hold together the needs for livable cities, less congestion, cleaner air and to drastically reduced carbon emissions.

While this may run counter to what one generally hears from some transit tech companies, the future isn't just about technology. There's no silver bullet software or hardware that will fast-track the future. The future will be driven by institutional, organizational and policy priorities and the technology deployed to eliminate the constraints of 20th or even 19th-century technology, embracing flexibility as priorities change and unforeseen needs emerge. This future is a place where transit agencies put in place clear policies and standards that enable mobility and then ensure the public and private sectors work together to deliver the service riders need.

The technology isn't the driver of the transit experience; the technology gets out of the way and becomes the unobtrusive tool riders use to comfortably get where they are going in the fastest way possible.



Adobe Stock/282681618

Account-based ticketing is an example of a technology that is critical for delivering riders a seamless experience when using public transit. It unlocks a step change in convenience by removing many of the obstacles and anxiety from the fare payment process, so riders can simply focus on where they are going and why.

Account-based ticketing means riders are no longer required to purchase tickets in advance or



to know all the fare rules and exceptions. It also allows cash-constrained riders to enjoy the self-same benefits of weekly and monthly passes based on fare capping, which automatically charges the best fare for every journey.

Account-based ticketing provides a platform to introduce these advances in fare payments, but it's also important to recognize this is asking riders, customer service agents and elected officials to do

something different and potentially difficult.

For decades, riders had to be experts in the intricacies of local fare systems and to have perfect foresight about their travel. They optimize and find the right day of the week to buy their tickets and know which month to buy a 10-trip pass because of school vacation and are aware of the one route that charges an extra \$0.25 fee because it crosses county lines.

Yet now, they hear they don't need to worry about any of this anymore: "Bring whatever fare media you want, add funds anytime and in any amount, board any time you have somewhere to go, and you'll be guaranteed to get the best deal!"

That's a pretty big change. It takes a new mindset, both for riders and transportation professionals. It takes trust, but once that hurdle is passed, there will

be room for some really innovative developments.

To move rapidly, the transit industry can run pilots and experiments, collect data on travel



Masabi



There's no silver bullet software or hardware that will fast-track the future.

patterns, enroll test groups and feed those results into the next pilot or into permanent changes and with a Software-as-a-Service (SaaS) platform, this can be done without costly change orders or years of waiting for custom development.

With a SaaS platform, a transit agency could:

- Roll out off-peak fares to encourage more non-commute trips or to manage peak hours congestion.
- Introduce novel pricing, like discounts for families traveling with children or subsidies to help people headed to dialysis treatment to ensure transportation isn't the barrier to good health.
- Offer premium fares for special event services like express buses to a big game or concert.

With tools like these, transit professionals can get really creative. They could, for example, start thinking about more dynamic pricing. Modern communications and display technology

help to stay in touch with riders more easily, and dynamic pricing is nothing new. Anyone who has ever gone to a Happy Hour has experienced dynamic pricing, as

have folks buying baseball tickets in recent years, not to mention in toll roads across the country. When fare media, validators and riders all work with an account-based ticketing system, these changes can be introduced, evaluated and changed as quickly as they are needed.

The future demands equity

Account-based ticketing opens up the possibility for lots of positive change, but how do transit authorities make sure they are bringing everyone along?

Fare equity has become a major theme in the transit community during the past five years but now is the time to zoom in: Equity of what type? For who? When someone flags equity implications, is it referring to:

- People of color or members of other historically discriminated against groups?
- Those on low incomes?
- With no bank account?
- With mobility impairments?
- With cognitive impairments?
- Who don't want to use a smartphone?
- Who don't speak the local language?
- Who prefer to use cash?
- Who prefer anonymity?

What is the transit industry's responsibility to each of these groups? They tend to be bundled together under the 'equity' banner, but the answer to the questions above will likely differ from group to group.

To equitably serve riders with physical or cognitive impair-

ments, should specialist partners be brought in rather than simply changing the fare policies?

What about income? This is something that can be addressed with fare collection and fare policy.

A major step to flatten the impacts of income disparity is to introduce fare capping via account-based ticketing – allowing people of all income levels to access the best fares previously limited to only those who could afford to pay upfront for a period pass.

As the political winds in some states veer toward zero-fare systems – without a clear replacement funding source – low-income fare programs can be an area of real opportunity here.

The costs of fare collection represent a small percentage of fare revenues. Those revenues are necessary to provide and improve the quality of the services riders care more about. In survey after survey, all riders – including low-income riders – say the most important improvements to public transit are higher frequency service and greater span of service.

Fare revenues also, of course, cover the costs of lower fares for those who need them.

What is blocking low-income programs, and how can it be addressed? The transit-centric future depends on identifying and resolving these blocks.

If it's politics, put a pilot together and prove the benefits of a low-income program don't require a system-wide zero-fare approach. If it's legislative, make the case to the elected officials. If it's about complexity, then now is a perfect time to be thinking about how to simplify this problem.

The U.S. government is offering support to solve some of the complexity surrounding low-income programs through the Federal Transit Administration's Enhancing Mobility Initiative and other grants. The question is: Will transit agencies seize this opportunity? L



About the author

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Unifying security systems

for Mass Transit

The power of a unified system is its ability to bring data together from disparate systems and departments and present it intuitively.

BY JERMAINE SANTOYA,
CONTRIBUTOR



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ost transit agencies still rely on siloed, proprietary systems for daily operations. However, due to rapid digital transformation, increasing urbanization and growing expectations from commuters and governments, transit organizations are beginning to modernize and explore ways to enable closer collaboration.

Today's commuters and municipal partners are increasingly expecting data from transit systems to be made available to support their decisions regarding which methods of



transportation to take and when. Legacy systems make this challenging since they don't always communicate with one another or provide an easy method to share data.

Getting one legacy system to talk to another often requires costly customization, and the result tends to be cumbersome and costly to maintain. Transit security systems are also becoming more complex, connecting an ever-growing number of sensors, cameras and Internet of Things (IoT) devices.

Upgrading to a modern, unified security system provides a solution. A unified system brings data from all devices and systems into one software platform, so you can see everything in one place. It can help improve collaboration, enable data collection and sharing among stakeholders, optimize daily tasks, reduce cybersecurity risks and more.

With so many opportunities, it can feel overwhelming to try to filter out the noise and figure out where to start. To keep things simple, don't begin with the technology. Begin with your mindset.

Overcoming departmental silos

Departmental silos have existed for so long that we often don't question the divisions. One group may manage buses and another manages subways or light-rail transit. Operations staff members don't talk to the maintenance team, and teams may be divided into separate groups for maintenance and infrastructure. As a result, your transit organization may be paying for duplicate security, operation systems and other redundant technology that duplicates effort and adds unnecessary bloat to your budget. Onboard systems that do not communicate with wayside infrastructure systems are often a source of redundant technology.

Making the switch to a unified system isn't just something that benefits just one team. The power of a unified system is its ability to bring data together from disparate systems and departments and present it intuitively.

A good starting point is to get everyone in the same room to talk about challenges and explore how to structure a solution that can benefit everyone. Once you have a clear understanding of your obstacles and goals, you'll have a much better idea of what technologies can support you.

Consider inviting other like-minded municipal agencies to be a part of the conversation. Transit agencies aren't unique in what they're searching for. Other departments in your town may be wrestling with similar challenges. Communicating with them early on can help you learn from each other's experiences, so you can find better solutions.



A unified system brings data from all devices and systems into one software platform, so you can see everything in one place.

For example, law enforcement agencies often have to find solutions for doing more with less and can use data gathered through the transit infrastructure. Many departments have been successful in leveraging technology to do this.

What can you learn from their successes? What mistakes did they make that you could avoid?

Consider whether there are any agencies or departments with whom you could join forces to share systems or data. Urban planning departments, for example, could benefit greatly from having more in-depth knowledge of how people move within a city or perhaps your region's



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The power of a unified system is its ability to bring data together from disparate systems and departments and present it intuitively.



About the author

Jermaine Santoya is the industry marketing manager for Genetec Inc.

department of transportation would consider partnering to reduce congestion. The more data you can share, the better view you have of how people move from here to there.

Consultants can be useful to facilitate the conversation. Talking to vendor representatives can also be helpful. Take the time to identify partners who think like you or who have the same goals you have. You want everyone at the table to be motivated to progress in the same direction.

Improving passenger experience

When onboard systems are connected to wayside systems, transit agencies can more easily optimize how to deploy fleets and reduce bottlenecks at bus stations, bus stops and parking lots. Transit authorities are just beginning to explore how powerful data from video analytics, light detection and ranging and other systems can be. Some are even experimenting with predictive analytics, so they can reroute buses to respond to anticipated spikes in demand. This type of use case is still in the early stages but will become more advanced soon.

This data can also be used to improve the passenger experi-

ence. For commuters, knowing whether a bus or train is late, or which train car is least crowded, can make a huge difference in their day. They want to be able to quickly check when the next bus is arriving, pre-pay their fare or parking fees online or reserve a parking spot for tomorrow. All of these outcomes require an approach to technology built on non-proprietary open platforms that allow easy data sharing and aggregation for analysis.

A unified system can also improve passengers' and drivers' sense of personal safety. Staff and passengers feel more secure knowing security will respond quickly and effectively if there's an incident on board a bus or near a station. When passengers report issues, having a record of what happened on board helps your team respond to the complaint. Video recordings, along with telematics data, can help to sort through the scenario to determine what happened.

Making the switch

The first step to transition to a unified system is to identify any closed systems you may have and replace them with solutions that run on open-architecture platforms. It's difficult to build a single

source of truth in a unified system if you have some data sources that don't communicate with other systems. The ideal scenario is to have everything operating on the same software. However, you can start by bringing data from open systems into a unified platform.

It's okay to take it slow. Start by identifying the biggest pain points, then fix them one at a time. Trying to do too much becomes a massive undertaking that can seem daunting. Like any journey, take it one step at a time.

For example, if you have three similar systems running, could you move towards harmonizing them into one shared system? Some common hardware like cameras, access control sensors or door controls may work perfectly well within your new unified system.

Look for the quick wins, too. You may be able to leverage some technology you already have. Perhaps you already have sensors in your subway tunnels to detect the presence of people or animals. Data from those sensors could be useful for security, operations, maintenance teams and even law enforcement.

Technology can also enable policy solutions. For example, if you have automatic license plate recognition cameras in parking lots, you could add analytics to get a better picture of how many people use those lots and create new incentives based on that. You could even designate a row of parking spots close to the station for carpooling and use video analytics to enforce this.

Technology is always advancing. Internet-connected sensors are being added to monitor air quality, keep track of battery levels on electric vehicles and even monitor driving behavior to ensure safety. More data and new possibilities will be available in the future. An open-architecture security system allows you to add new features as they become available. **L**



RAIL

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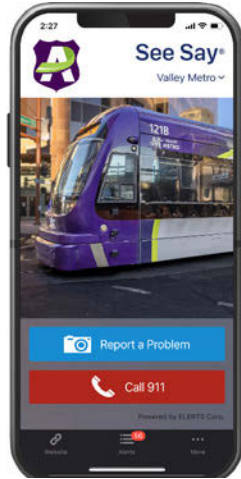


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BUS AND RAIL

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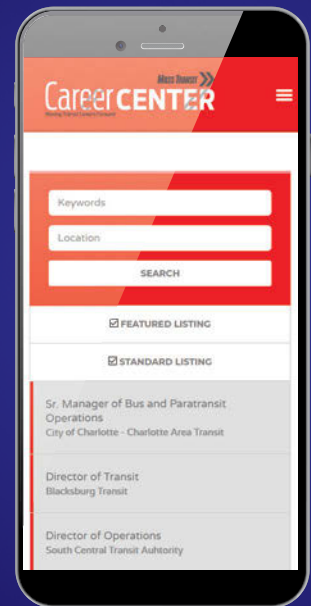
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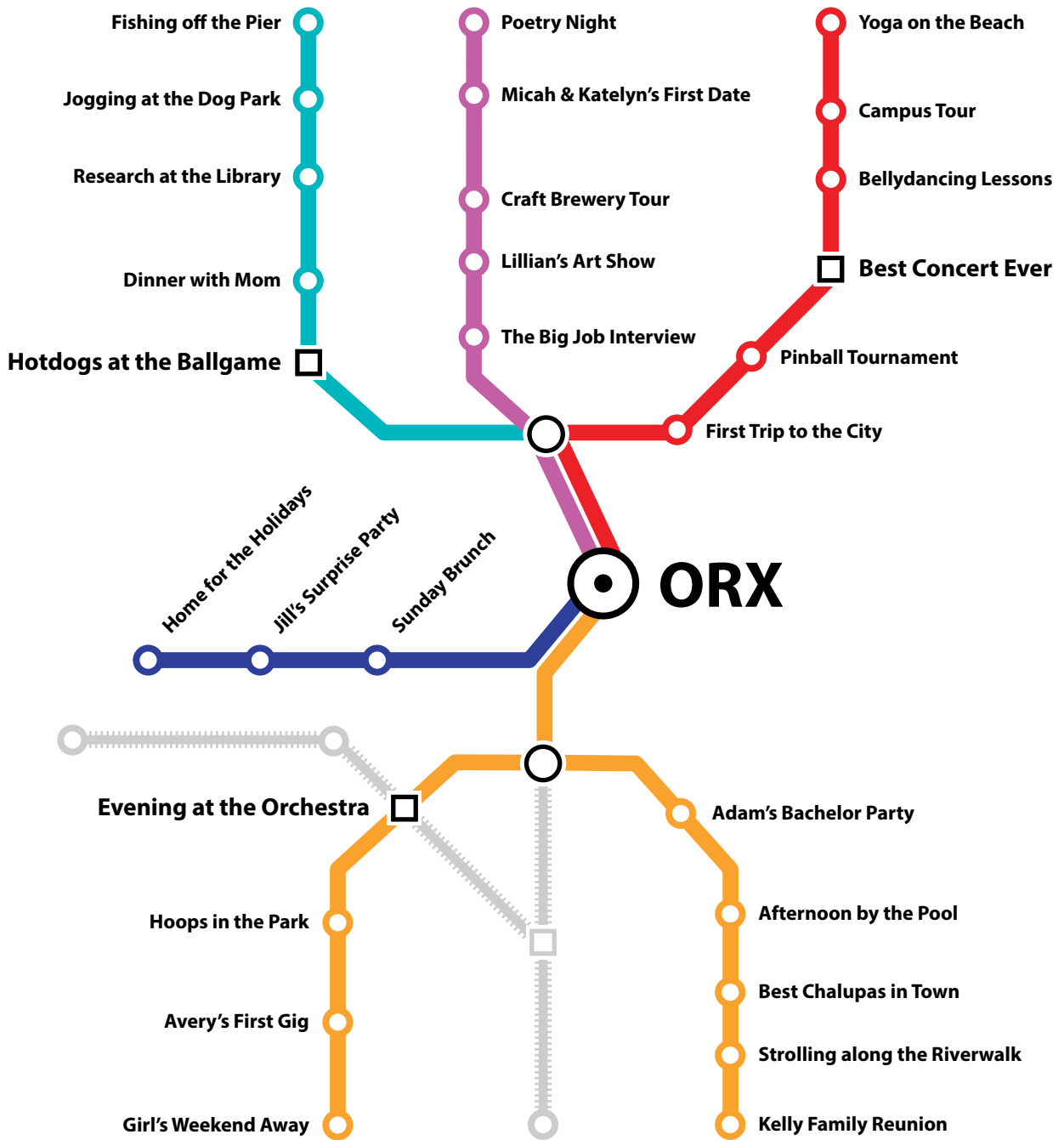
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