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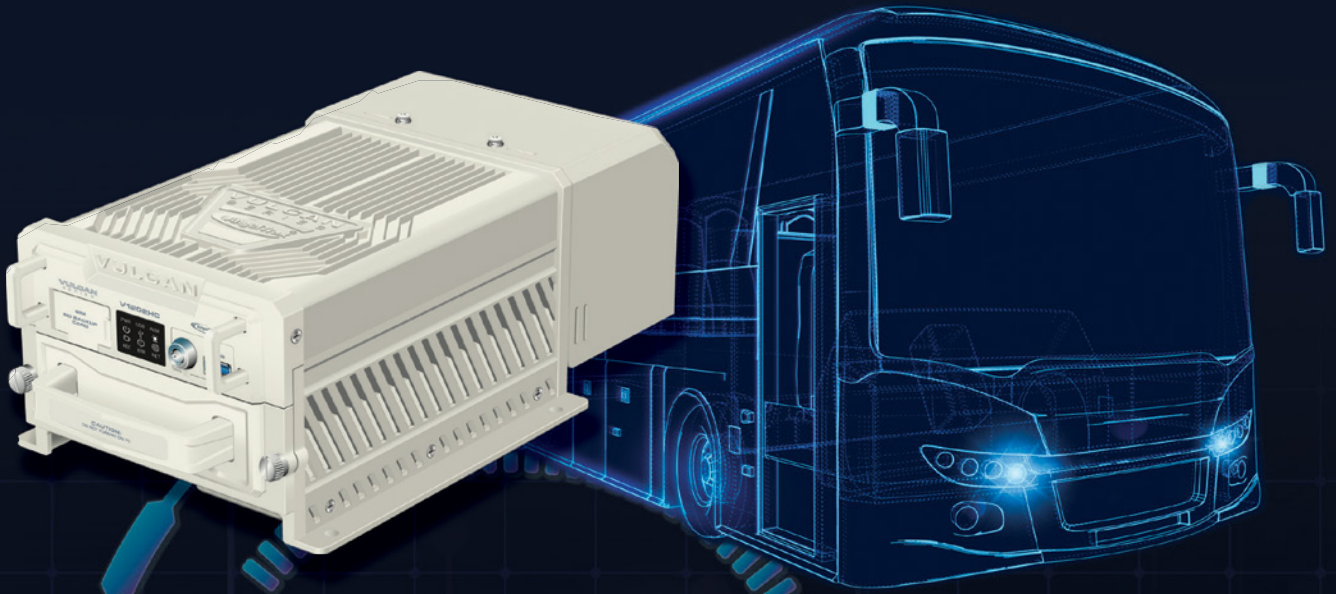
As with most challenges, collaboration with various stakeholders will provide a starting point to easing the strain.

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*What Can Be Done About
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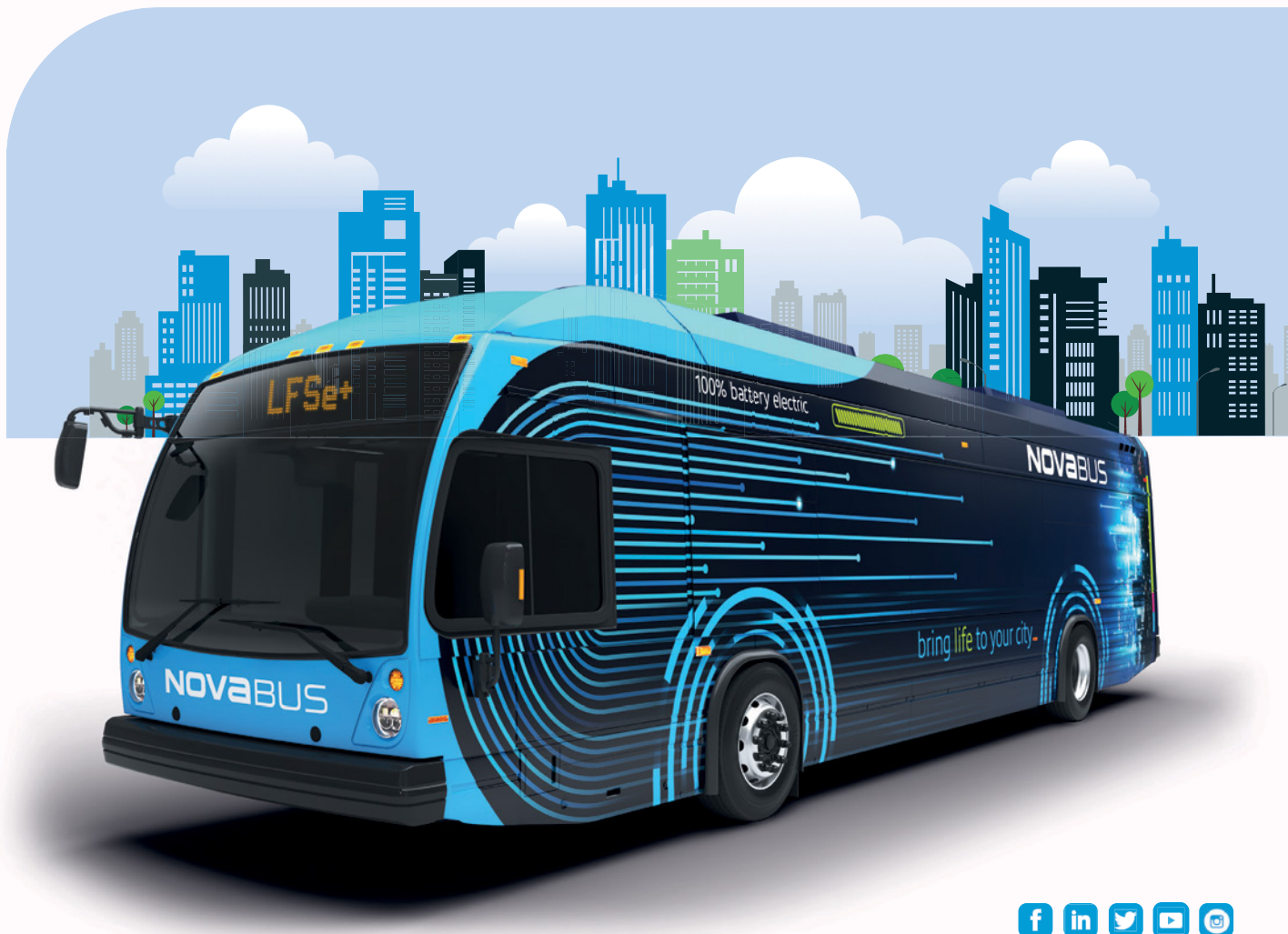


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What got readers attention in 2022

A year-end look at the magazine's top stories and how these inform us of what to expect in 2023.

I am continuing the tradition of using the final print issue of the year to highlight the magazine's most popular stories of 2022. There is a quote attributed to Maya Angelou, "You can't really know where you are going until you know where you have been." I don't know where I first heard that quote, but I think of it at the end of each year. Looking at the popular stories is a way to both reflect and gain insight into what 2023 may bring to the industry.

The magazine's website has maintained the significant gains experienced during the pandemic, which is gratifying as the entire *Mass Transit* team exists to ensure valuable information is shared among the industry. We wouldn't be here if you didn't read our articles, attend our webinars, watch our videos or engage with our posts on social media.

This year's top 100 articles were dominated by rail projects. This may be because major programs have shaken off any residual pandemic-caused delays and were able to mark progress this year, or it could further support the renewed interest in rail travel that started increasing in popularity a few years ago. Popular stories included the opening of Washington Metropolitan Area Transit Authority's Silver Line Extension, advancement of the Portal North Bridge, other developments along the Northeast Corridor, the public's first look at Caltrain's new trainsets and any story covering high-speed rail.

Technology-focused articles also piqued the interest of readers in 2022, with stories on the modernization program at San Francisco Municipal Transportation Agency, new fare gates at Massachusetts Bay Transportation Authority and the automated bus lane enforcement cameras on Metropolitan Transportation Authority all delivering high pageviews.

From the Mass Transit team, thank you for reading our coverage both online and in print. We wish you continued success in 2023.



Regarding industry personnel, the magazine's two features covering the operator recruitment crisis were well read and, we hope, useful as the industry works to solve this shared challenge. While the personnel announcements that are posted rarely crack the top articles on an individual basis, taken as a whole, they prove to be highly engaging. I do enjoy going to *Mass Transit*'s LinkedIn Page after a #PeopleOnTheMove item is posted to read the congratulatory and other supportive comments among industry colleagues. It's a reminder this industry is collaborative at its core.

From the *Mass Transit* team, thank you for reading our coverage both online and in print. We wish you continued success in 2023.

Mischa Wanek-Libman

Mischa Wanek-Libman, editor in chief

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A 2016 inspection trip organized by Amtrak and the Southern Rail Commission was meant to highlight the opportunity restoring passenger rail along the Gulf Coast could provide.

Amtrak, CSX, NS, Alabama State Port Authority reach agreement on Gulf Coast Corridor rail service

Amtrak, freight railroads CSX and Norfolk Southern and the Alabama State Port Authority issued a joint statement that they reached an agreement on rail service on the Gulf Coast Corridor. The agreement could lay the foundation for the eventual return of intercity passenger rail service between Mobile, Ala., and New Orleans, La., that has been suspended since Hurricane Katrina heavily damaged rail infrastructure in August 2005.

➔ [MassTransitmag.com/21288162](https://www.masstransitmag.com/21288162)



CIRCUIT WAS one of 10 grand prize winning projects awarded through NYSEDA's New York Clean Transportation program.

New York Clean Transportation grand prize winners awarded to 10 projects

► The New York State Energy and Research Development Authority, in

partnership with the New York State Department of Public Service and the New York State Department of Environmental Conservation, awarded \$82 million to 10 grand prize-winning projects as part of the New York Clean Transportation Prizes program. The program supports projects with funds that enhance clean transportation, improve mobility options and reduce emissions. The first phase of the program saw \$3 million in total funding awarded to 17 finalists.

➔ [MassTransitmag.com/21287758](https://www.masstransitmag.com/21287758)

Federal Railroad Administration issues list of priority projects in Northeast Corridor

► The Federal Railroad Administration (FRA) issued a list of priority projects in

the Northeast Corridor, a railroad line that spans from Boston to Washington, D.C. This list will advance a systematic approach for the improvement and development of the commuter and intercity passenger rail backbone of the region's rail network. The Project Inventory creates a project pipeline to assist Amtrak, states and the public with long-term planning that will improve service. It will guide up to \$24 billion in funding that FRA is investing in NEC intercity passenger rail service through the Federal-State Partnership for Intercity Passenger Rail Program (Partnership Program).

➔ [MassTransitmag.com/21287564](https://www.masstransitmag.com/21287564)



ACELA II Test Run on Northeast Corridor.

MCTS unveils MCTS CONNECT, its new BRT brand that will operate using electric buses

► Milwaukee County Transit System (MCTS) held an event Nov. 10, 2022, to introduce its bus rapid transit brand, as well as showcase the first of its electric buses that will operate along the corridor when it opens for service in June 2023. The MCTS CONNECT brand will operate on MCTS' East-West BRT nine-mile route that will connect downtown Milwaukee and the lakefront to Watertown Plank Road Park & Ride lot. MCTS's charge management plan calls for topping off each bus battery every third lap of the 18-mile roundtrip and then an additional two hours each night.

➔ [MassTransitmag.com/21286821](https://www.masstransitmag.com/21286821)



MCTS HELD an event on Nov. 10 that gave the community a preview of the MCTS CONNECT brand, as well as the service's first electric bus.

People in the News

Société de transport de Laval (STL)

The Société de transport de Laval (STL) appointed Josée Roy as the agency's general manager, effective Jan. 30, 2023. Roy, who will become the first woman



Roy

to lead the agency, currently serves as executive director, operations. Roy's public transport career began in 1990 with the Ministry of Transport. She joined the Agence métropolitaine des transports (AMT) in 1998 and spent 19 years advancing through the ranks until she was named director, infrastructure. Roy joined STL in 2017 as senior director of infrastructures before being promoted to executive director, operations.

➔ MassTransitmag.com/21286521

Connecticut Department of Transportation (CTDOT)

Garrett Eucalitto has been appointed as the commissioner of the Connecticut Department of Transportation (CTDOT).



Eucalitto

He will begin his second term in office early next year. Eucalitto will succeed Joseph Giulietti, who intends to leave state service at the conclusion of the governor's first term. Eucalitto is currently deputy commissioner of CTDOT, a position that he has held since January 2020. Prior to obtaining his current role, he was the transportation program director for the National Governors Association (NGA) in Washington, D.C.

➔ MassTransitmag.com/21288319

Los Angeles-San Diego-San Luis Obispo (LOSSAN)

The Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor Agency Board of Directors named Jason Jewell as managing director of the LOSSAN Rail Corridor Agency. Jew-



Jewell

ell has been serving as interim managing director since April 18, 2022. Jewell has worked for the LOSSAN Agency for seven years. Prior to his appointment earlier this year as managing director, he served as the LOSSAN agency's chief financial officer. He has extensive experience in finance and in the transportation industry. Before joining LOSSAN, he worked in accounting and finance management for more than 10 years with the Orange County Transportation Authority.

➔ MassTransitmag.com/21287539

Livermore Amador Valley Transit Authority (LAVTA)

The LAVTA Board of Directors selected Christy Wegener to serve as the agency's new executive director. Wegener has more than 20 years of transit experience and previously worked at LAVTA from 2014 through 2018 as the director of planning and operations. For the past four years, she has been the director of planning for the San Mateo County Transit District (Sam-Trans), responsible for strategic and operations planning for the district.



Wegener

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PEOPLE & PLACES



NEW MUNI service information displays are going into Muni shelters throughout San Francisco with updated features as part of SFMTA's Next Generation Customer Information System upgrades.

SFMTA surpasses midpoint in next generation shelter display installation

► As part of the San Francisco Municipal Transportation Agency (SFMTA) Next Generation Customer Information System (CIS) project, SFMTA is installing more than 800 new, larger Liquid Crystal Displays (LCDs) at Muni shelters and stations, replacing existing NextBus signs and expanding real-time information

coverage. The agency is over halfway to completion, with more than 435 new displays installed in shelters to date. The new screens will show real-time multilingual information, including graphics, maps and destinations. Additionally, SFMTA is working on new display locations with an emphasis on underserved neighborhoods, such as those identified by the Bayview Community Based Transportation Plan.

➔ [MassTransitmag.com/21286143](https://www.MassTransitmag.com/21286143)

Independent panel confirms BART Phase II single bore tunnel the right approach

► The Santa Clara Valley Transportation Authority (VTA) Board of Directors were presented with the results of an independent review panel that examined if the authority's single bore tunnel design for the second phase of a planned rail line into San Jose and Santa Clara was the right approach. The independent panel consisted of tunneling experts, led by the American Public Transportation Association (APTA). The panel's work was presented at the VTA Board Meeting on

November 3 and shows Santa Clara VTA's cutting edge tunneling methodology.

➔ [MassTransitmag.com/21286522](https://www.MassTransitmag.com/21286522)



A RENDERING of the planned single bore tunnel for the second phase of the BART extension.

WMATA opens Silver Line Extension

► The wait is over for transit users in the Washington, D.C., region: The 11.4-mile Silver Line Extension officially began service on Nov. 15. The line includes six new stations and a new rail maintenance facility. Washington Metropolitan Area Transit Authority (WMATA) representatives were joined by U.S. Department of Transportation Secretary Pete Buttigieg and other federal, state and local officials for an opening ceremony at Washington Dulles International Airport Station. The Silver Line is one of the largest capital construction projects in the United States and will provide high-quality, high-capacity transit service between the Dulles corridor and downtown D.C.

➔ [MassTransitmag.com/21287319](https://www.MassTransitmag.com/21287319)

Greater Montreal's Pie-IX BRT begin operations

► Transit providers in Greater Montréal welcomed service to Quebec's newest mobility offering: Pie-IX Bus Rapid Transit (BRT). Société de transport de Montréal (STM) and Société de transport de Laval (STL) buses will begin utilizing the 11-kilometer (6.8-mile) corridor with buses from exo scheduled to begin using the corridor in 2023. The corridor connects Saint-Martin in Laval and Pierre-De Coubertin Avenue in Montréal. The project includes 17 stations; 15 are in operation, with Jean-Talon and Belanger expected to open in 2023 once construction of a pedestrian tunnel for the future Blue Line and renovations of the Pie-IX bridge are completed.

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PEOPLE & PLACES

MORE NEWS AT A GLANCE

► Infrastructure Ontario and Metrolinx have awarded a C\$9 billion (US\$6.76 billion) contract to the Connect 6ix team to design, build, finance, operate and maintain the Ontario Line Rolling Stock, Systems, Operations and Maintenance (RSSOM) package.

➔ [MassTransitmag.com/21287756](https://www.masstransitmag.com/21287756)

► National Express Transit signed a three-year contract with the Regional Transportation Authority (RTA) of Pima County in Arizona. The services took effect Oct. 1, 2022, and builds on a partnership that began in 2012.

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People in the News

The Transportation Alliance (TTA)

The Transportation Alliance (TTA) has named Abena Bonso-Bruce executive director.

Bonso-Bruce will begin her tenure on Jan. 1, 2023. She will succeed TTA's longest serving CEO, Alfred LaGasse, who has worked at the organization for more than 40 years. Prior to joining TTA, Bonso-Bruce served as the assistant director of program management at the International Association of Fire Chiefs, an 11,000-member organization. As assistant director, Bonso-Bruce managed more than \$8.5 million in federal grants, focusing on firefighter recruitment and retention, as well as Diversity, Equity, and Inclusion initiatives.

➔ [MassTransitmag.com/21288002](https://www.masstransitmag.com/21288002)



Bonso-Bruce

San Diego Metropolitan Transit System (MTS)

The San Diego MTS has named Brian Riley the agency's new chief operating officer of Rail.

Riley, who started his career at MTS as a train operator in 1999 and most recently served as superintendent of transportation, will now oversee 555 operations and maintenance employees. Riley will be responsible for MTS rail operations, light rail vehicle maintenance, facilities maintenance, maintenance of wayside, safety and state and federal regulatory compliance. Riley takes over for Wayne Terry, who recently retired after working at the agency for 42 years.

➔ [MassTransitmag.com/21287367](https://www.masstransitmag.com/21287367)



Riley

Palm Tran

Palm Tran Public Transportation named Christian G. Londono director of support services.

He is a dedicated transit professional with nine years of transit experience in the areas of transit planning, strategic planning, operations, contract management, data analysis and performance management. He started his career at Palm Tran in the paratransit division (Connection) in the reservations department in 2013. Londono moved up through the ranks, performing different roles and contributing to the advancement of the organization.

➔ [MassTransitmag.com/21286448](https://www.masstransitmag.com/21286448)



Londono

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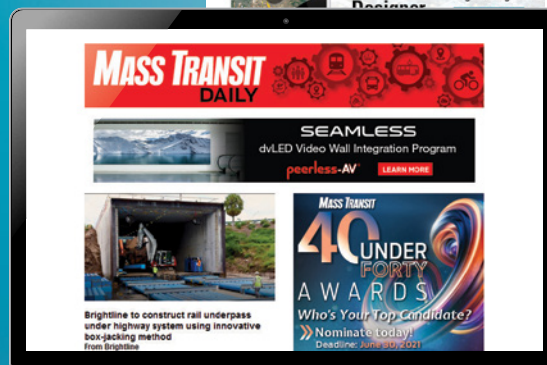
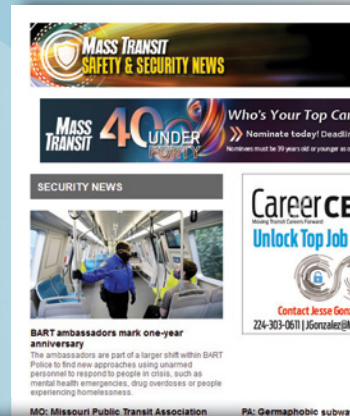


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MASS TRANSIT

BEST PRACTICES FOR INTEGRATED MOBILITY

A Historic Federal Transit Administration Grant Boosts Innovation and Customer Impact

Leaning into innovation while staying focused on foundational aspects of transit service has resulted in record amounts of federal funding that will further enhance transit in the Memphis area.



Gary Rosenfeld
CEO, Memphis Area Transit Authority

IN THE PAST YEAR, THE MEMPHIS AREA

Transit Authority (MATA) has made great strides, and we accomplished much of it by engaging and listening to our stakeholders. Not only must we keep the basics in the forefront: Excellent customer service, positive rider experience and well-equipped staff, but moving into transit practices of the future was necessary.

We made innovation a priority area, and in implementing creative strategies, we were in turn, awarded more resources to do that work.

We recently received multiple grants from the Federal Transit Administration totaling \$139.8 million, the largest federal investment received in our 47-year history.

The investment of \$76 million included \$54 million dollars earmarked for a new operations and maintenance facility and \$22 million to purchase clean electric buses. Nearly \$64 million received earlier this year will be used for an innovation corridor bus rapid transit system, which will connect our downtown to the medical district and our flagship school, the University of Memphis, all high-traffic areas.

More important than the dollars themselves is the impact and change the funding will bring to our service area. It will improve transit services for our riders, as well as improve work settings for our employees. Additionally, it will allow us to further lean into innovation to enhance our operations and ultimately, boost the local economy and environment.

The grant came on the heels of another historic milestone in our organization and city overall when Memphis City Council and Shelby County

Commission each voted to grant multi-million dollar dedicated funding to MATA. While many other cities already receive dedicated funding from their local governments, we consider it a win and a healthy start to impact more residents.

To understand the weight of this total funding, let's consider the challenges we've been navigating in recent years.

By and large, public transportation nationally had been underfunded. As CARES Act funds for pandemic support dwindled and ridership increased, the extreme need for increased funding was illuminated once again.

Public transit is not a last resort, but a necessary component of a vibrant and forward-moving community.

MATA is one of many public transportation agencies that experienced the effects of the national driver shortage brought on by the pandemic. A recent Transit Center report says more than nine in 10 transit agencies are having hiring challenges, with operators or drivers being the most difficult positions to fill. Nearly 75 percent of providers were forced to cut or delay services as a result.



Self+Tucker Architects

A RENDERING of a bus stop that would be part of future service on mConnect BRT in Memphis.


To avoid reducing services, we leaned into innovation and sensible operations to meet our customers' needs, becoming one of the first agencies nationwide to adopt on-demand transit, Ready! by MATA.

Operated in four areas of our service area, which is listed as the No. 1 car-dependent metro area in the country, well over 100,000 trips have been booked in less than one year. A neighboring city in our tri-state area has adopted on-demand services to bridge its own transit gaps. There are requests from residents for expansion to more areas, and dedicated funding will make that possible. Public transit is not a last resort but a necessary component of a vibrant and forward-moving community.

Aligned with our focus on innovation, we also recently partnered with LeMoyne-Owen College, the city's only Historically Black College and University (HBCU) for the first ever Go901 Tech Team. The Go901 Tech Team will answer customers'

requests for tech support. This team of students will help Memphians navigate new technologies, enabling them to use the Go901 app to perform various key tasks including scheduling, purchasing of tickets and fares and even track their rides.

In preparation for even more innovative strategies, including the rollout of a new fare card system, we are engaging in community feedback to ensure they understand how we are spending the funds awarded to us and grant their request to transition them into transit practices of the future.

The community, as well our industry peers, have welcomed the innovation with open arms. Our team received a coveted Innovation Award at the COMTO Industry Awards this summer, and I was honored to receive the Urban CEO of the Year by the Tennessee Public Transportation Association. More than recognition, the proof of our efforts is MATA customers attending to their needs—going to work, school, health visits and to improve their quality of life. 

Ottawa LRT Stage 1: 103 Lessons on Building a Better Rail Line

A report on the project by a provincial commission sheds light on the project's "persistent failures" and has stoked debate about the future of P3 projects.

By **Mischa Wanek-Libman**, editor in chief

Note from the editor: The September issue included a column discussing the importance of lessons learned when projects do not go to plan. The challenges in the construction and operation of Ottawa's Line 1 light-rail project (LRT), and a final report from the Ottawa Light Rail Transit Public Inquiry published at the end of November offer a chance to explore the topic more.

The opening of the Confederation Line, which is operated as OC Transpo Line 1 in Ottawa, Ontario, was supposed to be the delivery of "a transportation system worthy of one of the world's leading capital cities."

The 12.5-kilometer (7.8-mile) LRT project was the largest transportation infrastructure project in the city since the construction of the Rideau Canal in the early 19th Century. Even before the Sept. 14, 2019, opening, the line had experienced engineering challenges, such as a sink hole on Rideau Street, construction delays and animus among the project's two key stakeholders: The city of Ottawa and Rideau Transit Group (RTG) and the consortium tasked with

the design, construction, finance and maintenance of the first phase of the Ottawa LRT project through a public-private partnership (P3).

Following the light-rail project's opening, the line continued to experience a series of incidents ranging from delays in service to maintenance issues and two derailments in a six-week window. The compounding issues prompted the government of Ontario to establish the Ottawa Light Rail Transit Commission at the end of 2021 and mandated the commission investigate the commercial and technical circumstances that led to the breakdowns and derailments of Stage 1.

Justice William Hourigan, a former chair of the litigation department at Fasken Martineau with more than 25 years of experience in law and public service, was appointed to serve as commissioner. After 18 public hearings, a P3 expert panel and nearly 100 interviews with various project stakeholders, the final 664-page report of the Ottawa Light Rail Transit Public Inquiry was released on Nov. 30.

The final report from the inquiry names several reasons "why" the challenges arose and includes 103



A CONFEDERATION
Line train shortly before the line opened for revenue service in 2019.

recommendations for how to fix the ongoing issues with the line and ensure they do not reoccur on other major infrastructure projects.

The commissioner found several reasons behind the delivery of the unreliable light-rail line, including:

- The city chose unproven technology for the trains that strained the limits of what an LRT system could do.
- RTG did not coordinate the work of its sub-contractors and failed to ensure the integration of the various systems and components.
- An adversarial relationship developed between the city and RTG.
- The city rushed the LRT system into service before it was ready.
- RTG and its subcontractors did not provide adequate maintenance.



P3 Minus 'Partnership'

The use of the P3 model was thoroughly examined in this report, with Commissioner Hourigan writing it is tempting to give a simple answer to the question: 'Was the use of a P3 model wise?' He cautions the answer is not simple.

The report notes the perceived benefit of a P3 model is the transfer of risk but notes this project was one where "the downsides to the perceived advantages of a P3 model were in many ways realized." These included the city being left in a position with little insight or control, and when it enforced its contractual rights, fuelled an adversarial relationship with RTG. Additionally, the entity that signed the project agreement and compa-

nies performing subcontracts did not work effectively together.

"The ultimate result is the city's biggest infrastructure project risks being operated and maintained though a largely dysfunctional partnership, which can come with substantial legal costs," the report included.

Hourigan said while the city believed the P3 model was its only choice, market shifts, specifically with large contractors not as eager to bid on risk-heavy large projects, may make the P3 version used to deliver the first stage of the project obsolete.

"I recommend that all project delivery models be considered and that proceeding with a pre-conceived notion of the optimal



AN IMAGE showing damage to an O-Train following a September 2021 derailment that TSB determined to be caused by 12 bolts that failed because they were not adequately torqued when installed during refurbishment.



City of Ottawa

model should be avoided. Second, I note that contracts for transit projects have changed since the [Ottawa LRT State 1] project and recommend that government agencies should be responsive to changing market realities. Third, I propose a set of objective criteria to be used to assess the best delivery model for a given project," Hourigan wrote.

In response to the P3 evaluations in the report, the Canadian Council for Public-Private Partnerships (CCPPP) issued a statement pushing back on the reports assessment that a similarly structured P3 project would not exist in the future.

"While it is true there are many options in the procurement 'tool-box' for governments to consider, public-private partnerships have a demonstrated track record where the model delivers value, innova-

tion and sustainability for taxpayers," said Lisa Mitchell, president and CEO of CCCPP.

Mitchell notes the P3 model has been used to deliver everything from hospitals to highways to transit systems and wastewater plants.

"The model was adopted to combat the all too frequent delays and cost overruns experienced on traditionally procured projects – something upon which the model has time and again delivered," Mitchell said.

Mitchell's statement noted the complex nature of the projects like the Ottawa LRT Stage 1 and explained "a singular transit project is never an island in and of itself."

"The Council emphasizes that the third 'p' in P3s — partnerships — is arguably the most critical. We commend the inquiry for stressing how partnerships are key to successfully delivering, operating

A FINAL report looking into the challenges of the first stage of the Ottawa LRT project determined "persistent failures" in several areas led to "egregious violations of the public trust" that ultimately manifested in substandard and unreliable service.

and maintaining infrastructure while also sustaining and growing public trust. A strong partnership between the public and private partners ensures challenges are met and resolved together, striking a balance that avoids a zero-sum game in order to fully achieve the long-term benefits of the agreement. Collaboration is a necessity," Mitchell said.

What Happens Now?

The second stage of the Ottawa LRT project is well underway, and with the government of Ontario committing an investment of up to C\$1.2 billion (US\$880 million) to

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

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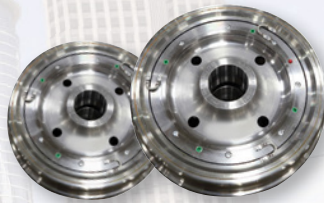
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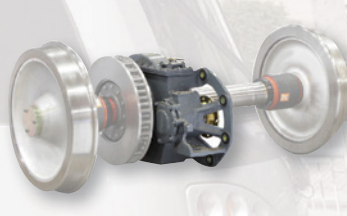
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the second stage of the project, the pressure to fix what is broken is immense. Additionally, ongoing maintenance issues with the first stage will need to be addressed, specifically the wheel/rail interface.

The day after the report was published, Ontario Premier Doug Ford said the project was in “shambles” and “stunk to high heaven” and criticized former Ottawa Mayor Jim Watson and former Ottawa City Manager Steve Kanellakos, who resigned Nov. 28, for their lack of transparency with the project.

Ottawa Mayor Mark Sutcliffe, who assumed office 15 days before the final report was published, noted he shared the “frustration and disappointment of so many Ottawa residents” and laid out three steps the city will take to implement the report’s recommendations and begin to fix ongoing issues with the rail service.

Mayor Sutcliffe’s three-point plan includes directing city staff to develop an action plan to implement key recommendations, ensure there is increased monitoring and appropriate oversight of the system and ensure transparency and regular reporting about construction and maintenance is shared with both the city council and the city’s finance and economic development committee. He said these updates will include timely updates on system performance, testing and modifications to safety and reliability criteria.

When asked about how he plans to build back trust in Ottawa citizens, Mayor Sutcliffe returned to the foundational promise of the Ottawa LRT project: Quality service.

“It’s all going to come down to the service people receive, and that’s what’s going to restore their confidence,” Sutcliffe said. “I’m hopeful if we adopt these recommendations and deliver a better service for people they will use the train more often.”

RTG said it looks forward to working with the mayor, city council and city staff to address the issues raised in the report.

“We acknowledge that all parties, including RTG and its subcontractors, have work to do to restore the public’s confidence in the city’s light-rail system. That work starts with a renewed commitment to working together on a path forward in the spirit of partnership required of all of us,” the consortium included in a statement. **MT**

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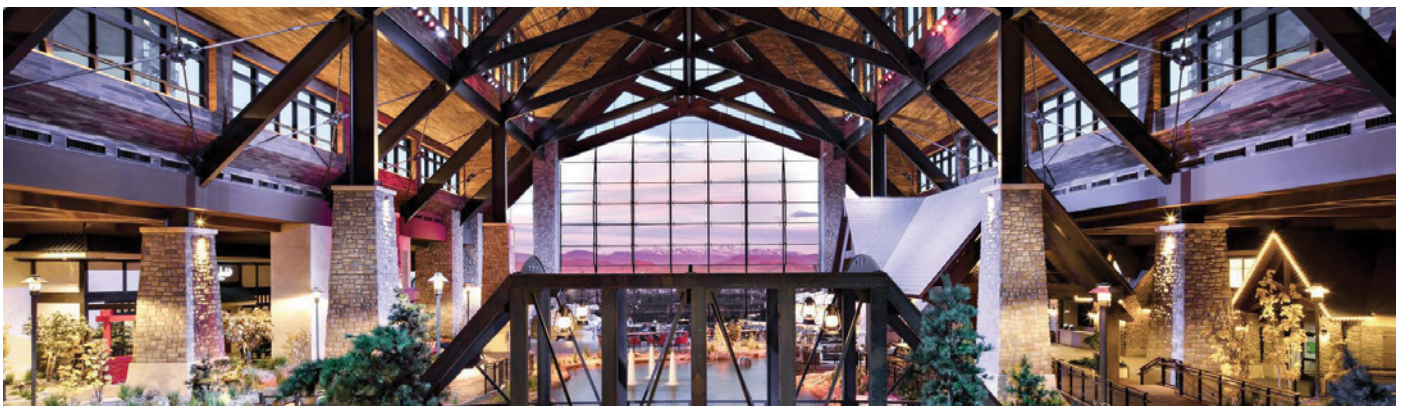
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What Can Be Done About Transit's Supply Chain Challenges?

As with most challenges, collaboration with various stakeholders will provide a starting point to easing the strain.

By **Mischa Wanek-Libman**, editor in chief

The North American transit industry has not been immune to global supply chain issues. Material shortages have delayed rail projects and the delivery of various transit vehicles.

Issues have even impacted the supply of plastic cards used for fare collection. In October, Bay Area Rapid Transit and Metropolitan Transportation Commission urged customers to use a mobile version of the region's Clipper card to pay for transit fares and temporarily reprogrammed some ticket vending machines to issue old-style paper tickets.

One segment to be impacted particularly hard by these issues has been the rural, small city, paratransit and nonemergency medical transportation providers. These mobility providers have experienced cancellations of small bus contracts, price increases between 30 and 70 percent and growing wait times to receive delivery of these vehicles.

The estimated backlog of 20,000 vehicles is expected to grow significantly in 2023 and may take five to seven years to recover.

According to a Community Transportation Association of America (CTAA) survey in August, these factors have led to 80 percent of respondents feeling highly concerned with the state of standard vehicle replacements.

CTAA, with the American Public Transportation Association (APTA) and the American Association of State Highway and Transportation Officials, sent a letter to U.S. Department of Transportation Secretary Pete Buttigieg requesting the department's assistance to make more small bus chassis available to the market and streamline procurement regulations.

The organizations recognized the historic levels of funding available to public transit through the Infrastructure Investment and Jobs Act but expressed concern the



“burgeoning crisis in the small bus industry” threatens to stifle the impact of the act on the transit industry.

Transit industry and supply chain experts have suggested courses of action that will require stakeholder collaboration, a willingness to shake up the status quo and readiness to invest resources in developing more adaptable supply chains.

Manufacturing Base's Big Squeeze

The transit industry's manufacturing base is experiencing extreme inflationary pressures, pricing volatility and a host of other challenges that are culminating into a giant vise that's placing the base under tremendous pressure.

Ray Melleady, executive vice president of United Safety and Survivability Corporation, explains the mobility market has found itself at the center of a perfect storm of factors. First, the market is driven largely by unique specifications written for an end user. Original equipment manufacturers, while building their own product, are also using an integration process to marry unique elements into a finished product, which creates several points of potential increase or change among primary, secondary and tertiary suppliers.

Second, the Producer Price Index (PPI) published by U.S. Bureau of Labor Statistics, which measures the average change over time in selling prices of certain products including buses, railcars and construction projects, is a trailing indicator that cannot accurately reflect cost change during rapid inflationary cycles.

“We've had these indices that were fairly predictable with nominal inflation, but toward the tail end of the pandemic, we saw inflationary pressures that have never been seen in this industry and the indices did not reflect real cost,” explained Melleady.

According to APTA, the PPI for Transportation Equipment (Truck and Bus Bodies) increased by 14.6 percent between March 2021 to March 2022. APTA

notes inflation experienced over the course of a year is now occurring in a single month.

“There has to be some shared perspective on what escalation looks like over time in order for price to be predictable to the end user and risk avoidant to the manufacturer or construction provider,” said Melleady. “It is financially impossible to project what pricing will be in four years. I would strongly urge the folks who are involved with procurement, and the folks who are involved with any bid process to look at ways to implement legitimate escalation clauses and trigger dates that mitigate risk over time for the manufacturer and provide certainty for the end user.”

Melleady, who has decades of experience working on the private and public sides of the transit industry, has witnessed the industry find its unified voice to shift views of what transit service is and can be to communities and raise awareness that delivered record levels of investment. Collaboration will again be required to lift the industry out of this challenging situation.

“Transit properties want and need a manufacturer of a bus or rail car to be healthy long-term. We've seen that movie before, where a manufacturer doesn't successfully navigate the costs associated with a project, and they aren't around to support that product over its useful life – there are no winners in that scenario,” said Melleady.

In the short term, Melleady believes having an open dialogue between end users and the manufacturers would benefit both and ensure the sustainability of the manufacturing base.

“It is mutually beneficial for contracting partners to sit down and talk reasonably through these challenges with a level of transparency that [end users and manufacturers] feel comfortable in making necessary adjustments,” said Melleady. “The FTA made it clear that it's acceptable to do this with federally funded contracts.

Earlier this year, the FTA issued a letter addressing contract modifications and outlining what is

80 percent
of respondents to a CTAA survey feel highly concerned with the state of standard vehicle replacements.

Community Transportation Association of America

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“Adjusting a contract according to an agreed upon index is the way to make sure pricing is reflective of time.”

-RAY MELLEADY,
executive vice
president of
United Safety
and Survivability
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permissible under current law and regulations. The letter notes the ability of parties in an existing federally funded contract to modify the contract for a variety of reasons, including price adjustments. FTA’s letter directed further questions to its regional office team.

Longer term, Melleady would like to see the U.S. Bureau of Labor Statistics indices restructured and he believes APTA provides a platform for the industry to work together on this effort.

“The indices should be reconstructed to contain newer technologies and components more commonly used in modern bus and rail manufacturing. Unique or blended producer price indexes would be available for Bus, Rail, Construction and Service contracts that would, by design, mitigate long-term risk for the supplier and budget certainty for the buyer,” he said.

In addition to making sure these indices are bucketed properly, Melleady says another major factor is the trigger date, noting the time between Notice to Proceed (NTP) and a project start date can be years with significant impact to the supplier.

“The NTP and the trigger of the pricing should be connected to an index which incentivizes both the manufacture and the end user to set and agree upon a reasonable date to trigger inflationary clauses. Adjusting a contract according to an agreed upon index is the way to make sure pricing is reflective of time,” explained Melleady.

Despite the immediate challenges, Melleady, a self-described optimistic thinker, has a brighter outlook for the future.

“Moving from traditional to strategic procurement can reduce risk and lower the overall cost of major purchases. We will work together to get through the immediate challenge of supply chain disruptions and hyperinflation and longer term, I’m optimistic about the manufacturing base and our ability to provide innovative products that move people in towns and cities across the United States,” he said.

Shift Toward Adaptability

Gary A. Smith, CPIM-F, CSCP-F, CLTD-F, has more than 40 years in supply chain management and is a recent retiree from the transit industry. He continues to speak on supply chain, conducts training and shares his expertise in thought-provoking articles, including a trio of pieces published in *Supply Chain Management Review* examining supply chain best practices post-COVID.

“If you look at successful organizations in the private sector, they are the ones that have world class supply chains, and mass transit needs to take a page from their playbook because we need to keep our buses rolling,” Smith said.

Keeping equipment moving was a goal Smith described as sacred when he worked in transit, and he explains a resilient, adaptable supply chain is one way every entity in the public sector can deliver on a similar goal.

“Supply chains need to change,” Smith said. “Adaptability equals agility plus resilience, where resilience, is the ability to absorb a change quickly and agility is the ability to pivot and come up with a new way of doing something.”

Smith recommends eight steps to build a more adaptable supply chain:

1. Create end-to-end visibility in the supply chain;
2. Investment in technology that supports this visibility;
3. Continuous improvement should be implemented throughout the entire company;
4. Planning should be emphasized over forecasting;
5. Supplier and customer bases should be segmented;
6. A supply chain risk analysis plan should be developed;
7. Transition away from transactional purchasing toward procurement and collaboration; and
8. Implement sales and operations planning as a process to balance supply and demand.

“Supply chain is one of the ways to be able to control. While we talk about cost reduction, we really need to focus on reducing risk in the supply chain, which means knowing your suppliers – from tier 1 to tier 3 - and knowing their issues as well. It’s all part of creating end-to-end visibility and reducing risk,” Smith said.

Smith notes there is not a “magic bullet” to solve supply chain challenges concerning risk and visibility but does say there are various software platforms available that are worth the investment to assist in the endeavor. He says sometimes convincing the right people this is an investment worth making can be a challenge because the platform is not customer-facing.

“It’s hard to get people excited about a system no one sees or to convince them of the ‘bang for the buck’ versus, for example, a new train or something that gives you better lighting on a bus. The result is public sector systems that are a generation behind,” Smith said.

While the decision to investment in supply chain management systems comes from the top of an organization down, implementing continuous improvement is a way to build resilience from the bottom up and provides common processes and language that can improve internal and external collaboration.

“Continuous improvement is something people can wrap their heads around, and it’s not just supply chain that can be improved. Mechanical and administrative processes can be improved, and it’s a relatively easy thing to teach. Continuous improvement gives everyone the same language, so you can really communicate,” Smith said. “In the next decade, due to things like climate change and [the retirement of] baby boomers from the workforce, we’re going to be in state of continuous disruption, and how quickly a problem can be dealt with and how an organization is able to adapt will determine what companies survive.”

For mass transit organizations, the question will be how much more effective or less effective they will be, and the supply chain is a key to that.” **MT**

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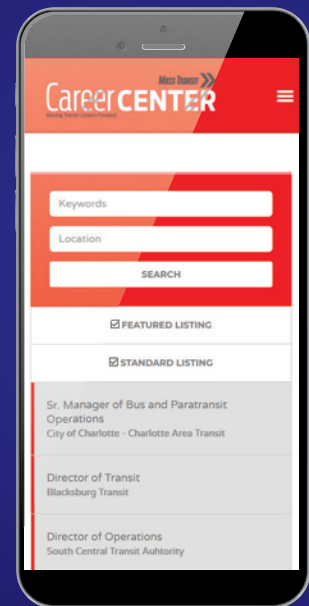
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Steve Quismundo, Palm Tran PR

As Hurricane Nicole Took Aim at Florida, Palm Tran Aided Thousands

Palm Tran lifted fares and provided more than 5,000 rides, assisting residents in preparing for the storm and evacuating them to shelters.

By **Ivonne Perez**, contributor

On the morning of Nov. 9, 2022, with waves of rain and wind increasing in frequency and intensity in southeast Florida, close to a dozen homeless people began to gather outside the Delray Beach Library, waiting to catch a Palm Tran fixed-route

bus to a shelter where they could weather impending Hurricane Nicole in safety.

"I didn't have anywhere to go," said Joshua Nebine, who patiently waited for the bus to arrive with a backpack and a book in hand.

"I don't know why people would pass up this opportunity, I've been

PALM TRAN Connection Service Coordinator Israel Aray helps Bettye-Jane Bonin off a Palm Tran Connection paratransit passenger van that arrived at the Special Needs Evacuation Center at the South Florida Fairgrounds on Wednesday, Nov. 9, 2022. Bonin was picked up at her home and brought to the shelter hours before Hurricane Nicole was to make landfall on the east coast of Florida.

outdoors for too many storms," John Gormley said to Delray Beach Police Officer Damien Ferraiolo, who was there as the community outreach officer assisting and encouraging the area's homeless population to get to safety.

Palm Beach County was under a hurricane warning and two zones under mandatory evacuation, which included mobile homes, barrier islands and low-lying areas as Tropical Storm Nicole formed into a hurricane with a predicted landfall on the east coast of Florida in the early morning hours of Thursday, Nov. 10.

Just hours before the projected impact, Palm Tran lifted fares and

“We prepare every year for scenarios of a direct hit from a hurricane which made this emergency response for the storm particularly smooth.”

CLINTON B. FORBES,
Palm Tran Executive
Director

provided more than 5,000 rides, assisting residents in preparing for the storm and evacuating them to shelters. All transportation services were completed by noon Wednesday, Nov. 9.

“We prepare every year for scenarios of a direct hit from a hurricane, which made this emergency response for the storm particularly smooth, and when a storm threatens Palm Beach County, Palm Tran is there to help the community,” said Palm Tran Executive Director Clinton B. Forbes. “Our Palm Tran team acted quickly. We were organized, we were able to get all our staff to designated areas, schedule necessary pickups for our Palm Tran Connection paratransit riders and also coordinate with local and county officials to make sure the most vulnerable in our community remained safe.”

At the Emergency Operations Center, Palm Tran Connection paratransit staff worked quickly to organize and schedule needed trips, including to the Special Needs Shelters located at the South Florida Fairgrounds. Under the leadership of Incident Commander Verdenia C. Baker, Palm Tran staff helped those with medical needs off paratransit vehicles and to safety at the Special Needs Shelter. Additionally, Palm Tran staff from all divisions assisted in checking in evacuees at two general public shelters, with several evacuees who were transported stating how grateful they were for the help in getting to safety.

Palm Tran fixed-route continued services and coordinated transportation to shelters for the homeless community by establishing four designated pickup locations. One of those stops was the Delray Beach library. Palm Tran operated until winds exceeded tropical storm force, requiring service to be suspended.

“I’m proud of our operations team; they worked diligently and got riders to safety in time to take all buses off the road by noon, securing the safety of our bus operators and staff,” said Charlie Boettiger, senior manager of fixed-route operations. “We kept the community and our staff safe, and we were ready to be back on the road as soon as the conditions improved and county officials declared it safe.”

Hurricane Nicole made landfall as a Category 1 storm just south of Vero Beach, sparing Palm Beach County of its strong winds and storm surge. Palm Beach County did experience flooding and coastal erosion due to coinciding king tide and storm conditions. The weather was mostly cleared by sunrise, and hurricane and tropical storm warnings were lifted by late morning. Palm Tran fixed-route, Go Glades dial-a-ride service and Palm Tran Connection paratransit service returned to normal operations at noon Thursday, Nov. 10, 24 hours after suspending service.

“We are grateful to everyone who came together to make sure our residents remained safe and secure during the storm,” Baker said. “This is a county of great leaders who have compassion for our citizens and commitment to serve. While we were spared from a direct landfall from Hurricane Nicole, we were able to reflect on how well the systems we have in place for emergencies work, and I am proud of our county officials and departments.” **MT**

Ivonne Perez is the senior public relations specialist at Palm Tran.



SUSAN EPSTEIN settling into the Special Needs Center at the South Florida Fair Grounds. She was picked up at her home and transported to the shelter by Palm Tran Connection paratransit service on Wednesday, Nov. 8, 2022.



INCIDENT COMMANDER Verdenia C. Baker (center) with a group of volunteers.



A FEW from the homeless community in Palm Beach County being transported to a nearby shelter on a Palm Tran fixed-route bus on Wednesday, Nov. 9, 2022.



In a future where EVs become the norm rather than the exception, public transit agencies will face a range of new variables they will need to juggle.

By **Anthony Allard**,
contributor

ELECTRIFYING PUBLIC TRANSIT: **Evolving Toward an Electric Bus Fleet**

There are a variety of characteristics that will define the carbon-neutral future, but one stands out: Dramatically increased reliance on electricity. The transportation sector presents a particularly attractive opportunity to make rapid progress in the fight against climate change through electrification.

The transportation sector, as compared to other industries, is especially reliant on fossil fuels and is responsible for 37 percent of CO2 emissions in the United States, according to the U.S. Energy Information Administration (EIA). Electrifying this industry would have a significant impact on curbing the country's total annual carbon emissions.

Moreover, one sub-segment of the transportation market is uniquely positioned for the transition to green mobility: Electric vehicles (EVs) and, more specifically, bus fleets. There are a variety of reasons for this. One being buses have relatively high fuel consumption since they spend a significant amount of time on the road. Approximately 65,000 buses are in operation in the U.S., according to Statista, and they contribute significantly to air pollution, particularly in urban areas. By shifting toward battery-powered buses, public transit agencies can reduce or eliminate the use of fossil fuels significantly and make positive contributions toward air pollution reductions in the communities in which they operate.

The Route to Fleet Electrification

Electric buses are increasingly available from a wide variety of manufacturers, and the business case for using them is compelling. They offer lower fuel costs, reduced maintenance requirements and are expected to remain in service

longer than their internal combustion counterparts. Because they travel on set routes, the optimization of the charging infrastructure, the vehicle batteries and the power supply is relatively easy compared to less predictable forms of transport. However, purchasing battery-powered buses is one step in a much more complex transition.

To start, transit agencies can't afford to swap their traditional buses for EV models all at once. This transition will need to take place over time, in line with existing vehicle depreciation and replacement schedules. This means transit agencies will need to gradually integrate EV buses into their fleets, running electric and internal combustion vehicles side by side for years or decades. They will also need to modify their operational systems and processes to accommodate newly introduced EVs.

Vehicle charging systems will need to be installed in existing terminals (which often feature challenging space limitations) and potentially in other locations along their route to top off. Rather than installing a lot of stand-alone charging pedestals, it may be more appropriate to consider a more long-term solution geared toward charging large numbers of vehicles.

Modular, customizable solutions are increasingly available and can serve multiple vehicles simultaneously while offering a more compact footprint. These systems also tend to be easier to install and have shorter lead times for delivery, which can help accelerate implementation. They typically can also scale up easily, providing fleet operators with the opportunity to start small, develop appropriate systems and processes and then expand their fleets as circumstances allow.

37 percent

the U.S. transportation industry's share of total CO2 emissions

Credit: U.S. Energy Information Administration

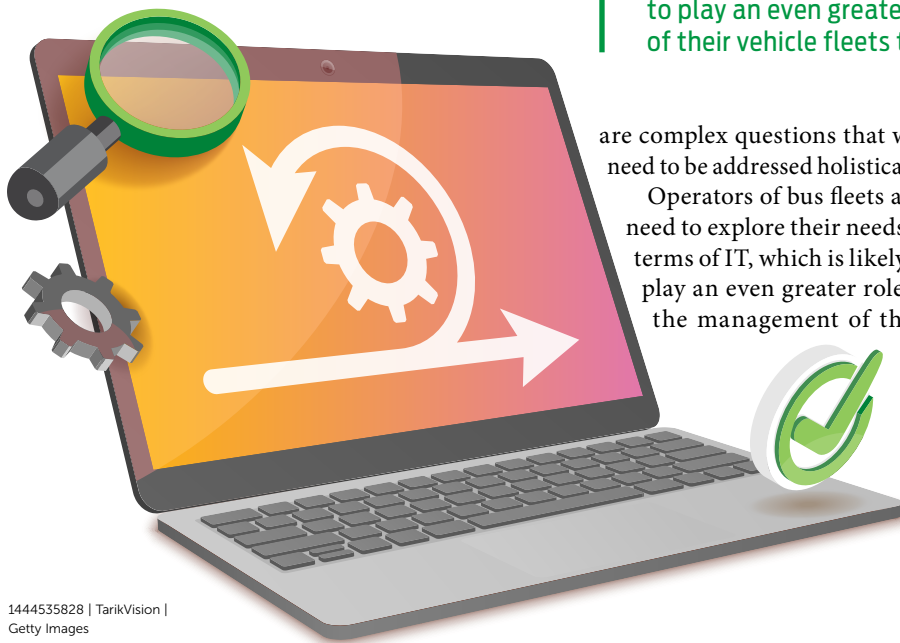
Merging EVs into Existing Fleets and Processes

In a future where EVs become the norm rather than the exception, public transit agencies will face a range of new variables they will need to juggle. For instance, do they need to invest in charging infrastructure up front based on their anticipated future demand or can they stretch that investment out over time? How will that charging infrastructure fit into

“Because they travel on set routes, the optimization of the charging infrastructure, the vehicle batteries and the power supply is relatively easy compared to less predictable forms of transport.”

their existing processes for things like maintenance, scheduling, depreciation and replacement, vehicle condition monitoring and repair? Do they have the necessary power infrastructure to support the additional demand on the power grid?

Should they supplement with battery storage to offset peak energy demands (and lower costs)? How can they automate energy demands? How will the shift impact their drivers, support staff and mechanics? Do they have the right skill sets in their personnel? What kind of training programs do they need to establish? These



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“Operators of bus fleets also need to explore their needs in terms of IT, which is likely to play an even greater role in the management of their vehicle fleets than it does today.”

are complex questions that will need to be addressed holistically.

Operators of bus fleets also need to explore their needs in terms of IT, which is likely to play an even greater role in the management of their

vehicle fleets than it does today. There are a range of factors to be managed such as: vehicle state-of-charge, tracking and analysis of vehicle telematics, orchestration of charging infrastructure, on-site energy optimization and vehicle maintenance scheduling and tracking, all of which depend on sophisticated software tools. Are there benefits to utilizing artificial intelligence (AI) or machine learning (ML) capabilities to improve their processes? Fleet operators of all kinds are grappling with these considerations.

A common sense approach to streetscape design and fabrication.



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Securing (Electric) Fuel Supplies

One additional challenge that public transit agencies need to deal with is getting sufficient power to their vehicles. For fleet operators looking to transition to EV buses, demand for electricity at their facility and potentially along their bus routes will skyrocket. They must begin the planning process with their local power utilities to ensure their needs can be met. Connection queues for utilities in many locations can be more than a year in many cases, even for more traditional, industrial-scale electrical services.

Large fleets could ultimately require so much power that utilities may need to upgrade their distribution systems to meet this demand. Transit agencies may

want to explore options such as an onsite battery energy storage system, which could help provide them with the flexibility to charge more vehicles at off-peak times, saving time and putting less pressure on the power grid.

Smoothing the Electrification Path

While the realities of transitioning to EVs may seem daunting, it will almost certainly yield significant rewards in terms of carbon reductions, lower fuel and maintenance costs and more efficient operations. However, the process will also be highly complex and time-consuming and demands that transit agencies approach the transition strategically, with a clear understanding of the variables in play and potential pitfalls. A smart, considered

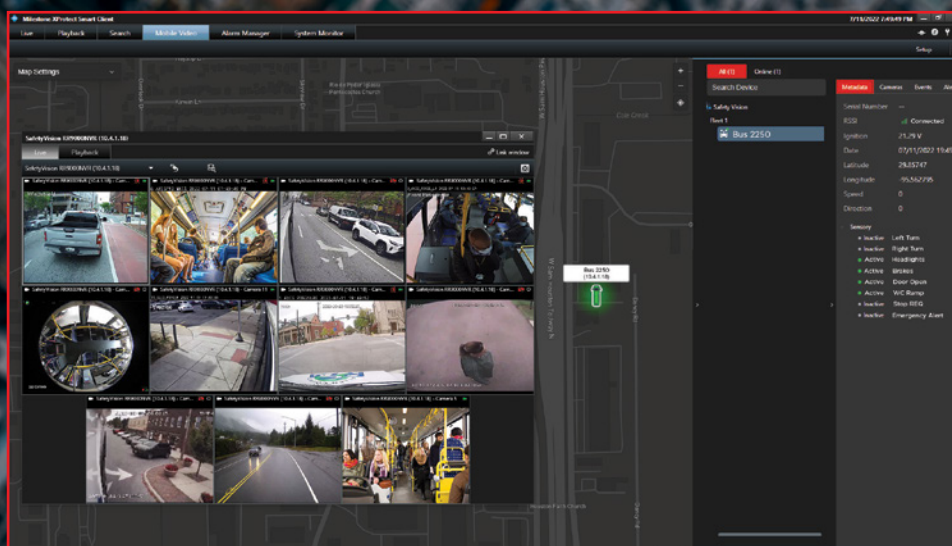
“Connection queues for utilities in many locations can be more than a year in many cases, even for more traditional, industrial-scale electrical services.”

approach to planning and deploying charging infrastructure tailored to their unique needs, coupled with digital platforms to reduce the complexity of the process and early engagement with power utilities and technology partners will be a vital step in that direction. **MT**



Anthony Allard is executive vice president and head of North America for Hitachi Energy.

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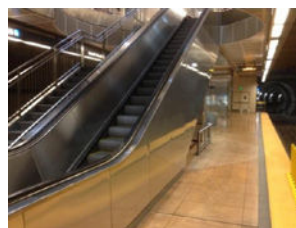
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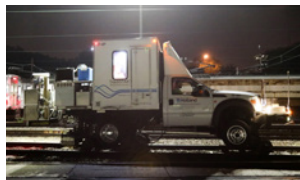
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Signature Sunset Transit Shelters

This 16' agency-branded Signature Sunset shelter joins a suite of branded products in Fort Collins, CO. Equipped with UL-listed solar lighting, 8' metal bench and integrated bike fixtures for first/last mile connections.

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<http://www.transcare.com>

Transdev North America

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Transign

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<http://taptco.com/home/>

Transit Auto Parts, LLC

<http://www.transitautoparts.com>

Transit Cooling Solutions

<http://www.transitcooling.com>

Transit Marketing Group

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<http://transitsafetyandsecurity.com>

Transit Solutions, LLC (TSI Video)

<https://tsivideo.com>

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<http://transloc.com/>

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In Focus: Bus Shelters

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Peerless-AV Outdoor Smart City Kiosks

The Peerless-AV Smart City Kiosk puts functionality at the forefront. The kiosk comes with an IP66-rated 55-inch Xtreme Outdoor Display, in either black or silver, and with or without speakers. It is made of all stainless steel and aluminum and finished off with high-quality, outdoor-rated paint to prevent corrosion. Outdoor elements are no match for this kiosk because it is all-weather rated, highly durable and built to last. Smart City Kiosks are an ideal solution for mass transit applications to showcase dynamic, digital signage content.

➔ www.peerless-av.com



Luminator E-paper Passenger Information Systems

Luminator's high resolution EMBARK™ E-paper technology provides transit passengers with dynamic real-time information, such as rider alerts, route information and more. Through remote and automatic updates, the displays allow transit agencies access to the latest information while reducing labor costs associated with manually changing paper displays. Its easy-to-read multi-page displays are energy efficient with ultra-low-power LEDs and optional solar power capabilities that enable easy, inexpensive installation in virtually any location. To maximize accessibility, Luminator EMBARK E-paper passenger information systems are equipped with on-demand audio announcements, improving the information available for all passengers.

➔ <https://luminator.com>

Tolar Manufacturing Custom Signature Voyager Bus Shelters

Located in a high pedestrian traffic area, Tolar Manufacturing's Custom Signature Voyager bus shelters span 17 feet in length, offering flexible length adjustments and spoke-style cantilever roofs to provide maximum shade. Low-draw LED lighting and oversize back-to-back media display kiosks are paired with real-time bus arrival information, assuring waiting passengers of their bus arrival time. Rounding out the passenger experience, the shelters are surrounded by ticketing machines and bicycle amenities to help support first mile, last mile connections. These third-party amenities exemplify the true flexibility of Tolar-built shelters, as they provide opportunities to maximize passenger comfort, connectivity and convenience.

➔ www.tolarmfg.com



Connectpoint The Falcon

Connectpoint's Falcon is the first of its kind when it comes to text-to-speech devices. This stand alone, real-time messaging system is ADA compliant, solar powered and a cost-effective solution to providing updated passenger information at the bus stop level 24 hours a day. The Falcon is completely autonomous and pulls real-time information from feeds without needing to be connected to a display. A prominent feature of the Falcon is the integrated solar film skin, allowing the device to run for weeks on a single charge. This device requires no electrical infrastructure and can be used in almost any desired location.

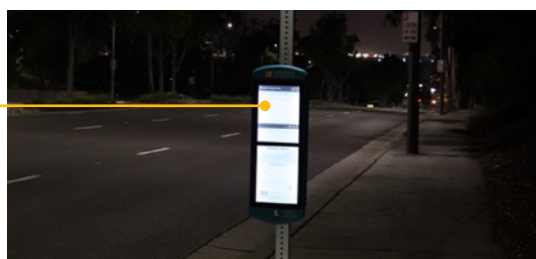
➔ www.connectpointdigital.com



Urban Solar Corp. **PV Stop+ with E-Paper Display**

The PV Stop+ delivers security lighting and real time bus arrival information to unsheltered bus stops. The PV Stop+ can be installed in just minutes to almost any existing bus stop pole. The ultra low-power e-paper display technology makes it easy to provide riders with real-time information. Displays can be powered either from the excess power the PV Stop+ generates or a separate long-life battery bank. The latter is ideal for shaded bus stops and northern locations where solar energy is limited.

➔ <https://urbansolarcorp.com>



Future Systems Inc. **Miami Air Conditioned Shelter**

Miami-Dade County and Hialeah officials gathered to open the region's first air-conditioned bus shelter at the Hialeah Metrorail station. The structure has a sliding door and contains a row of seats inside. The shelter, which is part of a pilot program, has room for four people seated and 11 standing. These air-conditioned shelters incorporate advertising displays outside and inside. Future Systems also offers heating options for cold weather locations.

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Equitable Transit Systems

Identifying populations • Essential needs • Mapping

Transit Propensity and Community Needs: Providing Insight to Create Equitable Transit Systems



By Jorge Luna
South Atlantic Area Transit
Lead, HDR

CHARLOTTE, N.C. • To create equitable transit systems, understanding the location of key populations and the mobility needs of those populations is critical. Agencies with access to comprehensive data can plan for a seamless and equitable transit system that works best for as many as possible.

One example of maximizing data is the CONNECT Beyond Regional Mobility Plan, led by the Centralina Regional Council, for the greater Charlotte region. The plan relies on transit propensity maps — using public data to determine where transit is most needed in the region. These interactive maps highlight various population concentrations and access to essential services. Insight gained from these maps helped identify key groups for deeper conversation regarding mobility needs.

Correctly used, transit propensity maps are a powerful tool to help owners/agencies inform the heart of equitable transit planning: Successful community outreach. Only by engaging and listening to various populations can agencies learn of their unique needs. Whatever the community's needs, a transit propensity map can help identify the location of who most needs service and

inform community outreach and fieldwork strategies.

Creating a Transit Propensity Map

The key to transit propensity maps is to understand the nuances of the data, drawn from real people's experiences. It's imperative the team goes the extra mile and holds listening sessions with underrepresented segments of the community — a truly equitable plan must incorporate the voices of those who will be using the transit system. This community outreach should occur before the plan is drafted, and then again to check the solutions presented in the plan address the community's needs.

Key activities in completing CONNECT Beyond were developing transit propensity maps, conducting field visits and ride arounds to augment data findings, gathering survey-based insight and holding listening sessions to understand

transit needs. This process created a holistic plan that incorporated feedback from travelers with varying mobility needs.

Boosting Propensity Maps

A transit propensity map paired with additional data can become increasingly helpful to transit planners and (public sector) decision makers.

Propensity maps can complement public surveys, listening sessions, origin-of-destination surveys or travel demand model data by showing where people are likely to need transit and where they are going. Community input can add nuance that data doesn't show. Using these insights and tools creates a powerful, comprehensive look at a region's state of transit.

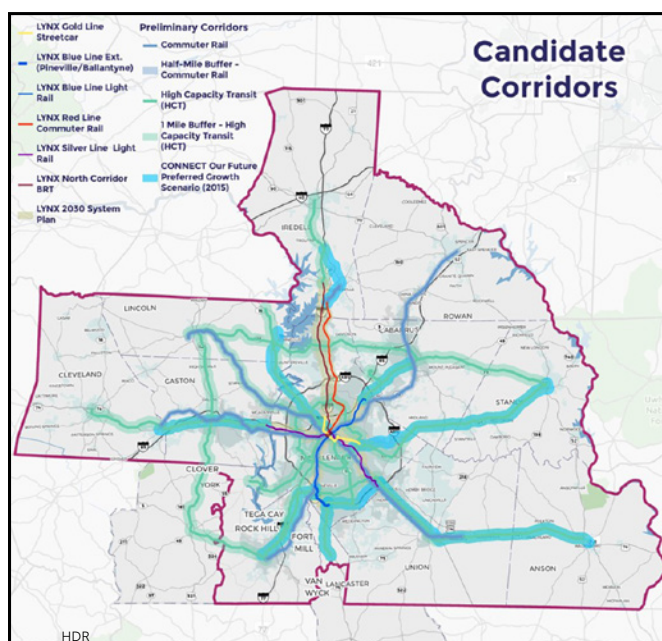
For CONNECT Beyond, the team used the propensity maps to help determine short-, medium- and long-term goals that would improve the overall transit system.

Creating a Living Resource for Ongoing Outreach & Funding Readiness

Transit propensity maps can serve communities as a living resource if featured and actively maintained on an agency's communication platforms. The transit propensity maps created for CONNECT Beyond are intended to be updated periodically. This empowers local agencies and municipalities to see their communities'

current transit needs and demographic details, a key benefit as they continue to compete for grant funding. This also gives the planning agencies the ability to assess the progress of plan outcomes and recommendations.

As transit agencies grapple with how to meaningfully enhance their equity in planning, transit propensity maps can complement the planning toolbox in understanding concentrations of potential transit users and their mobility needs, as well as insight to refine outreach and fieldwork effort. Using this tool to better inform a community outreach strategy leads to systems that better serve all riders, both now and in the future. **MT**



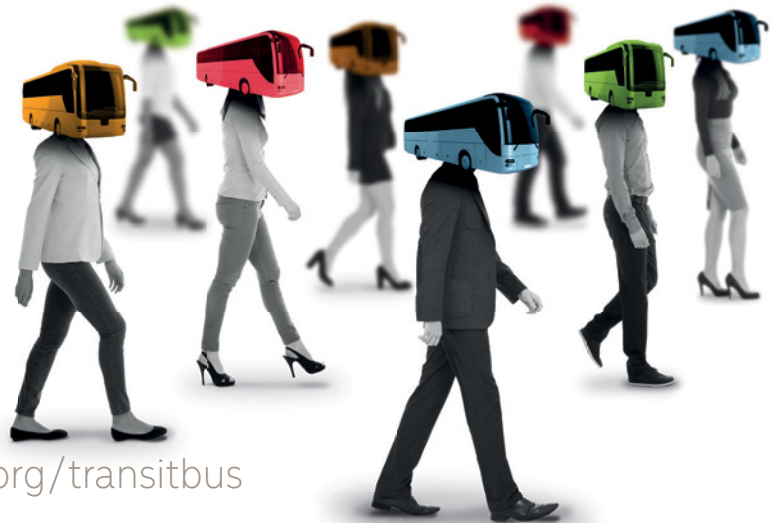
The Candidate Corridors evaluated as part of the CONNECT Beyond plan.

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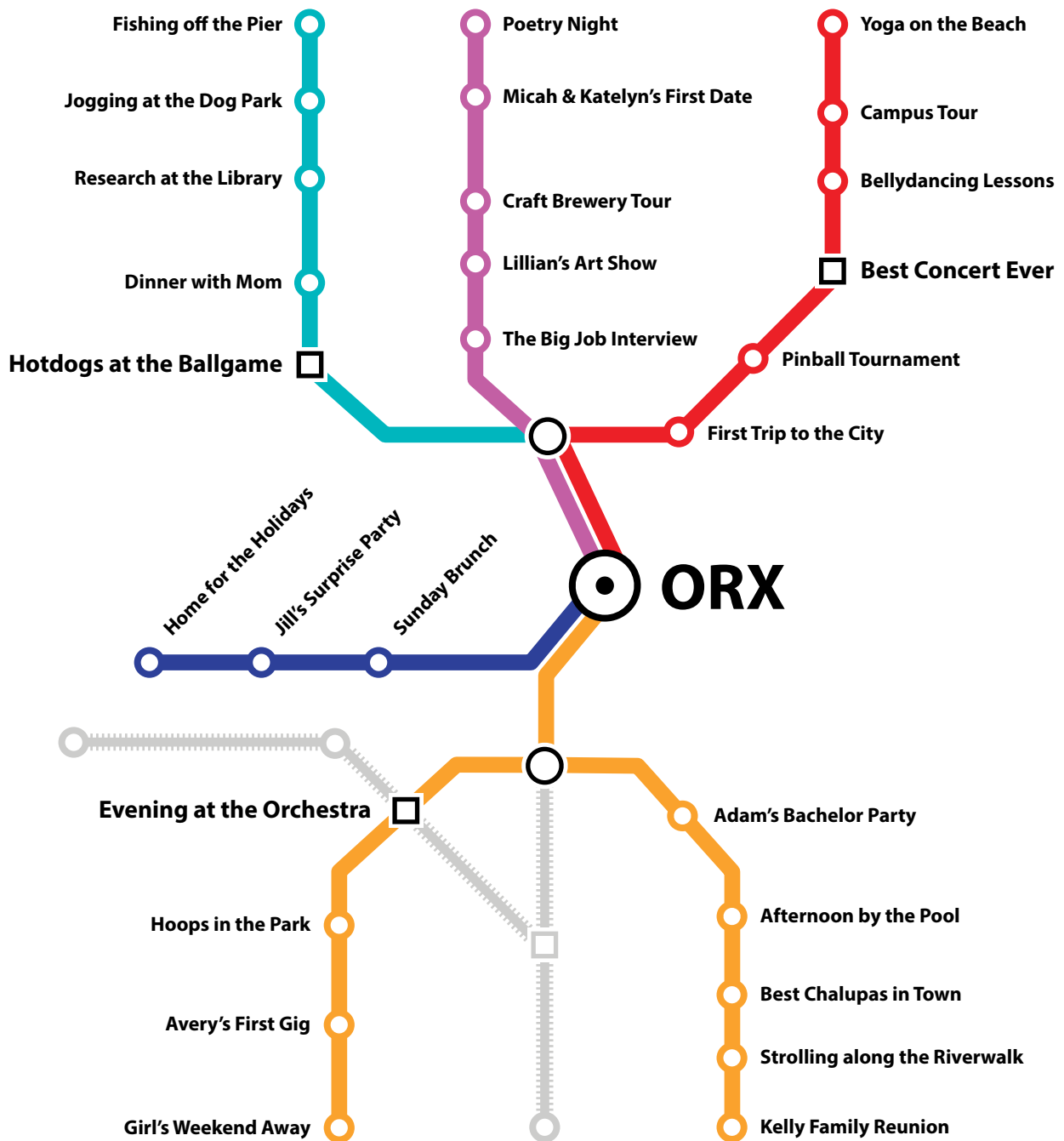


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