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How Values Drive Transit's Path Forward



CapMetro's values are guiding how it evolves as an organization, a transit provider and a community asset.

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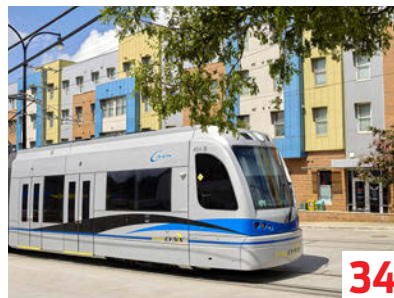
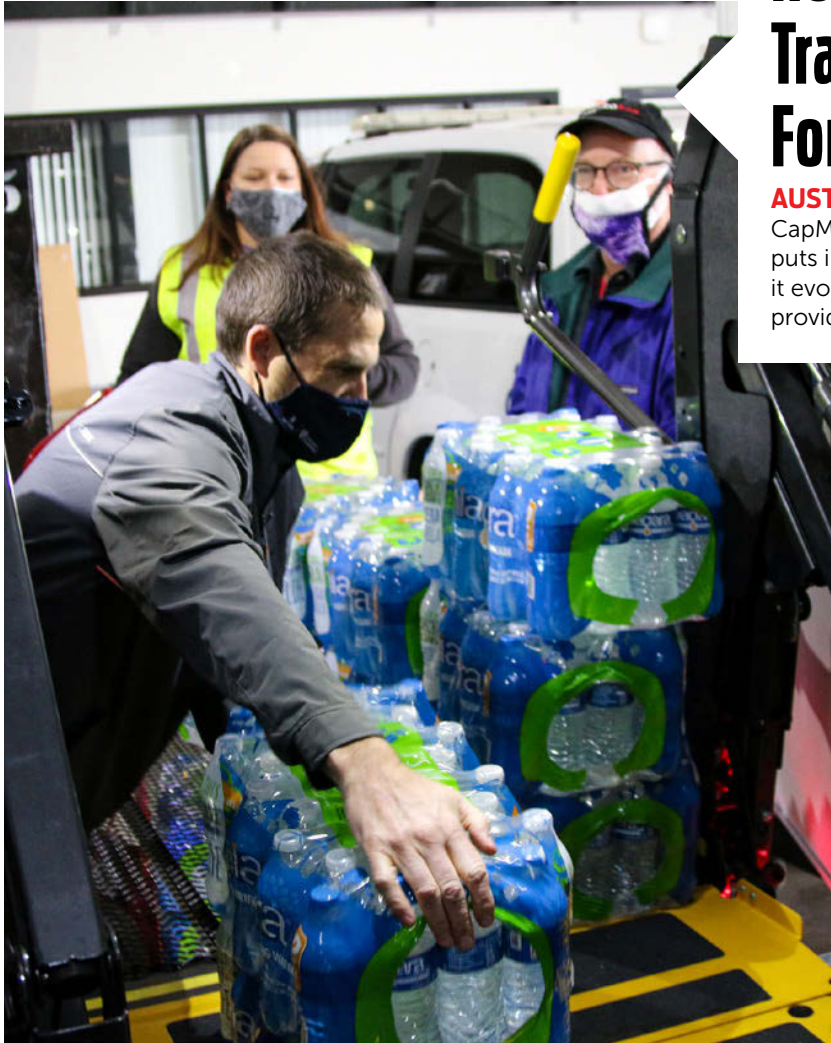
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➔ MassTransitmag.com/21261959

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Publisher Emily Guill
(847) 454-2730 | Emily.Guill@MassTransitmag.com

Executive Editor Mischa Wanek-Libman
(224) 324-8532 | MWanek@MassTransitmag.com

Associate Editor Megan Perrero
(224) 252-0226 | MPerrero@MassTransitmag.com

Contributors Shawn Enides, Blake Kozol

Multimedia Account Manager Kristy Dziukala
(920) 568-8324 | kristy@MassTransitmag.com

List Rentals Representatives InfoGroup
Michael Costantino
(402) 836.6266 | Michael.Costantino@infogroup.com
Kevin Collopy
(402) 836.6265 | Kevin.Collopy@infogroup.com

Production Manager Patti Brown

Ad Services Manager Deanna O'Byrne

Art Director Erin Brown

Audience Development Manager Debbie Dumke

ENDEAVOR BUSINESS MEDIA, LLC

CEO Chris Ferrell

President June Griffin

CFO Mark Zadell

COO Patrick Rains

Chief Administrative and Legal Officer Tracy Kane

EVP Healthcare & City Services Amy Mularski

EVP Special Projects Kristine Russell

EVP Marketing Solutions & Data Jacquie Niemiec

SUBSCRIPTION CUSTOMER SERVICE

877-382-9187; 847-559-7598
Circ.MassTransit@Omeda.com
PO Box 3257, Northbrook IL 60065-3257



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What's driving your organization?

An organization's values need to exist on more than just paper; they need to be understood and embraced by all members of a team to leverage their full potential.

While planning, writing and putting together this issue, the topic of corporate values emerged as an unofficial theme with our features on CapMetro and HIRTA. This issue's cover story on CapMetro in Austin, Texas, shines a direct spotlight on the agency's five values – equity, transparency, safety, sustainability and innovation – and the resources its team puts into those values. The result has been a turnaround in corporate culture, as well as a positive shift in the agency's favorability rating within the Austin region.

HIRTA shares two of the same values with its focus on equity and innovation. Perhaps not the expected values for a system in Iowa, but as readers of the article will find, it's what HIRTA expects from itself and what its customers need from the organization.

An entity's values serve as cultural cornerstones and direct an organization's purpose. One indicator I use of a topic's importance is how much has been written on the subject. Amazon currently has more than 2,000 books covering organizational values, how to develop them, why they are important and advice on ways to go about weaving these values into various teams.

Having a set of corporate values is one side of the equation; making sure those values are communicated, understood and embraced throughout the organization is the other side. What CapMetro has developed throughout its organization is a sense of ownership and empowerment among employees to ensure its values sit at the core of everything it does.

CEO Randy Clarke noted at several points during the magazine's interview with him that the agency's staff are the most important part of the organization. He wants CapMetro to offer careers rather than jobs and that means offering good training, paying a livable wage and expressing gratitude for staff efforts throughout the organization.

An entity's values serve as cultural cornerstones and direct an organization's purpose.



Early morning team breakfasts occur regularly for frontline staff and the management team frequently rides CapMetro's network equipped with gift cards and a note of thanks to hand out to operators and other team members who provide good service.

Clarke believes the best management structures are matrix style, which encourages questions to be asked. He promotes a practice within management teams he calls collaborative tension, which is designed to push colleagues to find potential deficiencies in plans (in a respectful and collegial way) to better the organization overall.

Clarke thinks these efforts have stoked a sense of passion among CapMetro staff, which helps the organization deliver service because the obligation to perform has been removed and replaced by the desire to perform.

HIRTA Executive Director Julia Castillo promotes the same type of commitment and care in her agency's staff. She explains their drive is to "give people the freedom to move around their own communities."

We enjoyed learning about these two organizations and hope their efforts inspire their industry peers.

A handwritten signature in black ink that reads "Mischa Wanek-Libman".

Mischa Wanek-Libman, Editor

✉ mwanek@masstransitmag.com ☎ 224-324-8532 🔗 [linkedin.com/in/mischawaneklibman](https://www.linkedin.com/in/mischawaneklibman)



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AN MBTA Green Line train breaks the ribbon to mark the opening of the new branch.

MBTA's Union Square Branch of Green Line Extension opens

Local, regional and federal officials joined other project stakeholders and community partners to celebrate the opening of the Green Line Extension (GLX) Union Square Branch with a ribbon-cutting event at the Union Square Station and Lechmere Station. The new branch will extend the northern end of the Green Line from Lechmere in East Cambridge to Union Square in Somerville. Union Square Station will serve the Green Line's E Branch as of opening day, but will switch to Green Line D Branch service later this year when testing begins on the new Medford Branch. When fully complete, Green Line trains will operate every five to six minutes in the peak periods, providing fast and efficient service in areas that did not previously have access to reliable public transit.

➔ [MassTransitmag.com/21261297](https://masstransitmag.com/21261297)



AVTA BOARD Chairman Marvin Crist speaks at the authority's March 16 event marking its complete transition to a zero-emissions fleet.

AVTA now operates North America's first fully zero-emissions fleet

▶ Antelope Valley Transit Authority (AVTA) held a celebration March 16 to mark its complete transition to a zero-emissions fleet. The final piece of its fleet came in the form of its 20th electric MCI coach for its commuter routes, which joins AVTA's 57 BYD zero-emission buses and 10 GreenPower EV Star Microtransit vans. AVTA credits its successful transition to staying committed to the zero-emissions vision outlined by its board. AVTA Board of Directors approved a contract to

purchase up to 85 zero-emission buses from BYD in 2016 to become the first U.S. agency to commit to a 100 percent electric fleet; welcomed its first electric vans and launched a microtransit pilot in September 2020; christened its first battery-electric commuter coach in August 2021; and decommissioned its last diesel bus in April 2020.

➔ [MassTransitmag.com/21260726](https://masstransitmag.com/21260726)

NJ Transit completes installation of bus charging infrastructure for pilot program

▶ New Jersey Transit (NJ Transit) finished installing eight electric vehicle chargers (EVCs) at the Newton Avenue Bus Garage in Camden, N.J. The agency has committed to transitioning its bus fleet to 100 percent zero emissions by 2040 and the installation of the EVCs is a step closer to deployment of NJ Transit's first battery-electric buses later in 2022. Scalfo Electric of Vineland, N.J., was awarded a \$3.24 million contract in September 2020 to renovate the Newton Avenue Bus Garage with electric vehicle charging stations and other associated infrastructure modifications. In addition to testing electric buses on NJ Transit's system, the Camden project will review the infrastructure resources and work required to modernize the agency's bus garages to accept new charging stations and the significantly greater power feeds needed to energize them.

➔ [MassTransitmag.com/21261452](https://masstransitmag.com/21261452)

FTA awards \$409.3 million to bus and bus facility projects

▶ The Federal Transit Administration (FTA) awarded 70 projects in 39 states a combined \$409.3 million through the Grants for Buses and Bus Facilities Program. The grant program supports communities with funds to purchase buses and related equipment to construct bus-related facilities. FTA also opened funding for the program's FY22 round on March 8 through a joint \$1.5 billion Notice of Funding Opportunity with the Low or No Emission Grant Program. The FY22 Grants for Buses and Bus Facilities Program has \$372 million available for grants. The administration notes that under the Bipartisan Infrastructure Law, the Grants for Buses and Bus Facilities Program has \$5.1 billion in authorized formula and competitive grant funding over the next five years.

➔ [MassTransitmag.com/21260338](https://masstransitmag.com/21260338)

Continued ▶

People in the News

New York City Transit (NYCT)

Richard Davey has been named president of NYCT, effective May 2. Davey hasn't



Davey

owned a car in 12 years, has a background in every mode of transportation and has earned a reputation as a management efficiency expert. Davey began his transit career in 2003 at Massachusetts Bay Commuter Railroad Company and was promoted to general manager in 2008. He accepted the general manager position for Massachusetts Bay Transportation Authority in 2010 and served as CEO of Boston 2024, vice president and senior advisor with Transdev and partner and director of Boston Consulting Group.

➔ [MassTransitmag.com/21261619](https://www.masstransitmag.com/21261619)

Gold Coast Transit District (GCTD)

Vanessa Rauschenberger was appointed as general manager of GCTD. She will oversee



Rauschenberger

an organization of 200 employees who operate and maintain a fleet of 87 vehicles and provide fixed-route and paratransit services across five jurisdictions in western Ventura County, Calif. Rauschenberger's career includes more than 11 years at GCTD. She served as GCTD's director of planning and marketing, led the implementation of several new routes, managed the development of numerous service plans and oversaw all grant applications.

➔ [MassTransitmag.com/21259366](https://www.masstransitmag.com/21259366)

Pace Suburban Bus (Pace)

Melinda J. Metzger has been appointed executive director of Pace. She has



Metzger

filled the role in an interim capacity since December 2021 and becomes the first female head of the agency. Metzger began her 40-year career in transit as an intern at NORTAN, now Pace's Northwest Division. She managed operations planning for the Regional Transportation Authority before returning to Pace in 1984. Metzger previously served as the agency's general manager and chief operating officer. Priorities for Metzger include focusing on the environment, equity and efficiency.

➔ [MassTransitmag.com/21260724](https://www.masstransitmag.com/21260724)

Valley Metro

Jessica Mefford-Miller has been selected by the Valley Metro Board of Directors to be the agency's new CEO. Mefford-Miller



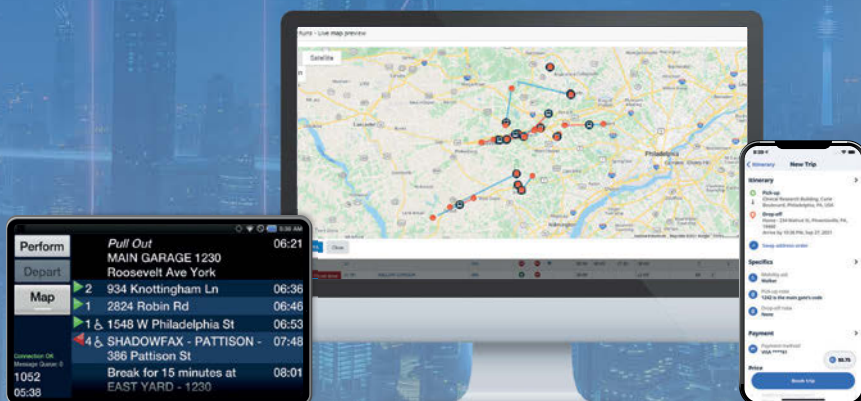
Mefford-Miller

comes from St. Louis Metro Transit where she led a team that delivered bus, light rail, paratransit and microtransit across the St. Louis metropolitan region. Notable highlights include leading Metro Transit through a reimaging of its bus system; creating a shift towards renewable energy; overseeing the planning and design of expansions to the current 46-mile light-rail line; and leveraging the region's rail investment to create thriving transit-oriented development.

➔ [MassTransitmag.com/21260957](https://www.masstransitmag.com/21260957)

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PEOPLE & PLACES

MTA bids farewell to NY Penn Station 'head knockers'

► The Metropolitan Transportation Authority (MTA) removed obsolete building components that limited head space at New York Penn Station. The seven low-hanging beams weigh 10 tons each and limited heights in Penn Station passageways to six feet, eight inches. Removing the beams, known as head

knockers, will allow MTA to pursue its plans to increase the spaciousness of the Long Island Rail Road concourse in Penn Station. The project began in 2019 to improve access to the east side of the station. The project will raise ceilings, widen corridors, add entrances and create more stairways and elevators to platforms. Project crews are increasing the ceiling height to 18 feet across the entire

concourse, nearly doubling the width of the 33rd Street Corridor to 57 feet from the previous 30 feet, improving lighting, creating more intuitive wayfinding and new direct sight lines to track level. Work is scheduled to be completed during the first quarter of 2023.

➔ [MassTransitmag.com/21259746](https://www.masstransitmag.com/21259746)



MTA OFFICIALS in Penn Station on March 8, 2022, where they announced the removal of original beams, known as "head knockers."

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Three Mississauga transit projects to see joint C\$677 million investment

► Mississauga, Ontario, will be able to advance a series of transit advancements with joint funding provided by the governments of Canada and Ontario, as well as local funding from the city of Mississauga. The government of Canada explains the investments will support increased capacity, quality and safety of public transit within Mississauga. The more than C\$677 million (US\$531.6 million) in funding includes C\$271.1 million (US\$212.9 million) from the government of Canada through the Investing in Canada Infrastructure Program, more than C\$225.8 million (US\$177.3 million) from Ontario and more than C\$180.7 million (US\$141.9 million) from the city. The funding will be used to invest in queue jump lanes at 25 intersections on Derry, Eglington and Dixie Roads; constructing a new bus rapid transit corridor along Dundas Street; and purchasing 348 second-generation hybrid buses for Mississauga's MiWay fleet.

➔ [MassTransitmag.com/21259273](https://www.masstransitmag.com/21259273)

For more information, visit www.MassTransitmag.com/21207835

Roam Transit, Parks Canada funding agreement to purchase electric buses

► A five-year agreement between Bow Valley Regional Transit Services Commission (BVRTSC), which operates Roam Transit, and Parks Canada will allow the transit provider to purchase electric buses in a move the commission and federal government believe will reduce personal car use in Banff National Park. BVRTSC added its first Proterra electric buses to its fleet last summer to serve downtown Banff, the Banff Gondola, the Banff Springs Hotel and Tunnel Mountain campgrounds. The three buses were partially funded through the Green Transit Initiatives Program through the government of Alberta. The C\$12.9 million (US\$10.26 million) agreement between BVRTSC and Parks Canada will help purchase three additional Proterra electric buses, which will be deployed in the summer of 2023.

➔ [MassTransitmag.com/21261447](https://www.masstransitmag.com/21261447)

MORE NEWS AT A GLANCE

Read More Online

► Southeastern Pennsylvania Transportation Authority selected BAE Systems to supply up to 340 electric drive systems for a new fleet of low-emission transit buses. [MassTransitmag.com/21257188](https://www.masstransitmag.com/21257188)

► Milwaukee County Transit System selected the Umo Mobility Platform by Cubic Transportation Systems as its new fare collection system.

➔ [MassTransitmag.com/21256381](https://www.masstransitmag.com/21256381)

► The Société de Transport de Montréal renewed its contract with Conduent Transportation for three years to support seven transportation networks with maintenance and upgrades of their systems and ticketing equipment in the Montreal metropolitan area and Québec City.

➔ [MassTransitmag.com/21261646](https://www.masstransitmag.com/21261646)

► Infrastructure Ontario and Metrolinx awarded a C\$443 million (US\$347.93 million) contract for the Lakeshore West Infrastructure Improvements Project, which is part of the GO Expansion initiative, to EllisDon Infrastructure Transit.

➔ [MassTransitmag.com/21258810](https://www.masstransitmag.com/21258810)

► First Transit has ordered six Axess battery-electric buses from ElDorado National (California) for operation at Emory University in Atlanta.

➔ [MassTransitmag.com/21257192](https://www.masstransitmag.com/21257192)

► The Regional Transportation District in Denver, Colo., selected HDR Engineering Inc. to conduct a feasibility study regarding a peak service rail schedule between Denver Union Station and downtown Longmont.

➔ [MassTransitmag.com/21257887](https://www.masstransitmag.com/21257887)

► John Burns Construction Company selected Miller Ingenuity to supply its

roadway worker protection system, ZoneGuard.

➔ [MassTransitmag.com/21258849](https://www.masstransitmag.com/21258849)

► MV Transportation, Inc., was awarded a contract to provide demand-response microtransit and trailhead shuttle services for the city of Sedona, Ariz., beginning this spring.

➔ [MassTransitmag.com/21258851](https://www.masstransitmag.com/21258851)



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People in the News

Delaware River Port Authority (DRPA)

The DRPA Board of Commissioners appointed

Captain Robert J. Finnegan, Sr., to serve as chief security/safety officer. Finnegan is a 30-year veteran of the DRPA Police Department. As Chief Security/Safety Officer, Finnegan will manage the authority's strategic planning efforts related to security and safety preparedness. He will also oversee the agency's Public Safety, Homeland Security/Emergency Management and Safety Departments. Finnegan, of Gloucester County, N.J., joined the DRPA Police Department as a police officer in 1992.

➔ [MassTransitmag.com/21260812](https://www.MassTransitmag.com/21260812)



Finnegan

Delaware River Port Authority (DRPA)

Captain Edward W. Cobbs, Jr., was appointed by the DRPA Board of Commissioners to serve as chief of police, becoming the first African American to lead the department. As Chief, Cobbs will oversee the authority's Public Safety Department which is responsible for protecting life, property and public assets, including DRPA's four Delaware River toll bridges and the PATCO transit line with its 13 stations. The department handles more than 80,000 calls for service per year. Cobbs, of Camden County, N.J., joined the DRPA police as a police officer in 1994.

➔ [MassTransitmag.com/21260812](https://www.MassTransitmag.com/21260812)



Cobbs

Memphis Area Transit Authority (MATA)

MATA has promoted John Lancaster to chief development officer.

Lancaster was formerly the director of planning and scheduling. In his new role, he will continue to guide the service and planning departments and enhance his responsibilities with a concentration on implementing new services across all divisions with an emphasis on improving passenger outcomes. "[This] new position represents our commitment to creating an exceptional customer experience and inspiring the community to invest in our success," said MATA CEO Gary Rosenfeld.

➔ [MassTransitmag.com/21259193](https://www.MassTransitmag.com/21259193)



Lancaster

Memphis Area Transit Authority (MATA)

Anthony Amos has been promoted to chief compliance officer for MATA. He was the Disadvantaged Business Enterprise and Americans with Disabilities Act compliance officer. His responsibilities will grow to include compliance monitoring of all business aspects as well as compliance with Civil Rights and the Americans with Disabilities Act provisions of stakeholder agreements. He will work with all divisions to ensure MATA develops solutions to community concerns so that it delivers a fair and consistent product.

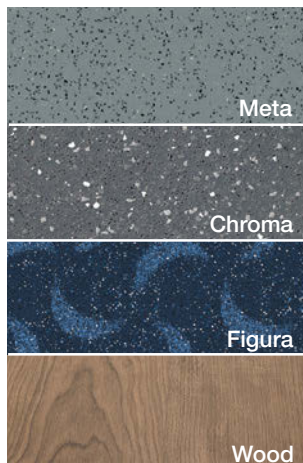
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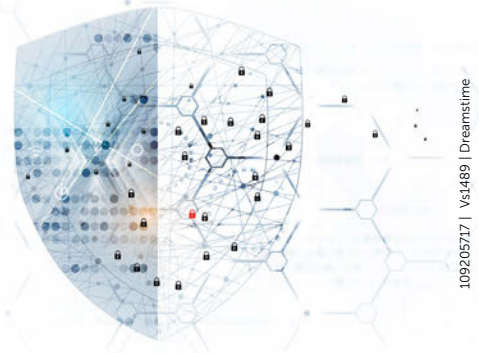
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DEADLINE: MAY 8, 2022

Nominees must be 39 years old or younger as of July 1, 2022, to be eligible.

Cybersecurity and the Cloud: Is Your ITS Infrastructure Ready for the Future?



All-time high levels of funding are now available to restore and modernize our nation's transportation infrastructure and advance the state of public transit in America. Likewise, as the recovery from the worldwide pandemic continues to slowly come into focus, now is the time for public transit agencies to take advantage of this window of opportunity to position themselves for the future. Cybersecurity and cloud-based solutions should be at the top of every agency's investment priorities to ensure their ITS infrastructure is ready for the future. Below are some key questions that executive directors and agency leadership should be asking to make sure they prioritize their investments wisely.

1. Why should my organization worry about information security?

There is a common statistic cited from recent studies that states a cyberattack occurs every 39 seconds. Cybercrime is estimated to reach costs in the trillions within the next few years unless we start implementing strong countermeasures now. Cybersecurity is a cornerstone of our national security policy and APTA continues to take a leadership position to advance this cause. The latest round of federal funding for transportation has made the implementation of cybersecurity not only a focus, but a requirement. Agencies will be held accountable and audited to demonstrate the steps they are taking to address this challenge.

2. What if we don't have the staffing levels or expertise to address cybersecurity?

The FTA and APTA have built a valuable library of information and toolkits to help provide a roadmap for success. Agencies will not be able to do this alone and the only path to success is a coordinated effort between agencies, funding

partners, stakeholders and technology providers.

Avail is unique as a technology provider in that we serve all three layers of the transportation information ecosystem – operational systems, enterprise information systems and subscribed systems. Therefore, Avail has made security a top priority.

3. What should an agency expect from technology providers and what should providers expect from agencies to implement a successful approach to cybersecurity?

There are clearly established pillars of cybersecurity, and technology provider's products and services make up a large percentage of the IT infrastructure and facilities piece of the puzzle.


Thus, agencies should expect their technology providers to have an articulated strategy around security and documented Information Security (INFOSEC) policy. Likewise, agencies need to be responsible for the operations and people pieces and provide strong governance that starts at the top. Any chain is only as strong as its weakest link, and this is especially true when it comes to security. The best path to success is agencies and technology providers working together to implement a unified strategy.

4. What are some examples of how Avail is innovating to be at the forefront of cybersecurity and help agencies?

As a technology partner, not just a provider, Avail is taking a holistic approach to security. This approach is guided by a cybersecurity committee and INFOSEC policy to secure our entire range of products and services. Our entire back-office suite of Enterprise Transit Management software is cloud based to enable agencies to migrate away from reliance of on-premise servers and hardware. We

are also now offering an upgrade to SO-CII compliance with enhanced intrusion detection, security logging retention and audit reports available to support agency regulation compliance, as well as increased limits on cyber insurance. An agencies' vehicle fleet includes an extensive technology stack that is connected to the cloud and thus vulnerable to cyber-attack. Avail has solutions here as well for agencies, and we can provide enhanced onboard equipment and mobile gateway routers with private networks, virtual tunnels, over-the-air updates and other protection mechanisms to ensure the security of all of your rolling stock and the safety of your passengers and drivers. These are just some examples to illustrate our holistic approach to security.

5. Any closing thoughts for agencies as they work on their strategic plans and investment strategies?

If you haven't started developing your agency security strategy and creating a documented INFOSEC policy, you need to start now. Regardless of who your technology providers are, you should be offering them a seat at the table to help be part of the solution and you should expect that they have solutions and strategies to help. There is funding available to help agencies invest in cybersecurity but they need to be cautious and look for more than shovel-readiness. At Avail, we have taken a holistic approach to security and our goal is to offer solutions that are shovel-worthy to ensure the success and security of our agency partners and those they serve. 



Rick Spangler is Chief Technology Officer for Avail Technologies, Inc.

HOW VALUES DRIVE TRANSIT'S PATH FORWARD AT CAPMETRO

CapMetro's values—and the resources it puts into those values—are guiding how it evolves as an organization, a transit provider and a community asset.

By **Mischa Wanek-Libman**, executive editor

Discussions surrounding mobility in Austin, Texas, often center around answering a series of questions steeped in 'how.' How can the fastest growing metropolitan city in the U.S.¹ continue to absorb, on average, 184 new residents per day? How can the city and its transit provider enhance and improve mobility in a region whose residents lost an average of 32 hours in 2021 due to congestion? How can a regional transit system grow by serving the people who rely on it most and limit the risk of these communities getting pushed to the margins?

CapMetro, the Austin region's public transportation authority, is answering these questions by being involved in nearly every hot topic within the transit industry. Its flexible on-demand service, Pickup, is operating in 11 neighborhoods; the authority recently integrated a micromobility bike share option; it awarded one of the largest single contracts for electric buses in the U.S.; a newly branded smart fare card and payment system is being polished for a launch this fall; the agency is pursuing a new approach to public safety; it has re-invented community engagement and then there is Project Connect – an estimated \$7.1-billion expansion program, funded through

a voter-approved property tax, that will transform the mobility landscape in the Austin region.

"I think that this has been a cultural experience here for Austin," said CapMetro President and CEO Randy Clarke. "We're changing not just transit in Austin, but we've also changed the culture of a region."

Clarke was hired by the CapMetro Board of Directors in 2018 and tasked with a complex list of directives, including developing the authority's long-term strategic vision; enhancing community engagement; forging partnerships along multiple fronts and ensuring the authority's financial viability.

Now in his fifth year leading the agency, Clarke and the team he has developed have made great progress on the initial directives. But the answer to 'how' this has been accomplished goes deeper than programs and projects and can be found in the authority's five values: safety, equity, sustainability, innovation and transparency.

"These values are the lens of how we do everything," explained Clarke. "Values effectuate change, not projects, and we're grounded in this."

Brian Carter, executive vice president, chief experience and engagement officer, adds that communicating



the agency's values throughout the organization provides a more enriching experience for CapMetro employees.

"It develops decision filters by which we test everything," said Carter. "Are these things that we think we want to do supporting those values? And if they're not, then we don't pursue them or we weigh them differently."

Equity

CapMetro has set a new benchmark for community engagement—an approach that was realized as plans for Project Connect were coming together.

"Public transit for many people who live around the poverty line is the family car," said CapMetro Board Chair Jeffrey W. Travillion. "We tried to make sure that we were speaking to communities that historically had not been spoken to, that were underrepresented [and] were underserved."

CapMetro's actions to engage the community go beyond the proverbial offering-a-seat-at-the-table-to-all scenario. What CapMetro has done and continues to do is move the table and seats into the community. More than 85,000 people were engaged prior to the passage of Project Connect with Travillion saying much of that engagement happened in PTA meetings, neighborhood association meetings, churches and anywhere else the community gathered.

CapMetro's proactive approach involved team members hired from communities around Austin. Many were bilingual and the message they helped communicate wasn't heavy on industry jargon, but the impact Project Connect could have on day-to-day lives.

"We always think about the end-users of the information that we send out," said Carter. "We have to take a step back and realize that we understand all these things more closely because we live it, breathe it, day after day. It can't be, 'do we understand it?', but 'does our customer understand it?'"

The result is improved trust among the community and among other municipal stakeholders.

"We have to have a culture of trust," said Travillion. "We have got a number of different stakeholders, all which have advocates, all which have interests and we have to understand what those interests are and understand how those communities are trained and socialized. And we have to make sure that we're all on the same page."

Transparency

Keeping everyone on the same page takes accountability and transparency, which Clarke and the CapMetro team work to support every day.

"We have more credibility and favorability than at any time in CapMetro's recent history," said Clarke.



But this too has taken intentional effort to develop. At the beginning of Clarke's tenure, CapMetro's favorability rating was around 38 percent. Just prior to Project Connect's success with voters, the agency had a favorability rating above 60 percent. The change stems from CapMetro's willingness to be vocal about its success, as well as topics it continues to improve upon.

"Being transparent when you're not good, that's when the public give you more runway and credibility," explained Clarke.

Leading up to Project Connect, the agency published community engagement dashboards with details about where CapMetro was engaging the community and summaries of meetings to illustrate the input received.

Transparency is also supported by a series of performance dashboards on the agency's website that share data and help a user visualize information related to finances, ridership, route performance, safety and reliability. CapMetro credits these dashboards with building relationships and trust within the community, as well as strengthening its brand.

"Ultimately, the agency is using the public's money, so we feel an obligation to show the public how we're investing the resources that are entrusted to us. These performance dashboards keep us accountable as we pursue operational excellence," said Deputy CEO Dottie Watkins.

Safety

Clarke shares his pride in CapMetro's holistic approach to public and operational safety because "it's a fundamentally different way of doing things." CapMetro's safety division has nearly doubled in size and it has added key leaders, such as the

L-R: Austin Mayor Steve Adler, Transportation Sec. Pete Buttigieg and CapMetro CEO Randy Clarke on March 16.

More Online

See *Mass Transit's* Insider Interview with CapMetro Board Chair Jeffrey Travillion

MassTransitmag.com/21262646



agency's first chief safety officer and director of systemwide accessibility.

The agency takes a three-pronged approach to public safety with staff consisting of public safety ambassadors, intervention specialists and the board-approved transit police.

Clarke explains public safety ambassadors are civilians who provide intervention, customer care and de-escalation efforts. Intervention specialists are social workers who are out in the system engaging with individuals experiencing homelessness or mental illness. Law enforcement involvement is reserved for the most safety-critical situations and Clarke notes CapMetro's transit police force will handle "true threats" such as explosive detection.

"Our public safety approach looks at how we are integrated to the community," said Clarke. "We are working very hard with community partners and doing this in a community-focused way. We purposely established a public safety committee made up of community members to provide [a level of] oversight and guidance to our public safety program. That's [CapMetro] giving up a lot of control, but it's the right thing to do."

The approach is paying measurable results with Clarke sharing that in the two months since the public ambassadors have been on the system, there have been 10 to 12 situations where, previously, law enforcement would have been called, but these situations were solved by ambassadors through a de-escalation process.

Innovation

An initiative being planned that hits on the agency's values of innovation and equity is the pending

launch of the CapMetro "Amp" account-based ticketing system and a new fare structure that incorporates progressive fare capping and support for an equitable means-based fare structure.

Carter explains Amp made sense for CapMetro's smart card brand because it ties in with Austin's music scene, is a term of excitement and can help promote enthusiasm for the value of transit in the city. The term also speaks to CapMetro's electric vehicle investment. However, the real change comes from the technology behind the system that will allow the authority to pursue a fare structure that addresses transit affordability.

"It's more about how we can think about our fare structure in a way that benefits the people who need it the most. And what does the fare structure look like in the future as it's enabled by technology that we have that's available to us," said Carter.

This technology is not only enabling fare capping for the first time in Austin, but the agency's board is considering a recommendation from staff to approve a new fare type called Equifare, which will deliver reduced fares on a need basis. Equifare will be for residents with household incomes less than 200 percent of the Federal Poverty Level or who are already enrolled in federal or state support programs such as Medicaid, Children's Health Insurance Program or Supplemental Nutrition Assistance Program (SNAP), among others.

"Public

transit for many people who live around the poverty line is the family car."

- BOARD CHAIR

Jeffrey W. Travillion



"If someone lives in affordable housing, there's a higher chance they're part of SNAP, so with our community engagement roots, we'll go to affordable housing facilities and work with management to sign people up for this Equifare program," said Clarke. "They don't have to come to us. We'll go to them, set them up with a new card and account and they will be good to go."

Sustainability

In 2021, CapMetro Board approved one of the largest electric bus procurements in the U.S. and announced it was powering its facilities, electric vehicles and MetroBike ebikes with Texas wind energy. While Clarke believes these are worthy accomplishments, he is unapologetically blunt when it comes to the importance of financial sustainability.

CAPMETRO BROKE ground on MetroRail's new Downtown Station in March 2019; it opened in October 2020 under budget.



IN JUNE of 2021, CapMetro and its partners celebrated delivering one million meals to community members.

CAPMETRO WAS one of the first transit agencies to start transporting food to residents shortly after the pandemic began.

“Nothing matters if you’re not financially stable. Fiscal responsibility is sustainability,” said Clarke. “CapMetro has concentrated on proper fiscal management for the future, and we are fortunate to have a financial plan that no one in the industry has.”

This wasn’t always the case with Clarke describing the agency as “fundamentally underwater” in the not-so-distant past with the work to rectify the situation beginning with his predecessor. Clarke says financial stability has been achieved through transparency, not accruing debt and even efforts such as not having a State of Good Repair backlog.

“We prioritize budgets to make sure all our assets are [maintained]. We have a reserve account that is statutorily required, a board-driven reserve account and a sustainability capital fund for all our agency green initiatives. We have a sustainability reserve account, a special facility reserve account for non-Project Connect facility expansions and we have a long range plan for staffing and staff adjustments – all these things are covered,” said Clarke.

The Project Connect expansion program is also funded sustainably with the voter-approved tax financing the program’s capital, operational and maintenance needs. Clarke noted there was some level of pushback from some stakeholders who wanted a bond measure that only covered capital costs, but he said CapMetro leadership held firm against this option by offering a simple but direct response, “don’t build a house you can’t heat.”

“One of the most important things you do at an institution is leave someone’s long-term finances better and their infrastructure assets better,” added Clarke. “And I am confident to say we have one of the best financial models of any transit agency in America.”

Eye to the Future

CapMetro has developed a strong foundation upon which to grow its organization, network and services for decades to come. When asked what the measure of a successful future will be, Travillion identified three situations he wants to see made possible with CapMetro’s system: For the community’s aging population to have access to the healthcare facilities they need; for a child who wants to attend a magnet school, the ability to travel to that school no matter where it is located; and for an individual who wants to work, the ability to travel to any job in the community.

“We have built a team of people who understand mobility, who understand transit, but who also understand this community, love it, and want to make sure it works well for all of us. CapMetro has this in its current team, led by Randy,” explained Travillion.

And that leads back to the topic of values and how the commitment of the agency and its staff to equity, safety, sustainability, innovation and transparency are driving the organization and the community toward a better-connected future.

“We have a little bit of Athenian Code,” said Clarke.

The reference is to the civic oath taken by citizens of Athens two millennia ago, but which remains relevant to modern public servants. The oath ends with the following words, “...we will transmit this city not only, not less, but greater and more beautiful than it was transmitted to us.”

“You have to leave this place better than how you found it,” added Clarke. “And better isn’t about ribbon-cutting events — the institution must be better. Initiatives come and go; programs, projects and people come and go, but values create and enable culture to grow; culture to sustain and evolve. It’s why we do what we do.” 

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1. U.S. Census Bureau
2. 2021 INRIX Global Traffic Scorecard



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Breaking Down Transit Barriers in the Heart of

HIRTA is embarking on several projects and programs to better meet the needs of its communities and provide a more equitable transit system.

By **Megan Perrero**, associate editor

Small and rural towns have as diverse communities as their medium and urban counterparts—it just may not be immediately spotted. But for the Heart of Iowa Regional Transit Agency (HIRTA), seeking out the diverse groups of people that make up the communities

it serves (seven counties in total) and identifying their various needs is second nature.

“As a smaller agency, we know that if we do not stay up on things like technology and additional options for people with services, we’re going to be left behind and we’re still going to be operating

like we were 30 years ago, which we know doesn’t work for us anymore,” said HIRTA Executive Director Julia Castillo.

To better understand what does work, HIRTA brought in the Community Transportation Association of America (CTAA) as a consultant to complete a ser-

vice redesign project for one of the counties it serves to act as a model for the other six. HIRTA then took this information to develop a new business plan, which was adopted in May 2020.

"I feel that pushed everything forward into some of the projects that we've done now," shared Brooke Ramsey, business development manager, HIRTA.

To make some of these projects a reality, HIRTA got creative with how it could leverage additional funding outside of federal dollars. The solution? Establishing a 501(c)(3) nonprofit organization, the Heart of Transit, which allows HIRTA to apply for grant opportunities not available to typical government agencies.

Now, HIRTA's focusing on programs that are breaking down transportation barriers for the communities' most vulnerable riders, especially those who need access to healthcare and human services.

Removing Barriers to Access Healthcare

One program that is enhancing access to human services is the Retired & Senior Volunteer Program (RSVP). HIRTA submitted a grant application through AmeriCorps Seniors to start the volunteer program in Madison and Marion Counties to meet its goal of having an RSVP in every county with 75 volunteer drivers each.

The program tackles transit barriers by recruiting people 55 and older to be volunteer drivers and provide trips to the pharmacy, grocery shopping and medical appointments—another initiative HIRTA has been addressing.

"We're very aware because we have been reviewing those plans that the health departments do in all seven of our counties of what they say are transportation barriers," said Castillo. "What we found was people will forget they don't have transportation, and the day of their appointment, they'll

remember they have an appointment but no way to get there."

With the help of grant funding and a new mobility coordinator, HIRTA developed its Do You Have Transportation? campaign to work with appointment schedulers, like at medical facilities, to ask the appointment goer if they have transportation, and if they do not, help them identify options to get there. Now, HIRTA is continuing its efforts to increase access to transportation for healthcare with its Health Connector Project: An Inclusive Mobility Experience from Beginning to End, which is funded through a contract with the U.S. Department of Transportation under its Complete Trip – ITS4US Deployment Program from 2021. The objective is to provide enhanced and equal access by integrating the scheduling and management of healthcare appointments and transportation, with a focus on underserved communities.

"Here's this opportunity for taking that [campaign] a step further and how can we get healthcare facilities, when they schedule an appointment for someone, that they can also schedule transportation," said Castillo.

The overall goal of the program is to increase mobility options across transportation modes while tackling the obstacles of planning and completing trips. The program is starting in Dallas County with the hope of expanding regionwide and will focus on rural, veterans, persons with disabilities, low-income, older adults and persons with limited English proficiency.

Currently, the program is in the concept development phase, the first of three phases that will last about 12 months. Ramsey shares so far, the work has been intense as the team has created 14 different documents that lay the foundation "for other transit systems to implement something similar."

"We do this because we want to make life easier and better and more accessible. We want to give people the freedom to move around their own communities that they've chosen to live in."

JULIA CASTILLO,
Executive Director, HIRTA

Technology Powers Solutions for Independence

The project team recently submitted the phase two application for its Healthcare Connector project, which moves it from a contract to a grant. Phases two and three would involve developing the software that is needed, implementing the software into the services and then operating it for a period—all of which could take another three years. In the end, Ramsey shares the final product for end users will have a web-based interface and/or a mobile app, depending on the type of device used. To be more inclusive, they're also creating an option so facilities can schedule transportation for riders who don't use technology.



**This HIRTA vehicle
is a safe space.**

**Racism, bigotry
or discrimination
will not be
tolerated.**

Images provided by HIRTA

"I think this project will appeal to people who have never used public transportation before, and that's because we're looking at this with a wide lens and recognizing we live in a multimodal society," said Ramsey.

To make this a complete trip solution, the project will also include a wayfinding function, something that will be helpful for those navigating large medical campuses that have multiple buildings and entrances. The goal is to give the user more freedom by making the trip experience less overwhelming and to create a product that is inclusive to everyone, despite their abilities or preferred languages.

"If you have a visual impairment, this gives you greater independence. It'll give you the tools to find an elevator, an escalator or a specific office within the building," said Ramsey. "My favorite part is the translation because it will make people realize that public transportation really can be used by everybody."

Another way HIRTA gives riders more freedom is through its automated fare collection system. With HIRTA serving many school kids and elderly people, ensuring they had the proper funds to ride the system was sometimes a challenge. Instead of needing exact change, caregivers, parents or riders can upload funds to an online account. People can also board the vehicles and give the driver cash, regardless of having exact change. The driver can accept the cash and enter the information into a tablet, which then goes to the person's account, allowing them to use the remaining balance later.

"Catering to caregivers has been a huge priority for me because we want to try to give people as much independence as they can have for as long as they can have it," said Castillo.

Ramsey agrees, adding that they evaluate solutions with a multitude of demographics in mind.



PASSENGERS CAN pay for their trip by uploading funds to an online account.

"We really tried to make sure that the solutions we put in place can be used by all different types of populations. We're working on things that help make folks with limited English proficiency more accessible, we focus on helping veterans and people with disabilities; really every different type of demographic that we have within our service area," said Ramsey.

No One Left Behind

In addition to its limited English proficiency options with its fare collection system, HIRTA is expanding upon these efforts thanks to funds recently awarded by the Iowa Department of Transpor-

tation (DOT). The project is called Flex Connect and involves hiring a bilingual mobility coordinator who will specifically focus on the Latino community to better help them understand how to ride HIRTA.

"One of our communities is 32 percent Latino, and in doing our analysis, we realized that only about one to two percent [of Latino people] ride HIRTA," said Castillo. "Looking at why, it comes down to the unfamiliarity of having to call ahead for demand response, and then having to give personal information or to be picked up at your door. So, we



HIRTA'S RSVP recruits people 55 years and older to voluntarily drive other community members to the grocery store, pharmacy and more.

looked at what we can do to better serve that community.”

They decided to add various scheduled stops around the area where most of them live, creating a type of deviated fixed route, so people can either go from door to door or wait at a stop without having to give out any personal information. Part of the project also includes an optional Social Determinants of Health survey where passengers can ride free for a year if they complete this prior to using transit and again at the end of the program to evaluate how transportation impacted their lives.

For this project, HIRTA is working closely with the city of Perry, the Dallas County Health Department, Perry City Manager and Dallas County Hospital, among others.

“I think [this] shows a good connection to the community itself in making sure that we are delivering the service

has touched multiple aspects of the agency. Castillo explains they started by considering if the communities saw HIRTA as the agency saw itself. Even though the agency is inclusive, aims to service everyone and cares about diversity, it didn’t have anything directly communicating this. So, it got to work, creating a diversity, equity and inclusion plan and mission statement; putting up stickers inside buses that say hate and harassment will not be tolerated; and changing the equal opportunity statement on job postings to be at the top and more personal.

“The biggest thing [I’ve heard] for people in rural areas is we don’t have any diversity. Well, there is. Look at who you’re serving, and if you have a group of people that aren’t on [the service], then that’s who you’re missing,” said Castillo. “They’re in your community; you have to figure out where they’re at and why you’re not serving them.”

With this in mind, HIRTA was awarded a grant from the Iowa Developmental Disability Council and Iowa DOT to evaluate how it serves people with disabilities and how the agency could do so more equitably. HIRTA worked with Easterseals’ project action using the Accessible Transportation Community Initiative. The project created a coalition of community partners

including riders, human service agencies, county and city officials, healthcare providers and other stakeholders to work on barriers and improvements for accessing transit.

With its project partners, HIRTA developed three main goals and objectives, as well as

“As a smaller agency, we know that if we do not stay up on things like technology and additional options for people with services, we’re going to be left behind.”


JULIA CASTILLO, Executive Director, HIRTA

an action plan. For example, HIRTA created new inclusive educational and marketing materials for social media, print and online that featured people with development and physical disabilities. HIRTA also created materials that cater to specific disabilities, such as its large-print brochures, translated options and educational materials on how to interact with low vision and blind passengers.

Making It Happen

Castillo shares many of these projects and programs would not have been possible without the support of HIRTA’s Board of Directors. From approving the new business plan to the grant programs that funded the Flex Connect and Health Connector, Castillo says the board members are always ready to research, ask questions and give input.

Ramsey and Castillo also agree this is how the entire HIRTA staff operate, adding that people don’t work within departments, the departments work within the people. And that they’re able to accomplish as much as they do because they created a plan, started with the smaller steps and have the commitment to make it happen.

“We do this because we want to make life easier and better and more accessible. We want to give people the freedom to move around their own communities that they’ve chosen to live in. And just because they’ve chosen to live in a rural community, doesn’t mean that they should be less than or get served less or have less resources,” said Castillo. 



the way that they need it, the way that they want it. We can talk about how we do things, but it may not be the way [riders] want them done,” said Ramsey.

While Flex Connect is a new project, HIRTA’s focus on diversity, equity and inclusion (DEI) goes back a handful of years and

SPECIAL REPORT: U.S. Bus Fleets Report

What data is telling us about the trends impacting the bus market and the state of U.S. fleets.

By **Mischa Wanek-Libman**, executive editor

Having entered the third year living with the COVID-19 pandemic, the transit industry has shifted its focus to providing services in communities based on changed mobility patterns. The American Public Transportation Association's (APTA) Ridership Trends platform shows average weekly ridership nationwide for the first 13 weeks of 2022 was 107.4 million riders versus an average of 66.8 million riders in the first 13 weeks of 2021 – more than a 60 percent increase. While customers are returning to systems across the U.S., overall ridership remains reduced compared to pre-COVID-19 numbers. Reduced ridership was cited as an ongoing challenge by transit agency respondents to *Mass Transit's* "2022 Mobility Outlook," a survey of readers conducted



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in late 2021 and early 2022. However, a very close second was recruitment challenges.

In a policy brief published in March, APTA found 92 percent of surveyed transit agencies stated they had difficulty hiring new employees with respondents saying bus operations positions were the most difficult to fill.

Additionally, 66 percent of respondents said they had difficulty retaining employees.

Mass Transit addressed the industry's labor issues in a recent article that explored how the pandemic exacerbated this challenge that had been developing prior to the health crisis. Employee data collected

Terminology NTD mode types

RB: Bus Rapid Transit

TB: Trolleybus

CB: Commuter Bus

VP: Vanpool

DR: Demand Response

MB: Bus

DT: Demand Response Taxi

Numbers reflected in this report used information within the National Transit Database for the modes listed.

2,850 miles

Number of fixed guideway and high intensity busway route miles in U.S.

Source: National Transit Summaries and Trends 2020

Active Vehicles in the United States

*Active cutaway vehicles **grew by 3.6%** between 2019 and 2020, while active buses **decreased by 2.5%***

Source: NTD 2020 Vehicles



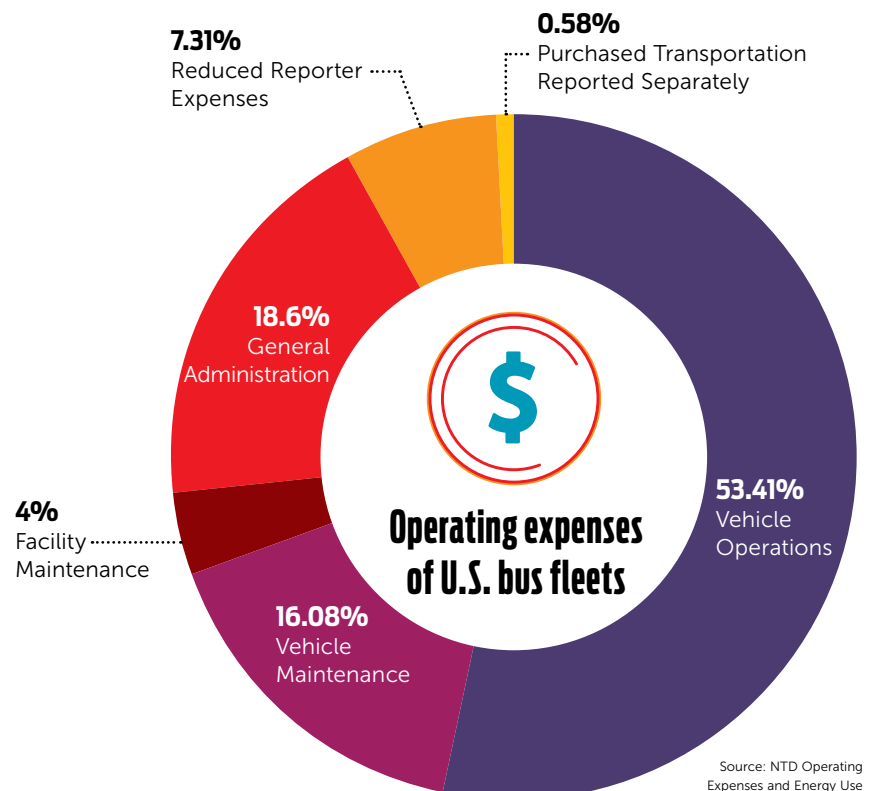
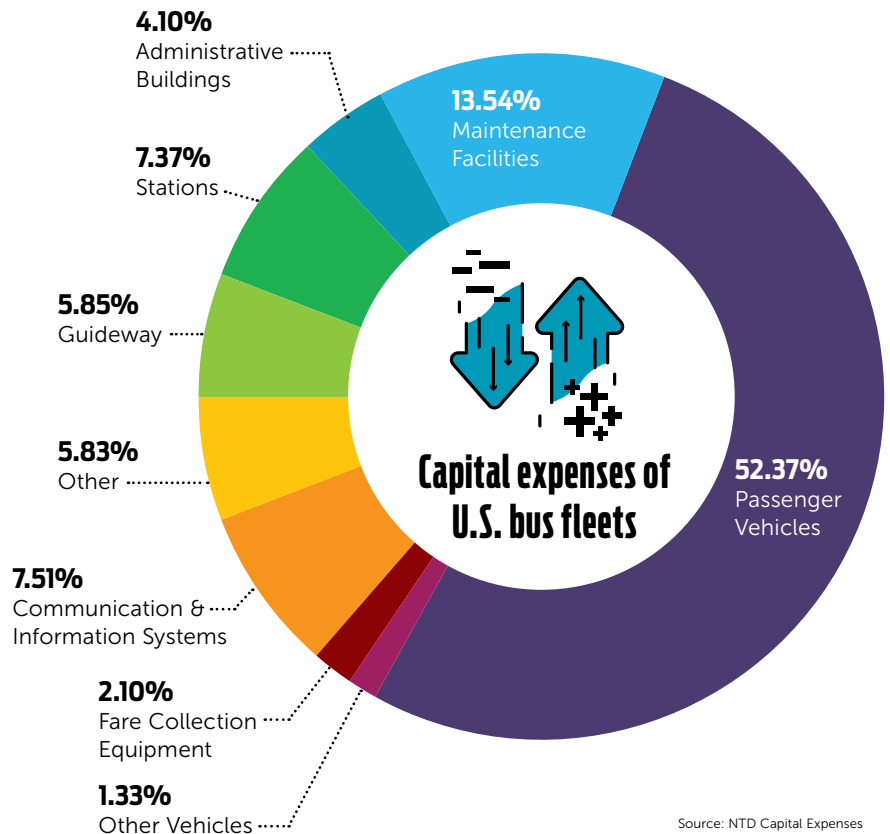
in the National Transit Database (NTD) shows overall employee numbers fell about two percent between 2019 and 2020, but when the data is isolated to vehicle operation employees, the count dropped 3.5 percent.

Despite ongoing ridership and labor challenges, the transit industry – particularly the bus segment – has several bright spots. The impact of the Bipartisan Infrastructure Law and its potential to speed the industry’s transition to lower-emission and zero-emission fleets, reduce State of Good Repair backlogs and promote transit as a transport mode worthy of federal investment cannot be overstated.

On April 1, one of San Francisco’s most anticipated transit projects began service with the opening of bus rapid transit (BRT) on Van Ness Ave. The project is the city’s first BRT and it is expected to deliver travel times that are 32 percent faster for San Francisco Municipal Transportation Agency and Golden Gate Transit customers.

In addition to the Van Ness BRT service, there are eight more bus rapid transit projects expected to open in 2022 including Milwaukee County Transit System’s East West BRT; TriMet’s Division Transit Project; Metro Transit D Line in Minneapolis and Birmingham Xpress BRT, which the Alabama city hopes to have in service prior to the World Games 2022 commencing in the city in July.

BRT projects that have started construction since the summer of 2021 include Indianapolis Public Transportation Corporation’s 15.2-mile Purple Line BRT; Clark County Public Transportation Benefit Area’s 10-mile Mill Plain BRT; and Miami-Dade County Department of Transportation and Public Works’ 20-mile South Corridor Rapid Transit Project, which is one of six rapid transit corridors being built in the county.



Fleet Age Varies

Fleet renewal, replacement and expansion see boosted investment

The age of certain types of rubber-tired revenue vehicles has been improving steadily over the past few years. The percentage of active vehicles beyond their useful life as reported in the NTD shows buses, articulated buses, double-decker buses and over-the-road buses has been steady or reflects slight improvements, while trolleybuses saw significant improvements. Smaller transit vehicles such as vans, cutaways, automobiles, minivans and sports utility vehicles saw an increase in the percentage of active vehicles that met or exceeded useful life.

Mass Transit's "2022 Mobility Report" found 36 percent of respondents reported their

agency's bus fleet was in immediate need for investment to comply with State of Good Repair, followed by 14 percent who reported maintenance facilities and 13 percent who reported stations/stops.

In early March, the Federal Transit Administration opened its first competitive grant opportunity under the Bipartisan Infrastructure Law with the availability of a combined \$1.5 billion through the Low or No Emission (Low-No) Grant Program and the Grants for Buses and Bus Facilities Program. The Low-No Grant Program will have \$1.1 billion available to help transit agencies purchase or lease low- or no-emission

Percentage of active vehicles that meet or exceed the useful life

- » 16% of buses
- » 13% of articulated buses
- » 22% of cutaways

Source: NTD Vehicles 2020

vehicles that are built in the United States. The Grants for Buses and Bus Facilities Program has \$372 million available to help agencies purchase and rehabilitate buses, vans and other related equipment and build bus facilities.

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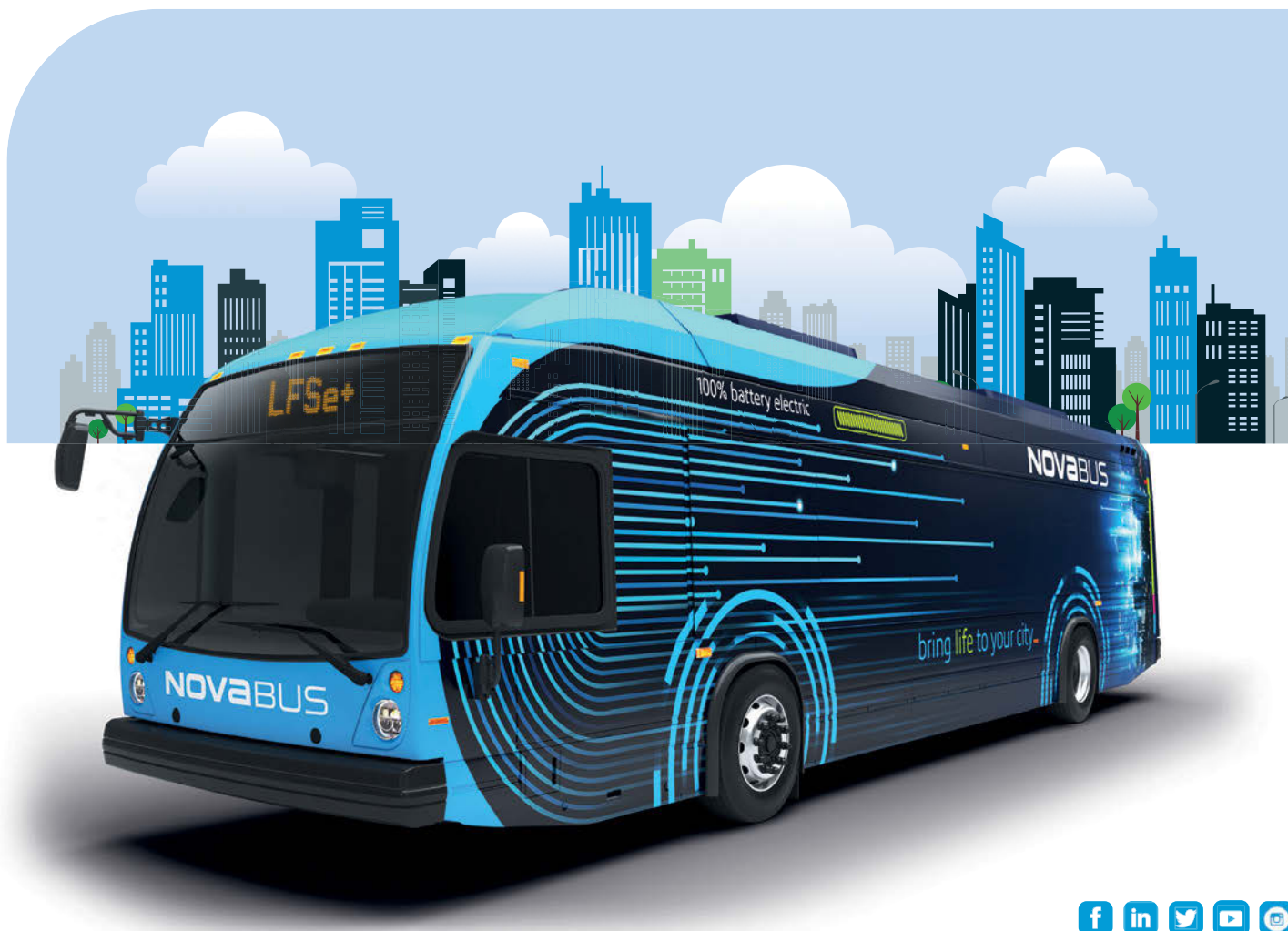
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Vehicle Energy Options

Pushing toward zero-emission fleets

The transit industry continues its efforts to transition to zero-emission fleets. The most recent edition of CALSTART's annual "Zeroing in on ZEBs" report found the count of full-size zero-emission buses (ZEB) in the U.S. grew by 27 percent in 2021 versus 2020. The report says the U.S. currently has 3,533 ZEBs deployed while Canada has 606, which includes 307 delivered in the past year.

"Early adopters such as large transit agencies in California, New York, Florida, Kentucky and Oregon continue to lead, but still are not at scale," said Jared Schnader, director of Bus Programs at CALSTART. "Smaller transit agencies and regions that are not familiar with zero-emission technologies need additional resources and effort to begin their transition."

In updated data released in early March, CALSTART notes global ZEB transit bus models available are expected to reach 262 by the end of 2022, which is a six percent increase versus 2020. However, most of those available models will be in the Chinese market.

CALSTART also points to the increase in range of ZEBs as a bright spot. CALSTART's analysis of data from vehicle manufacturers shows approximately half of ZEBs available in 2022 have a range between 218km/135.5 miles and 388km/241.2 miles.

In January 2022, Antelope Valley Transit Authority's electric fleet reached seven million miles driven and in March, the authority celebrated its achievement of becoming the first U.S. agency to fully transition to a zero-emissions fleet.

Agencies that welcomed their first zero-emission vehicles recently include Omaha Metro Transit, Akron Metro Regional Transit Authority, OC Transpo in Ottawa, Ontario, and the Central Ohio Transit Authority.

On the hydrogen fuel cell front, Champaign-Urbana Mass Transit District became the first transit provider to commercially deploy 60-foot articulated hydrogen fuel cell electric buses, as well as launched its 100-percent renewable hydrogen production station. SunLine Transit Agency welcomed five hydrogen fuel cell buses last fall and celebrated the installation of a new liquid hydrogen pump to fuel those buses in January. **MT**

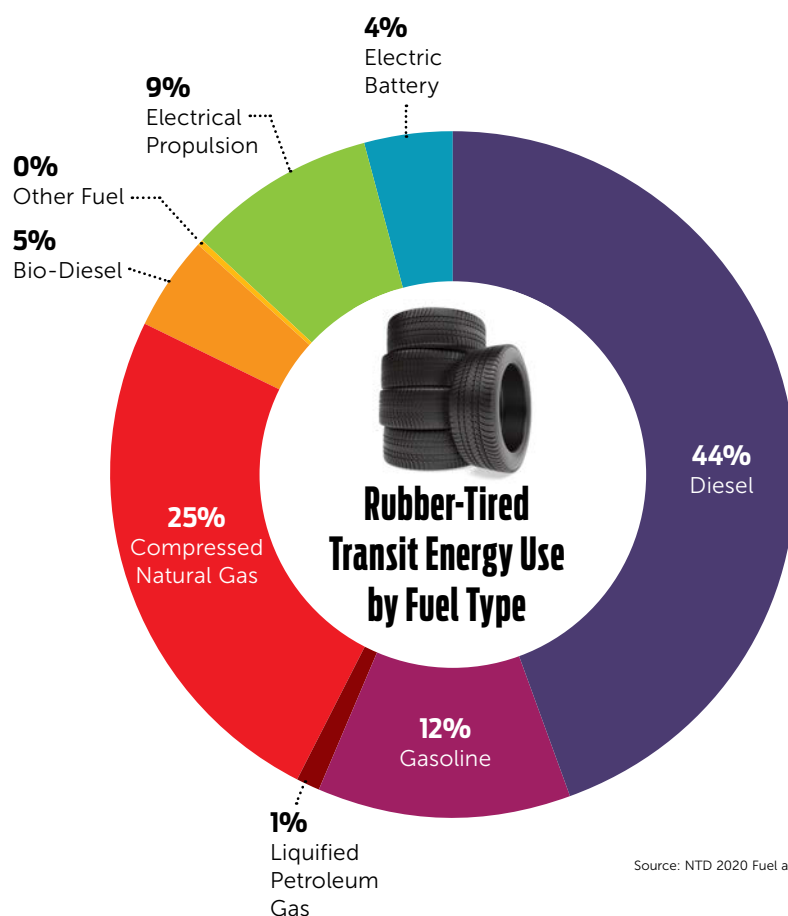


*The U.S. zero-emissions rubber-tired fleet traveled **20.8 million active miles in 2020***



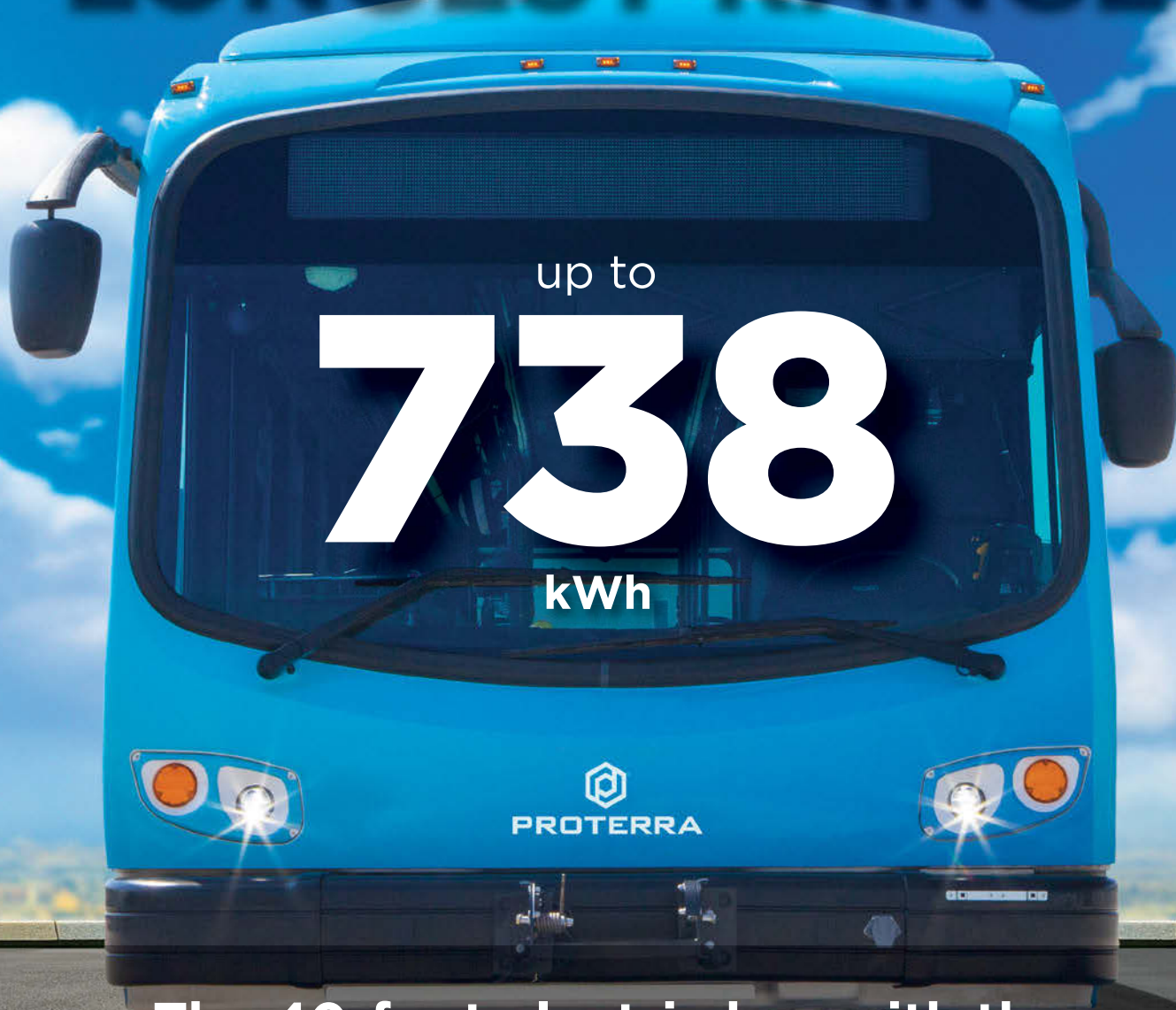
*The number of active zero-emission vehicles in the U.S. grew by **16.3% from 2019 to 2020***

Source: NTD 2020 Revenue Vehicle Inventory



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Unlock New Possibilities with IP-Based Video Surveillance Systems

Modern unified systems allow transit organizations to bring various data sources together for faster, easier access to information.

By **Shawn Enides, contributor**

OPEN ARCHITECTURE
unified video surveillance systems allow transit authorities to gain new insights by integrating data and analytics.

489286935 | Getty Images via Genetec

Across the nation, analog, proprietary video surveillance systems are being replaced by unified open-architecture, IP-based systems as transit authorities consolidate the many disparate systems within their agencies, including onboard deployments for their fleets.

Rather than switching back and forth between many different systems to view and analyze data, modern unified systems allow transit organizations to bring various data sources together within a single interface, making it easier and faster to access and interpret information.

System Unification Provides Greater Operational Insights

Unlike proprietary systems, open architecture unified video surveillance systems can bring together multiple systems and data sources, so transit authorities not only view video recordings, but also gain new insights by integrating this data with analytics such as occupancy, people-counting and more.

At the Massachusetts Bay Transportation Authority (MBTA), the promise of being able to gain insight across all systems in one place was so compelling that the organization decided to implement standardized open architecture systems within all buildings, train stations, bus stops and even on board its vehicles. In addition to upgrading its video surveillance system, the transit authority also added people-counting sensors, automatic license plate recognition cameras (ALPR) and more.

Now, when a bus is late because someone is illegally parking or driving in a dedicated bus lane, MBTA can use ALPR to capture the offender's plate numbers from video captured by the onboard cameras. The system can also keep track of how often a particular car has been caught violating parking rules and, if they want to, use the plate information to issue a ticket. ALPR is also being



used for park and ride, ticketing, counting parking spaces and more.

Evidence Sharing Through System Unification

Because MBTA systems capture video evidence and other data that may be relevant for law enforcement, it has also adopted open-architecture evidence management software, which is unified within its video surveillance system dashboard.

When onboard cameras capture driving infractions, possible threats to passenger safety or other suspicious activity, the cloud-based software makes it easy to tag and share encrypted, watermarked video with the appropriate authorities. The software can blur faces to protect the privacy of bystanders if a decision is made to release video evidence to the public. It's as easy as sending an email but ensures all best practices are followed to maintain a chain of evidence that will stand up in court if necessary. It also helps ensure security when sharing sensitive information among internal departments.

Being able to log in once and access information from video surveillance, ALPR, people-counting sensors, GPS trackers and more has made sharing data

much easier than when using siloed systems. It can also significantly cut down on the workload to retrieve and share evidence with law enforcement.

Operational Efficiencies Gained Through a Unified System

A unified system can also introduce many other operational efficiencies. New technologies can be deployed more rapidly with an open architecture system, compared to a proprietary system. During the COVID-19 pandemic, for example, transit agencies were able to add people-counting sensors to their system to ensure that vehicles and buildings did not exceed the recommended capacity limits. Now that capacity limits are no longer in force, those sensors are being used to improve the accuracy of ridership counts. Having that data at hand helps the transit agencies validate ridership numbers, a vitally important metric for funding, as well as improve route planning and recommend service changes.

Considerations When Adopting a New System

Before investing in a new system, it is important to do the research. A proprietary system can't be unified with a non-proprietary system because unification requires



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open-architecture, ONVIF-compliant systems. ONVIF is a neutral industry standard that ensures systems created by different manufacturers can “talk” to each other. You can verify your system conforms to ONVIF standards online at onvif.org.

Cost is also an important consideration for many organizations that are interested in transitioning to a unified, open-architecture system, but it’s important to remember that the whole system doesn’t need


an overhaul on day one. The upgrade can be worked toward gradually by choosing ONVIF-compliant systems for all new purchases.

Another option is switching to a unified, open-architecture system, which can offer significant long-term savings. Unifying all onboard and wayside systems within one software system may be cheaper than buying several different proprietary systems.

A unified system also makes it easier to streamline and automate certain processes and thereby saves resources. For example, at MBTA, retrieving and sharing video evidence previously required a lot more manual intervention. Someone had to physically remove hard drives from buses and trains, upload the data to another computer, copy the information to a disc or thumb drive, and walk or drive the file over to whoever else needed to see it. Now, the file is securely stored in the cloud and is easy to share via an encrypted link. The video surveillance software can also help find important moments caught on camera by cross-referencing with GPS and other data.

Moving to a Unified System

Moving from siloed systems to a unified, open-architecture physical security system is a big undertaking, but your software partner should be ready and willing to support you every step of the way. Don’t be afraid to ask questions and get an in-depth tour of how the software works in transit applications. You want a partner who is excited to share insights gained from working with organizations like yours.

Exciting innovations are happening in technology that are helping transit authorities to improve rider and employee safety, operational efficiency and customer experience. Open architecture systems allow you to adopt best-of-breed technology as soon as it hits the market. You’ll be amazed what opportunities await when all systems work together within one unified platform. 



Shawn Enides is account executive, Transportation (U.S. and Canada) at Genetec.



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BROOKVILLE DELIVERED the first of five Liberty® NXT LRVs to Sound Transit in March.

What features have been added to the companies' LRV/streetcar rolling stock in the past year, and what new features are coming in 2022 and beyond?

JF: "We're in our second generation of the Liberty NXT streetcar platform. [For the second-generation platform], typically, it's evolved system components that we're using. The overall dimensions of it are slightly different. It still uses the same onboard energy storage system, but since it's been out there operating for so long, it has improved. The onboard energy storage system, we've put it to the test with how efficient it can be off wire. Now that we've seen it succeed and prove itself out in the field, we can tell our customers if [they] want a certain length that we used to not accept or approve, we let them do that now."

MC: "In Charlotte, N.C., they are operating the first hybrid-battery powered streetcar from Siemens Mobility. The streetcar can operate both on and off-wire via an Onboard Energy Storage System (OESS), allowing the vehicle to maintain a catenary-free zone where necessary. Our LRVs

Updates from Light-Rail Vehicle Suppliers

Siemens and BROOKVILLE share insights into their latest product and service offerings, as well as the current business climate.

By **Megan Perrero, associate editor**

While the public sector is facing its own set of operating challenges, the private sector is not immune. And like the public sector, the private sector is adapting and pushing forward.

For instance, light-rail vehicle (LRV) suppliers Siemens Mobility (Siemens) and BROOKVILLE Equipment Corporation (BROOKVILLE) are gearing up for multiple deliveries this year, with BROOKVILLE having delivered

the first of five Liberty® NXT LRVs to Sound Transit in March and Siemens producing LRVs to deliver to agencies in Phoenix, Portland and Houston, among others.

Mass Transit magazine recently caught up with BROOKVILLE Sales Manager Jake Ferko and Siemens Mobility North America Rolling Stock President Michael Cahill to get the latest updates on these vehicles, as well as challenges the private sector is experiencing.



CHARLOTTE IS operating Siemens' first hybrid battery-powered streetcar that can operate on and off-wire via an OESS.

in Phoenix and soon in Orange County feature a new front-end bumper designed to minimize collision impact and vehicle damage while increasing operator and passenger safety. In the future, we can upgrade a vehicles' OESS as battery technology evolves, as each OESS was intentionally created to include an expandable and modular design that allows for easy up-

grade. Other features we could see in the future include greater use of digital technologies that allow real-time viewing of onboard vehicle cameras and operator screens from wayside control centers."

What are some of the top amenities and features customers are requesting to be included in the LRVs, and how has the pandemic affected these requests?

JF: "Every time we get different requests and requirements from transit agencies. There have been some requests for antimicrobial materials to be used in the car; a better HVAC system to keep better airflow; and [to] space out the seats differently or the way the standing area is, so the boarding and off-boarding all could be modified to better accommodate

the COVID-19 guidelines. And [someone] wanted the door for the operator."

MC: "The pandemic has changed the way people see public transportation, and because of that we are seeing customer requests for touchless ride capabilities, upgraded air ventilation and filtration systems, and passenger information systems to monitor for overcrowding and mask use. We currently offer optimized door spacing for greater passenger flow at stations. Our C-car configuration on all our S700 LRVs allows for better social distancing; Passenger Information Systems can communicate about social distancing and real-time occupancy levels; and our vehicle HVAC systems now include fresh air dampers that automatically adjust based on the number of people in the vehicle."

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How are the companies responding to the push for green mobility?

JF: “There’re opportunities out there for completely all battery-electric locomotives, switcher locomotives, freight locomotives. The demand is coming. The thing that agencies need to understand is that it comes with the price tag; it’s expensive. There’re some opportunities we’re looking at right now with the potential to provide all electric locomotives. We already have our streetcars, which are all battery electric, and then there’s the potential for hydrogen-powered propulsion in the future. But that’s still in its research and development phase.”

MC: “All our vehicles, from LRVs to locomotives, are painted with water-based, low VOC paints. And our vehicles feature LED lighting throughout, requir-

ing less power and lasting longer than traditional lighting. All our Charger locomotives are EPA and CARB certified, and our new dual-powered Chargers for Amtrak can run on diesel, biodiesel or electric power. We are always looking for sustainable alternatives in our manufacturing process. Solar panels provide more than 80 percent of the energy needed at our Sacramento plant, and we are making it a goal to be carbon neutral before 2030 and 100 percent powered by green energy.”

What supply chain impacts are the companies experiencing?

JF: “You can’t predict lead times for when you’re going to get certain components in. So, it’s hard to give customers a defined delivery schedule and even price fluctu-

ations with steel. One week we send a quote out, we feel confident in our pricing, and then it fluctuates non-stop. And I think everyone’s seeing this. It’s hard with the supply chain, not having clearly defined delivery times and prices and constant fluctuations. These are long-drawn-out contracts. So, it’s a living thing you’ve got to be constantly updating. We do our best to optimize cost and it’s just learning to adapt with what’s going on.”

MC: “There was excessive pressure on the world’s supply chain from all sides. Several key markets were suddenly shut down, cutting off the flow of many key products. In some instances, many customers delayed scheduling on certain orders, causing a sudden waterfall of excess products. The pandemic revealed weaknesses in the global supply

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chain, and to be resilient here in the U.S. market, we are constantly looking to develop and grow our network of American suppliers.”

What is the next big thing for LRVs?

JF: “The potential for maybe totally off-wire routes. There are solutions out there that can make it possible. I think streetcars are strong right now and they will continue to be strong. And the way streetcars can positively impact a community’s economy and the flow of moving people to different sectors of the city that maybe don’t get the traffic it deserves. I think [streetcars] are finally getting some of the exposure they deserve, and the success stories help.”

MC: “Our colleagues in Germany are working on sustainable



LRVS IN Phoenix feature a new front-end bumper designed to minimize collision impact and vehicle damage while increasing operator and passenger safety.

innovations for the global market, like a fully automated LRV, vehicle side automation to support driver assist and an automated depot to direct trains once at the yard. The

global team is also testing hydrogen-powered commuter trains, which is a really exciting innovation we can’t wait to see come to the U.S.” **MT**

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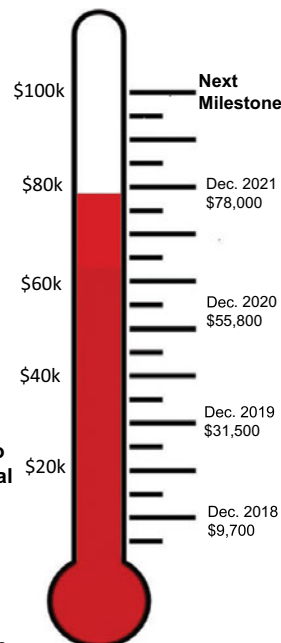
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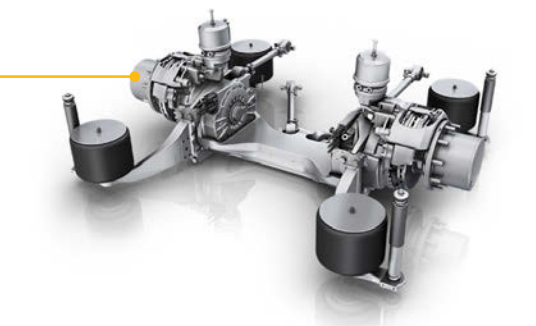
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Crash Hardened Memory

Widespread use of a “black box” for video storage should ultimately lead to safety improvements across the industry.



Blake Kozol
CEO, Deuta America Corp.

Recorders also help operators establish effective safety management strategies and training.

RECENT NTSB RECOMMENDATIONS, THE FRA NPRM 2019-14407 and APTA recommendation APTA RT-OP-RP-024-19 pertain to retaining forward-facing and operator-facing camera feeds in crash protected memory for rail vehicles. The desire to preserve such data in protected memory is not new and has been included on the NTSB Most Wanted List for years. In August 2021, the Federal Transit Authority (FTA) released FTA Report 0200 “Inward- and Outward-Facing Audio and Video Recordings for Transit Rail Vehicles” in response to an NTSB safety recommendation from 2017, which resulted from investigations surrounding transit rail collisions.

Having video data preserved after an accident can be helpful in investigating the causes and circumstances surrounding such incidents. Crash protected memory helps to ensure those videos may still be available even after a catastrophic collision. Recorders also help operators establish effective safety management strategies and training. As such, this requirement should increasingly be seen in new rail transit vehicle procurements and retrofit specifications; however, many recent procurements for new rail vehicles and retrofits have not included this requirement even though they have been required in at least some modes since 2015.

Historical providers of such protected memory devices have usually been event recorder manufacturers, not video system integrators. Saving video files rather than event data requires a significant difference in protected memory capacity, communication interface file management and read/write speed compared to traditional travel

data/event storage. This is especially challenging in large memory units designed to comply to IEEE1482.1:2013 and FRA 49 CFR 229 standards which require substantial thermal insulation and mechanical stability. These high-capacity and high-speed memories also need to be able to

function reliably for years without generating an interior buildup of heat which could damage the electronics or shorten their lifecycle.

Other critical considerations are ease of integration into the network and NVR ecosystem. For example, communications interface and data latency need to be contemplated. Video must be processed and stored as instantaneously as possible. The amount of time between the loss of video feed and a power cut, for example, can have a significant impact on the usability of the stored video in post-accident investigation and should be kept under one second.

The supply industry also offers solutions which do not require a complete video system upgrade and can be retrofitted on existing NVRs to provide crash protected capabilities. As most U.S. transit vehicles are already outfitted with forward-facing and operator-facing cameras, this can impact authorities’ abilities to deploy systems cost-effectively and enable more widespread usage.

Again, available storage size is important in several ways. As more camera feeds and higher quality video are made available, memory technologies continue evolving. Acquiring the largest capacity of memory available helps to decrease the risk of obsolescence and capacity limitations threatening overall product life cycle costs. As the amount of time covered by stored video is a function of the number of cameras, video quality, compression and available storage, a large capacity memory contributes to assuring video data can be retained in high quality and from multiple cameras for longer periods of time.

The widespread use of crash hardened memory for video storage should ultimately lead to safety improvements across the industry as investigators will have access to sound and video information in addition to the traditional travel data that previously may have been unavailable because it was destroyed or never captured. This can enable not just an enhanced ability to make conclusions regarding post-accident investigations but also allow operators to improve their safety training and safety management strategies based on observed behaviors in actual operating situations. **MT**



AN EXAMPLE of a hardened memory module certified by the U.S. Department of Transportation.
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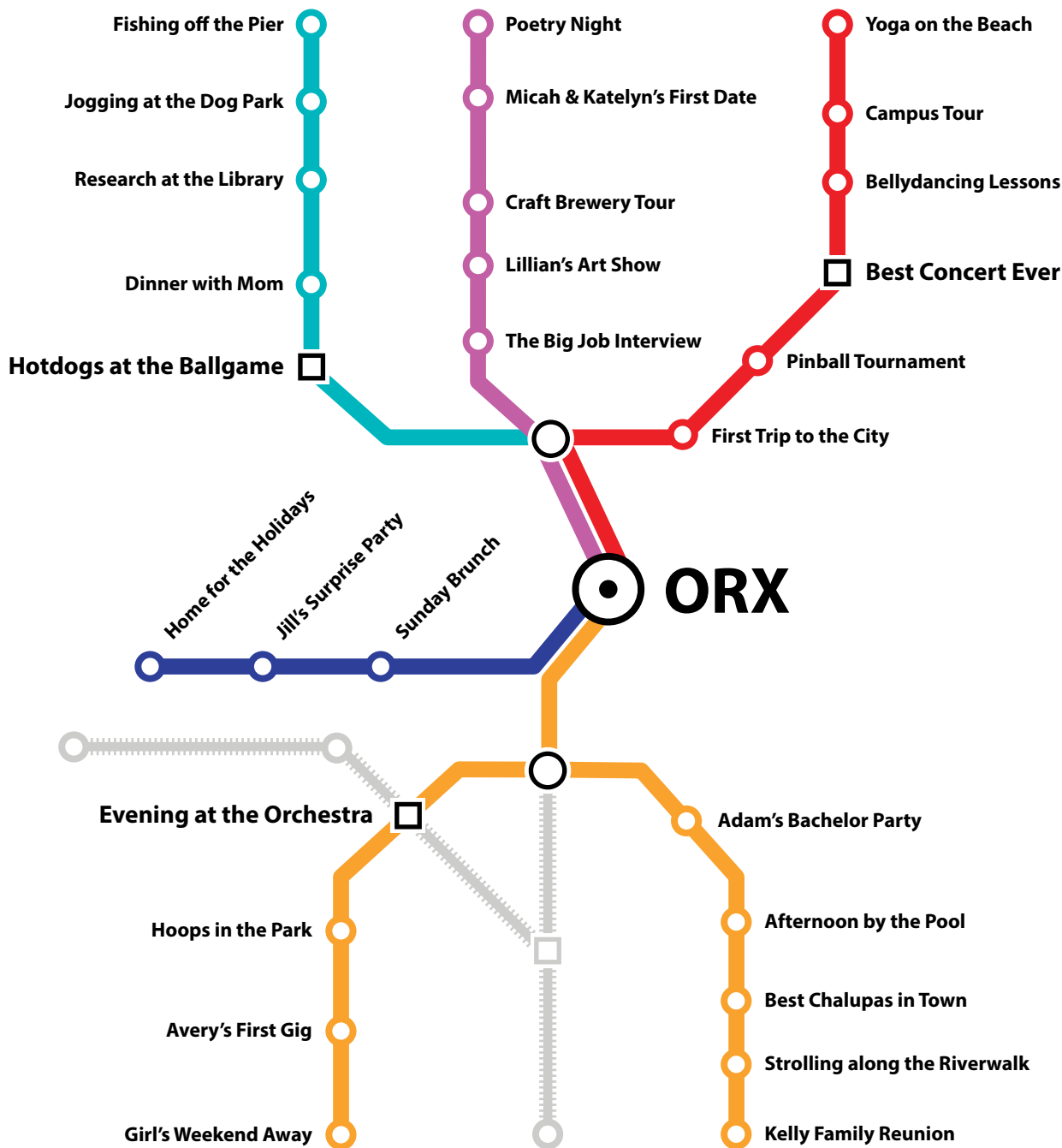
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