



BULLETIN

Volume 67, Number 8 | August 2024

2024 MTA July Financial Plan Presented

The July Plan remains balanced through 2026 with deficits of \$428 million in 2027 and \$469 million in 2028, compared with the February Plan which was balanced through 2027.

Changes from the February Plan primarily reflect Agency re-estimates and new needs, farebox and subsidy revenues and debt service actions. The two biggest changes from the February Plan are Subway and Bus farebox revenue, which is projected to be lower by \$811 million through 2027, and real estate transaction tax revenues, which are projected to be lower by \$790 million through 2027.

Projections for Commuter Railroad farebox revenue and toll revenue at Bridges & Tunnels (B&T) facilities, on the other hand, are favorable to the February Plan, with Commuter Railroad fare revenue favorable by \$114 million through 2027 and B&T toll revenue favorable by \$209 million through 2027.

The pause in the Central Business District Tolling Program

(CBDTP) is also expected to have an adverse impact on projected farebox revenue. MTA estimates that farebox revenue will be lower by \$30 million through the remainder of 2024 as anticipated shifts from vehicles to mass transit do not take place. Farebox revenue for 2025 through 2028 has not yet been lowered awaiting an outcome to the congestion pricing pause. Farebox revenue forecasts in 2025 and later will be adjusted accordingly when there is more clarity on the duration of the congestion pricing pause.

The Plan does not yet include impacts to operating expenses and debt service from the pause in congestion pricing under the assumption that either the congestion pricing pause will be lifted, or a replacement revenue stream will be provided in a timely manner. Such yet to be incorporated higher expenses during the financial plan
Continued on page 3



Electric Railroaders Association

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Trip Notices

September 14, 2024: Metropolitan New York Bus Association Committee of the Motor Bus Society trip to the New Jersey Transportation Heritage Historic Bus Festival and Philadelphia Route 15 PCC service. Visit <https://erausa.org/pdf/motor-bus-society/2024-09-metropolitan-ny-bus-association-trip-nj-pa.pdf> for all the details.

October 17-20, 2024: Motor Bus Society Fall 2024 Convention. Visit <https://erausa.org/pdf/motor-bus-society/2024-10-mbs-fall-convention-pittsburgh.pdf> for all the details.

November 22-24, 2024: Annual Meeting Weekend with visits to Coney Island, the Shore Line Trolley Museum, and early entry to NY Transit Museum. Visit <https://erausa.org/regional-trips/2024/11/> for all the details.

Donations

The ERA Board of Directors belatedly express their deepest appreciation for these recent member donations.

\$1000 and Above

Estate of Harold Golk

(Editor's note: Harold [ERA #1375] was a loyal member of 75 years, having joined the ERA on August 8, 1949! He was very supportive of the association and a participant in our international and regional conventions for many years.)

ERA is a 501(c)(3) tax exempt corporation. Your donations are fully tax deductible and can be made either with your membership renewal or using our donation form on our website: www.erausa.org/donate. Your donation helps to maintain ERA's 90-year long tradition of traction education and entertainment!

Monthly Zoom Meeting

There is no meeting in August

Cover Photo

Day Three of scheduled activities on the ERA's 2024 European tour took us to Utrecht, Netherlands to see the National Railway Museum. To get there, though, we had chartered a train of retired Dutch National Railways EMUs built by Talbot in 1973. The tour group had gathered on the designated platform at Amsterdam Centraal Station starting at about 8:30 AM for our scheduled 9:06 departure. To our surprise and delight, the passenger information system displayed the ERA's name on the signs along Platform 8 and, presumably, the large destination signs throughout the station. Left to right in the photo were: Yury Maller, Robert Newhouser, Timon Hunt, Efrek Krisher, Bruce Bente, Mark Walbrun, Lily Yee, William Erland, William Mosteller, Paul O'Brien, Sidney Keyles, Michael Glikin, Sarah Fleming, Irwin Markowitz, John Roxburgh, Luz Liddie, Malcolm McKean, Robert Mahar, and Raymond DeGroote. Not attending this day were Dennis Furbush and Fidel Patino. Paul Grether and Kristen Fredriksen were not here as they were riding the chartered train's equipment move from where it was kept to Centraal Station.

Jeff Erlitz photo



Closeup of the platform destination sign showing our special train. Utrecht Maliebaan is the station that is now part of the museum.

Jeff Erlitz photo

**Worldwide Suburban Electric Railway, Metro and Tramway Openings in July 2024**

Date	Country	City	Segment	Distance (miles)	Rail/Metro/Tram
7/1	China	Tianjin	Line 1: Donggulu to Shuangqiaohe	?	M
7/7	Luxembourg	Luxembourg	Lycée Bouneweg to Stadion	2.3	T
7/15	Australia	Perth	Joondalup Line: Butler to Yanchep	9.0	R
7/17	Italy	Naples	Line 6: [Mostra -] Mergellina to Municipio	2.3	M
7/21	Netherlands	Amsterdam	Line 25: Amstelveen Westwijk to Uithoorn Centrum	3.4	T
7/22	Italy	Catania	Nesima to Monte Po	0.8	M

URBAN RAIL NEWS, JULY 31

(Continued from page 1)

period would be due to potential earlier bond issuance, reductions in in-house capital spending which could reduce capital reimbursement of in-house labor costs, delays in new rolling stock which could increase maintenance expenses, and unrealized savings from increased bus speeds due to reduced congestion which could result in less overtime spending from longer operator shifts.

Operating expenses remain under control. Even with \$156 million included in New Needs requests, operating expenses in the July Plan are \$226 million favorable compared with the February Plan. This favorable change includes subsidy increases to offset additional expenses necessary for the expansion of the Automated Camera Enforcement (ACE) program at NYCT and the expansion of the resident toll rebate programs at B&T.

Information on New Needs, which cover critical cybersecurity needs, fare evasion mitigation efforts, maintenance and service support, can be found in Volume 2 of this Plan.

The February Plan included operating efficiencies initiatives that are expected to generate \$1.88 billion through 2027 directly impacting MTA. The annually recurring saving target was increased from \$400 million to \$500 million in the 2023 July Financial Plan (July Financial Plan 2024-2027), and this Plan continues to include unidentified savings targets totaling \$296 million for the 2025 to 2028 period, which will be identified in the upcoming November Plan.

The Plan continues to reflect additional farebox and toll revenue from biennial 4 percent yield increases proposed for March 2025 and March 2027 in the February Plan.

[MTA 2025 PRELIMINARY BUDGET](#), July 2024

Rail News in Review

New York Metropolitan Area

NEW YORK CITY TRANSIT (NYCT)

BMT Jamaica Line **Station Construction Update**

On Monday, July 22, work was completed on the Manhattan-bound platform at 75 Street-Elderts Lane Station. With that, the Jamaica-bound platform at Cypress Hills Station was closed for reconstruction and elevator installation work.

This work will continue through the end of the year and is being accomplished by the joint venture of Gramercy PJS under contract A-35305.

Additional Platform Edge Barriers

Over the weekend of August 3-4, new platform barriers were installed at DeKalb Avenue  Station on the BMT Canarsie Line.

IND Culver Line **CBTC Update**

On Monday, July 15, CBTC in Automatic Train Protection Manual mode was placed in service on southbound local Track B1 from Ditmas Avenue to Kings Highway.

Two weeks later, on Monday, July 29, full Automatic Train Operation mode was placed in service on this same segment.

BMT Brighton Line **Track Outage**

Starting on Monday, August 5 and continuing to the end of the year, express Tracks A3 and A4 are out of service from the south end of Parkside Avenue to Kings Highway.

This is to allow Forte Construction Corporation, under contract A-37140, to perform structural, electrical, and architectural work at Church Avenue. This work is part of a much larger ADA accessibility upgrade project involving 13 stations. For the duration,  trains will operate local in both directions from Prospect Park to Kings Highway.

Subway Service Improved

With the Spring "pick" that began on June 30, the next phase of subway service increases occurred. As of Monday, July 1, enhanced midday and evening service on weekdays has been added to the , ,  and  lines. Headways on these lines decreased from 10 to eight minutes. Starting Saturday, July 6, the  and  lines saw enhanced weekend service. Headways on these two lines dropped from 12 minutes to 10 minutes.



MTA PRESS RELEASE, July 2

LONG ISLAND RAIL ROAD (LIRR)

New Schedules

New schedules will go into effect on Tuesday, September 3, and the railroad will — for the first time in its history — double the number of morning trains that run from Oyster Bay directly to Penn Station. In addition, there will be an additional direct morning train to Atlantic Terminal for riders at Valley Stream, Rosedale, Laurelton, and Locust Manor stations.

The LIRR has been monitoring riding patterns and feedback, which has shown more off-peak riders prefer Penn Station than rush hour riders do. The new schedules change which branches run to which terminals during midday, late evening, and weekend hours to provide as many riders as possible with direct service to Penn Station, while continuing to offer robust service levels to those who prefer Grand Central Madison. For those who do have to transfer, schedules have been adjusted systemwide during these hours to provide more evenly spaced departures, reducing average wait times.

Babylon Branch

To allow for station renovation work at Babylon, which will require closing one of the two platforms on most weekends, service will generally consist of three trains per hour during middays, evenings, and weekends:

- A local train between Penn Station and Babylon
- An express train between Penn Station and Babylon. East of Jamaica, the train will stop at Freeport, Massapequa, and all stops to Babylon
- A local train between Grand Central and Massapequa (extended to Babylon on weekday evenings)

Far Rockaway Branch

The 7:44 AM weekday train from Jamaica to Atlantic Terminal will now start in Valley Stream at 7:26 AM and make all stops.

On weekends, daytime trains will run to and from Grand Central instead of Penn Station.

Hempstead Branch

Westbound trains from Huntington and Ronkonkoma will resume stopping at Elmont-UBS Arena on weekday evenings.

Long Beach Branch

On weekends, trains will run to and from Penn Station instead of Grand Central.

Montauk Branch

There are no major changes to Montauk Branch service.

Oyster Bay Branch

The 7:17 AM weekday train from Oyster Bay will be extended to Penn Station.

Port Jefferson Branch

During middays, evenings, and weekends, both Huntington trains per hour will run to and from Penn Station.

Port Washington Branch

There are no major changes to Port Washington Branch service.

Main Line (Ronkonkoma Branch)

During middays, evenings, and weekends, both Ronkonkoma trains per hour will run to and from Penn Station.

Buses will substitute for midday weekday trains between Ronkonkoma and Greenport until mid-November to allow for track work.

West Hempstead Branch

During middays, evenings, and weekends, trains will run to and from Grand Central.

Brooklyn service

Midday and weekend service will consist of three shuttle trains per hour between Jamaica and Atlantic Terminal.

MTA PRESS RELEASE, July 29

METRO-NORTH RAILROAD (MNR)

Fifth Wrapped Locomotive Enters Service

The fifth locomotive with special colors and designs, as part of a Heritage Series to highlight the railroad's 40 years of service to the public, was unveiled on July 12. Unlike the previous four rebrands, the rebranding of locomotive No. 214 pays tribute to the Metro-North workforce. Workers at MNR's North White Plains Shop restored locomotive No. 214, and a wrap was applied featuring pictures of past and present Metro-North workers.



P32AC-DM 214 (General Electric, 4/1998) at its introduction at North White Plains on July 12. MTA photo



The full-size mosaic images, created from the individual employee photographs, on each side of the locomotive are representative of Metro-North's East of Hudson lines, with the clock tower at White Plains station representing the Harlem Line, a New York Cityscape representing Grand Central, a view of the Hudson River from the Bear Mountain Bridge for the Hudson Line and Bridgeport's Black Rock Harbor Lighthouse for the New Haven Line. As a historical nod, one side of the locomotive uses the old two-toned "M" logo of the MTA, and the other side uses the modern MTA logo.

[MTA PRESS RELEASE](#), July 12

NEW JERSEY TRANSIT (NJT)

Additional Multilevel Cars Purchased

NJT's Board of Directors approved the purchase of 36 additional Multilevel III rail cars that offer an increase in seating capacity, mechanical reliability and improved amenities. The purchase continues to advance NJT's plan to phase out the oldest single level rail cars from the fleet.

Multilevel III cars will offer a range of benefits over the older single level cars they will replace. The vehicle maximum speed will increase to 110 miles per hour. The cars will be compliant with the latest federal regulations, including Positive Train Control. Other amenities will include USB charging ports and new, onboard information displays.

The contract utilizes options on the existing contract with Alstom Transportation at a cost not to exceed \$170 million plus five percent for contingencies, subject to the availability of funds. NJT already has orders in for 138 new Multilevel III vehicles which are in production. The first of these vehicles is scheduled to arrive in New Jersey for testing later this year.

In December of 2018, the NJT Board of Directors approved a rail rolling stock vehicle procurement award to Bombardier Transit Corporation (now Alstom Transportation Inc.) for 113 Multilevel III rail vehicles to replace the single-level, self-propelled Arrow III rail vehicles manufactured more than 40 years ago. In February 2022, the Board approved the purchase of an additional 25 Multilevel III vehicles.

[NJ TRANSIT PRESS RELEASE](#), July 24

PORT AUTHORITY TRANS-HUDSON

Majority of Riders Now TAPP-ing

More than half of PATH riders are now using the new tap-and-go fare payment system, with the percentage of PATH riders using TAPP consistently surpassing 50 percent of all riders each week. In the seven months since its introduction, PATH has recorded more than 7.6 million TAPP entries.

TAPP, short for Total Access PATH Payment, allows passengers to pay their fare at select turnstiles with the tap of a contactless debit/credit card, smartphone or wearable device, instead of the PATH-issued SmartLink cards or pay-per-ride MetroCards that have been traditionally used.

More than 51 percent of PATH customers used TAPP to pay their fare during the week of July 1, which was consistent with the two weeks prior. Over this three-week span, an average of about 83,000 riders used TAPP each weekday. The figure was about 58,000 riders on weekends.

The speedy adoption of TAPP among PATH's ridership has coincided with a steady growth in the number of system turnstiles equipped with TAPP readers. Of the system's 318 standard gates, 172 now accept the new fare option. TAPP-enabled fare gates are available at all PATH stations in both New York and New Jersey.

The TAPP pilot launched in December 2023, part of the first phase in replacing PATH's legacy Smartlink and MetroCard fare payment system installed in 2008. As TAPP is phased in throughout the system, equipment supporting SmartLink and MetroCard will remain operational as more customers become familiar with the new fare payment alternative. Existing PATH discounts for SmartLink users remain in effect and will be available when PATH issues a TAPP fare card.

The new system has received wide praise from riders and industry stakeholders alike. TAPP was recently recognized by the Intelligent Transportation Society-New York for innovation, winning the group's 2024 "Project of the Year Award" for outstanding transportation initiatives.

[PORT AUTHORITY PRESS RELEASE](#), July 12

Other U.S. Systems

AMTRAK

Hudson River Tunnel Update

The Gateway Development Commission (GDC) has received \$12 billion in federal funding to build the Hudson River Tunnel and rehabilitate the existing North River Tunnel. The \$12 billion in funding adds to the \$4 billion in funding GDC already had committed for the project, bringing the total amount of funding to \$16 billion.

The Federal Transit Administration (FTA) has signed a Full Funding Grant Agreement through the Capital Investment Grants program with the GDC that will allow the FTA to invest close to \$6.9 billion in the project, representing the largest grant ever signed by FTA.

In addition to the \$6.9 billion from the FTA, the U.S. Department of Transportation (USDOT) also approved three Railroad Rehabilitation and Improvement Financing loans through USDOT's Build America Bureau, totaling \$4.1 billion, which will provide financial support at below-market interest rates.

Other sources of USDOT support for the project include:

- \$3.8 billion through the Federal Railroad Administration's Fiscal Year 2022-2023 Federal-State Partnership for Intercity Passenger Rail Program for the Northeast Corridor Program
- \$1 billion through Amtrak annual grant funding
- \$25 million through USDOT's 2023 Rebuilding American

Infrastructure with Sustainability and Equity (RAISE) program for the Tonnet Avenue Bridge Project

- \$292.1 million through USDOT's 2022 MEGA Grant program for the Hudson Yard Concrete Casing Phase 3 project

The total \$16 billion cost of the project will be split 70/30 between USDOT and the project's local partners, which include New York, New Jersey, and the Port Authority of New York and New Jersey. The arrangement saves the local partners billions of dollars compared to the original plan to split the project costs 50/50.

The Hudson Tunnel Project encompasses a range of components, including a new double-track tunnel between the Bergen Palisades in New Jersey and Manhattan in New York City, rehabilitating the North River Tunnel damaged by Superstorm Sandy in 2012 and creating a concrete casing at Hudson Yards to allow the new tunnel to connect to New York-Penn Station.

With the funding secured, GDC can now move forward with heavy construction and tunnel boring activity. Heavy construction will begin in the coming weeks with the Hudson River Ground Stabilization Project, which will stabilize the riverbed on the Manhattan side of the Hudson River to enable the Tunnel Boring Machines (TBM) to excavate the new tunnel.

By the end of 2024, GDC will have awarded contracts for more than \$5 billion in construction activity, including contracts to build sections of the tunnel passing through the Palisades in New Jersey and going through the Manhattan bulkhead under the Hudson River Park and will have ordered the first TBM.

When the new tunnel and the rehabilitated tunnel open, which is estimated to happen by 2038, the project will provide four modern rail tunnels for Amtrak and New Jersey Transit trains. In addition, the project will provide the capability to significantly expand capacity in the future.

USDOT says additional project benefits include building resiliency and safeguarding rail operations against future extreme weather events, managing floods on both sides of the Hudson River, and creating a safer environment for first responders, maintenance workers, and the public, especially in the event of an evacuation.

[MASS TRANSIT](#), July 9

East River Tunnel Work

Amtrak will be initiating the rehabilitation of the East River Tunnels later this year following the award of a construction contract to the joint venture of Skanska E-J ERT. The tunnel is comprised of four tubes, two of which require significant repairs and comprehensive reconstruction following damage caused by floodwaters that entered the tunnel during Superstorm Sandy.

The East River Tunnel Rehabilitation Project will demolish all existing tunnel systems down to the liner, before completely restoring both tubes that were damaged in 2012.

During this project, one tube will be closed at a time, minimizing service impacts while maximizing track access for construction.

The work will involve the following:

- Spot repair and patching of the concrete tunnel liner
- Reconstruction of the bench walls in a modern high-low

configuration

- Conversion from ballasted track to a modern direct fixation track system with integrated drainage
- Installation of new fire and smoke detection systems
- Replacement and modernization of signal, traction power, standpipe, and drainage systems

Additional work will be performed aboveground to upgrade tunnel approaches and install new signal equipment and power cables in Queens, as well as improvements to existing ventilation facilities in Manhattan and Queens.



Looking east from just outside Penn Station towards, left to right, Lines 2 and 1 of the East River tunnels. Amtrak photo

The project will be governed by a Project Labor Agreement established as part of a 2021 Memorandum of Understanding between Amtrak and North America's Building Trades Unions covering Amtrak's major civil engineering projects.

During the work, which is expected to last approximately three years, Amtrak plans to maintain the vast majority of service, with slight schedule changes for Northeast Regional and Acela trains, as well as modifications to some long distance and state supported services. The project will also not result in a major disruption to LIRR or NJT service. Amtrak and the railroad partners are coordinating to mitigate service impacts and will provide detailed service information via numerous channels in the coming months.

[MASS TRANSIT](#), July 15

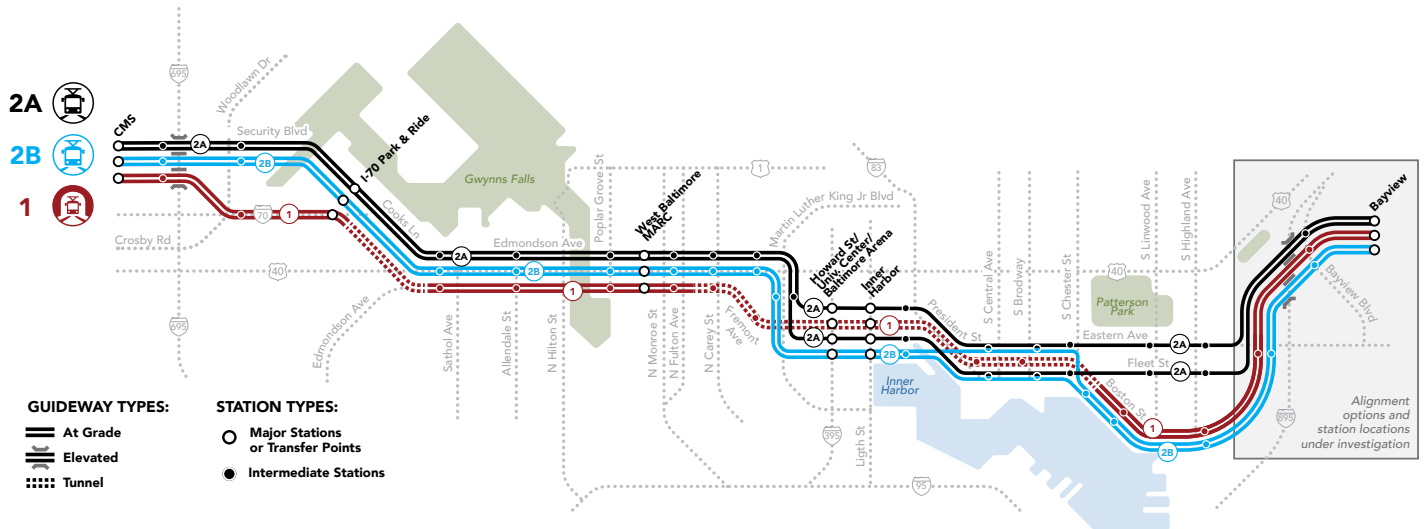
BALTIMORE, MD.

Red Line Update

The Baltimore Red Line project that was revived in 2023 will be a light-rail line that will address a wide gap in east-west transit service between Bayview and Woodlawn, Md., through downtown Baltimore City.

The selection of light-rail as the mode of transportation is based on technical analysis, including access, travel time, connections, reliability, and ridership, in addition to consideration of the line's cost effectiveness and significant and continuous input from the public.

During the past ten months, the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) conducted the technical analysis and public outreach. Financial analysis also confirmed light-rail is more cost-effective over the long term compared to alternative transit



Map of the proposed Red Line in Baltimore. Red Line Project website

modes such as bus rapid transit (BRT). While the initial capital cost of the light-rail line is higher than BRT, light-rail vehicles offer greater capacity, which will be an asset in the high-density corridor and lower the operational cost per rider and lead to increased ridership.

The MDOT MTA will continue its analysis and coordination with local partners to define the route alignment, including the extent to which the project includes tunneled segments. The preferred alignment is expected to be announced by the end of 2024 — which will reflect current conditions, growth patterns and project priorities.

The MTA has initiated the National Environmental Protection Agency review, which is required before final design can begin. As part of this process, a Supplemental Environmental Impact Statement also will be prepared and will build upon the extensive work completed a decade ago. The agency plans to enter the Federal Transit Administration's Capital Investment Grants program in late 2024, an initial step to receiving future federal funding for the construction of the Red Line.

[MASS TRANSIT](#), July 1

BOSTON, MASS.

Fairmount Line To Go Electric

A \$54 million plan has been approved by the Massachusetts Bay Transportation Authority (MBTA) Board of Directors to bring battery-electric train service to the Fairmount Commuter Rail Line, which will help to create more frequent service and lower emissions in surrounding communities.

Keolis Commuter Services, the operating partner for MBTA Commuter Rail, submitted an innovation proposal to the MBTA in December 2023 with a plan to introduce battery electric multiple unit trains (BEMUs).

The trains will provide faster, quieter, more reliable service with notably less air pollution in the corridor served by the

Fairmount Line. With approval from the MBTA Board of Directors, the MBTA and Keolis can now finalize the details of the contract, including a timeline for service to begin.

It is anticipated that trains would run every 20 minutes on weekdays. Subject to the procurement process, the first train is expected to enter service in early 2028.

BEMU trains use hybrid power with an onboard battery that charges when overhead catenary wires are available, such as at South Station. The trains can then run on battery power. BEMU trains also provide passengers with smoother rides, more space, and a modernized commuting experience. Additionally, BEMUs operate a quieter service, significantly reducing noise and vibration for passengers and residents adjacent to the route, yards, and maintenance facility.

With this agreement in place, Keolis will act as a Project Delivery Partner (PDP) to manage the new fleet, additional power and charging infrastructure, and a new light maintenance facility. The PDP approach is split into two phases, beginning first with the preparation phase to design and develop procurement documents and following with the delivery phase to project manage and integrate the BEMU fleet.

[MASS TRANSIT](#), July 26

OMAHA, NEB.

Streetcars Ordered

CAF has partnered with the Omaha Streetcar Authority, the city of Omaha, Neb., and Omaha Metro to launch the city's new tram network project by supplying the units that will operate on the line. CAF will provide design and construction of the infrastructure and the trams, as well as the operation and maintenance of the system.

Scheduled to enter into operation in 2027, the almost 3.1-mile-long network will comprise 16 stops. Running east along Harney Street and west on Farnam Street, the network will connect Omaha's historic Blackstone district with the downtown area.

The project aims to improve mobility for residents, workers

and visitors traveling between the city center and key business, education and service hubs while also driving employment growth and economic development.

CAF's scope includes the initial supply of six trams, along with their corresponding depot parts and special tools. The contract also provides an option to increase the number of trams by up to 29 additional units in the future. The contract is worth approximately \$54 million.

The Urbos platform three-module trams have a 100 percent low-floor design. They are equipped to operate using either overhead catenary power lines or Onboard Energy Storage Systems (OESS) on sections of the line without a catenary infrastructure. They will be the first CAF trams with the OESS system to be manufactured for the United States.

[MASS TRANSIT](#), July 9

PHILADELPHIA, PENN.

Market-Frankford Cars Ordered

Southeastern Pennsylvania Transportation Authority (SEPTA) has contracted Hitachi Rail STS USA, Inc., to replace its aging Market-Frankford Line fleet. The new rail fleet will provide greater accessibility, capacity, and reliability.

Under the contract, SEPTA will receive 200 cars, with the option to order up to 40 additional. The total contract amount for the base order is \$724.3 million. Delivery of the new railcars is scheduled to begin in 2029 with full fleet delivery by the end of 2031.

This procurement initiative is being led by STV, which is providing project management, design, engineering, testing, inspection, commissioning, and maintenance support services for the new rail cars.



Rendering of SEPTA's new cars for the Market-Frankford Line.
Hitachi Rail STS USA

In February, the Federal Transit Administration announced SEPTA will receive approximately \$317 million toward the purchase of the new railcars, the largest competitive federal grant the agency has ever won. The investment was part of the second Rail Vehicle Replacement Program package

funded by the federal Infrastructure Investment and Jobs Act.

SEPTA is utilizing lessons learned from the current fleet to make improvements with the new railcars. The new fleet will have designated, accessible spaces for riders with mobility devices, strollers, or bicycles. Other features will include:

- Automatic door operation
- Digital wayfinding displays with real-time data
- Regenerative braking to conserve energy
- Open gangways with increased passenger flow and visibility for law enforcement
- Greater passenger capacity
- Enhanced passenger communication system
- Longitudinal seating
- Handholds for standees

Hitachi Rail's North American headquarters is located in Pittsburgh, Penn., but the railcars will be assembled at the company's new railcar factory in Hagerstown, Md.

[MASS TRANSIT](#), July 26

SAN DIEGO, CALIF.

New Copper Line Approved

The San Diego Metropolitan Transit System (MTS) Board of Directors approved plans to move forward with implementing a new Trolley Line segment in East County. Service on this segment, the Copper Line-East County Connector, is expected to begin as early as September 2024.

The Copper Line will serve four stations between El Cajon and Santee every 15 minutes daily. The new line is set to replace the existing Green and Orange Line service north of El Cajon Transit Center. The agency says the Copper Line will improve the reliability of service, not just in East County, but throughout the system.

The agency says a primary purpose of the Copper Line is to run dedicated Trolleys on this segment, improving service reliability between El Cajon and Santee. Delays that may occur on the rest of the system will no longer impact service between the two cities.

When the new service plan goes into effect, San Diego MTS notes Green Line service will terminate at El Cajon Transit Center, allowing Trolleys to avoid the single-track segment between Gillespie Field and Santee stations. The segment has had a history of creating a ripple effect of delays for trains and missed transfers for riders coming in and out of Santee as only one train can enter or exit this segment at a time.

San Diego MTS anticipates Green Line on-time performance will improve, meaning riders have more reliable transfer times, and fewer delays. Green Line Trolley service will be extended later at night and all Sunday service will continue to El Cajon Transit Center instead of alternating trains stopping short at the San Diego State University Transit Center. Operating with shorter trains, the Copper Line will reduce the wait times and lessen traffic at Santee intersections along Cuyamaca Street.

The agency estimates approximately eight percent of

Proposed Trolley System



Map of the revised route network showing the Copper Line between El Cajon and Santee. MTS

passenger trips on the Orange and Green Lines are expected to make a transfer to or from the Copper Line once the Trolley Line reconfiguration in East County is implemented. Approximately 92 percent of passenger trips will not be impacted by the service change.

[MASS TRANSIT](#), July 19

SAN FRANCISCO BAY AREA, CALIF.

BART's Fleet of the Future Update

BART's Fleet of the Future project has just completed one milestone, with the final car of the original contract now ready for service. The project is now entering its second phase. The last car of the original contract, car number 775, was officially certified for passenger service on Thursday, July 18. BART is now accepting cars from the second Core Capacity contract at the Hayward Test Track.

In the six years since the first Fleet of the Future train first went into service, the new trains have gone from a surprising sight for riders to an everyday part of their trip. The legacy fleet was officially retired in April with a fond sendoff, but

the fact is the new trains took over the system by replacing the old cars for all scheduled runs in September 2023.

The increased pace in production and delivery of the new fleet has been essential to the transition. Car manufacturer Alstom is now delivering 20 cars a month to BART, almost twice as many as the 11 cars a month stipulated in the original delivery schedule.

The quicker tempo of deliveries is one of the reasons the Fleet of the Future project is expected to come \$394 million under budget. Another big cost saver was BART's decision to have its own highly experienced staff do more of the engineering work in-house. The project team has included engineers who have successfully completed new rail car projects at other agencies.



One of BART's Type D/E (Fleet of the Future) trains.
Railway Gazette International photo

With all 775 of the cars from the original contract now on board, BART is renewing its focus on the delivery and certification of an additional 306 rail cars for the Transbay Corridor Core Capacity Program (CCP). That's a package of strategic investments that will allow BART to operate up to 30 ten-car trains per hour in each direction through the Transbay Tube.

An additional 48 cars, which will follow the 306 CCP cars, will serve Phase II of BART to Silicon Valley (BSVII) in the coming decades. The CCP cars and BSVII cars will bring BART's total fleet to 1,129 rail cars.

In addition to BART funds in the 775 Rail Car Project, many funding partners have made the Project possible, including:

- Federal Transit Administration (FTA)
- Metropolitan Transportation Commission (MTC)
- High Speed Rail Authority
- Strategic Growth Council/California Dept of Housing & Community Development
- California Department of Transportation (Caltrans)
- Santa Clara Valley Transportation Authority (VTA)

The Core Capacity (306) Rail Car Project is likewise supported by a coalition of funding partners, including:

- FTA
 - MTC
 - California State Transportation Agency (CalSTA)
 - Caltrans
 - San Francisco County Transportation Authority
 - Alameda County Transportation Commission
- The 48 BSVII rail cars are fully funded by VTA.

[BART PRESS RELEASE](#), July 23

WASHINGTON, D.C.

Automatic Door Operation Update

The Washington Metrorail Safety Commission is allowing the Washington Metropolitan Area Transit Authority's (WMATA) Metrorail to fully operate in auto door mode.

Auto door mode will allow for faster entries and exits, with doors opening within three to five seconds after the train stops on the station platform. The time saved per stop is up to 10 seconds. Metrorail previously launched auto doors on the Red Line in December 2023.

While train doors will open automatically upon arrival, operators will still close train doors manually for departure. Auto doors are controlled by technology already onboard trains that ensures trains are safely stopped at the platform before the doors open.

WMATA says upgrading and restoring the technology for auto doors will enable the Metrorail to automate 20,000 daily door openings systemwide.

[WMATA PRESS RELEASE](#), July 8

First Purple Line Car Delivered

The MDOT MTA and the Purple Line project team celebrated the arrival of the first Purple Line light-rail vehicle on July 11. Each vehicle is 142 feet long, currently the longest of its kind in the United States. The vehicles are assembled in Elmira, N.Y., and then transported to Maryland by flat-bed trucks.



The first Purple Line vehicle, No. 101.
Maryland Transit Administration photo

The vehicles are being built by CAF. Each vehicle has capacity for 430 passengers, with seating for 80, can accommodate up to eight wheelchairs, and features eight bike racks to encourage passengers to take their bicycle or scooter onboard. The vehicles have been designed to reduce noise as they travel through communities.

Once delivered to Maryland, the vehicles will undergo an extensive commission and testing process, followed by static track testing that is scheduled to begin later this year. CAF is expected to deliver the entire fleet of 28 light-rail vehicles by the end of 2025.

[MASS TRANSIT](#), July 12

International

AMSTERDAM, NETHERLANDS

Tram Route 25 Extension Opens

On July 20, the light rail extension from Amstelveen to Uithoorn, south of Amsterdam, was opened with a modest celebration, with a few hours of free rides between the three new stops in Uithoorn. On Sunday, July 21, scheduled passenger services started on the extended line 25 between Zuid station in Amsterdam and Uithoorn Centrum.

To the south-west of Amsterdam lies the Haarlemmermeerpolder, an inland lake that was drained in 1852. A large agricultural area was created with a fairly extensive railway network (local lines) from the beginning of the twentieth century, with connections to Amsterdam, among other places, and via the villages to the "old country," such as Aalsmeer and Uithoorn. The railways were not very successful in the then still sparsely populated area; passenger transport ended in 1950 and the equally modest freight transport ended in the 1970s. In the decades that followed, Aalsmeer and Uithoorn developed into satellite towns of Amsterdam; both have a population of approximately 30,000 today.

The old railway station in Amsterdam, Haarlemmermeerstation, a monumental building from 1915, together with the northern section of the former railway to Bovenkerk, has been home to the Amsterdam Electric Museum Tram since 1975. Today, the line has been shortened for several years due to construction work on the crossing motorway A9.

In 1990, a combined tram/light rail line was built between Amsterdam and Amstelveen for tram line 5 to Amstelveen center and light rail line 51 (part of the metro) to Amstelveen Poortwachter, further south. In 2004, an extension of line 51 from Poortwachter to Amstelveen Westwijk followed, partly via the old railway line.

In 2019 and 2020, this line was modernized and converted to low-floor operation (see <https://www.urban-transport-magazine.com/en/the-new-amstelveenlijn-in-amsterdam/>). It became a tram line with the number 25. During this modernization, a parking facility for 25



Uithoorn Station, with bus station for regional lines. Most of the track in Uithoorn is paved for bus services. Maurits van den Toorn photo

trams was built south of the Westwijk terminus.

In 2016, the decision had already been made to continue the line to Uithoorn. The old railway embankment could be used for this, but had to be adapted as the former railway line was only single-track. There are even some old buildings from the railway era along the route. The new line is almost four kilometers long and construction lasted from 2014 to 2023, followed by a very long test period from August 2023. The project cost €60 million, including the expansion of the aforementioned stabling facility.

Since July 21, it has been possible to use the three stops in Uithoorn — Aan de Zoom, Station and Centrum — and travel to Amsterdam by rail again after almost 75 years. Unfortunately, this only goes as far as Zuid station; to continue to the city center, you have to change to metro line 52 or tram line 5.

A journey between Uithoorn and Amsterdam Zuid takes about half an hour. The service is operated by CAF 15G low-floor cars (five-section articulated). The cars on line 25 are painted silver-gray with black, the same cars on the city network are white with blue. For the time being, single cars are being used because second cars have derailed several times during test operations. Hopefully, it will be possible to run with two-car trains from September 1.

Incidentally, the line is officially called “Amstellijn,” but that has apparently been forgotten. Even the project organization refers to it as the “Uithoornlijn.”

URBAN TRANSPORT MAGAZINE, July 27

BANGKOK, THAILAND

Orange Line Extension

The government has approved a 13.4-kilometer extension of Bangkok’s Orange Line west across the city center, awarding Blue and Purple Line operator Bangkok Expressway & Metro a 140 billion baht 30-year public-private partnership contract for construction and operation on July 18.

The tunneled extension will connect Bang Khun Non on the Blue Line west of the Chao Praya River to a second Blue Line interchange at Thailand Cultural Centre on the east side

of the city center. Three of the 10 intermediate underground stations will interchange with other lines. Progress on the western section has been delayed by legal disputes over the concessionaire tendering process.

Work on the 22.4-kilometer eastern leg of the Orange Line, between Thailand Cultural Centre and Yaek Rom Klao, began in 2017. In total there will be 17 stations, including interchanges with the Yellow Line monorail at Yaek Lam Sali and the Pink Line monorail at Min Buri, with the six easternmost stops being on elevated alignment. This initial section of the Orange Line is due to open in 2028, with the city center western extension scheduled to open two years later, bringing the total route length to 35.9 kilometers.

With the Orange Line’s second phase now approved, BEM is expected to order 51 three-car trains; 30 would be for the Orange Line, with the rest expanding the Blue Line fleet to cope with expected traffic growth. These will operate from 750v DC third-rail supply and be based at an expanded Rama 9 depot, one kilometer east of Thailand Cultural Centre. Bids have been received from Siemens Mobility, which supplied the existing Blue Line fleet, and Japan’s J-TREC.

METRO REPORT INTERNATIONAL, July 25

BELGRADE, SERBIA

New Trams Ordered

On July 11 Belgrade city transport operator GSP named Turkish supplier Bozankaya as the winner of a 7.8 billion dinar contract to supply 25 trams.

The first is to be delivered in 12 months, and the rest within the following 13 months. GSP has specified five-section, completely low floor vehicles between 29 and 32 meters long with a minimum of 40 seats and a total capacity of at least 160 passengers at four passenger per square meter.



Urbos 3 No. 1530 (CAF, 2013) is currently the newest car in Belgrade’s tramway fleet. It’s shown here operating a Route 9 trip on Bulevar Milutina Milankovića on May 10, 2024.

František Vaňásek photo via Urban Electric Transit

A rival bid from Siemens Mobility was rejected on procedural grounds as it was not submitted through the public procurement portal.

[METRO REPORT INTERNATIONAL](#), July 12

BERLIN, GERMANY

U-Bahn CBTC Contract

Berlin transport operator BVG has awarded Siemens Mobility a contract to supply communication-based train control to support Grade of Automation (GoA) 2 attended semi-automated operation on metro lines U5 and U8.

The two lines were selected for the Berlin U-Bahn's first CBTC deployment as the existing train protection technology needs to be renewed.

The contract announced on July 5 covers a total of 40 route-km with 26 stations on U5 and 24 stations on U8. It is worth about €200 million, and there will also be additional long-term maintenance contracts.

Siemens Mobility's Trainguard MT CBTC will automate acceleration, braking, train spacing, and emergency braking, with the driver focusing on boarding and alighting passengers, visual monitoring of the route, and emergency intervention.



BVG 2610, a type F76E built by Waggon Union in 1977, is seen on line U5 heading to Hönow at the relatively new Museumsinsel Station on September 22, 2022. Jeff Ertlitz photo

The CBTC will reduce headways to under 100 seconds, increasing capacity by 30 percent while also improving reliability and punctuality. Siemens Mobility said services would not be interrupted during installation, with the CBTC expected to go live on U5 by 2029 and U8 by 2032.

[METRO REPORT INTERNATIONAL](#), July 5

Longer Tram Unveiled

The first of the longest trams ever ordered for Berlin has been unveiled by operator BVG. The nine-section trams will be used to increase capacity on Route M4 from Hackescher Markt to Falkenberg and Zingster Strasse, which carries up to 18 trams

per direction per hour and around 100,000 passengers per day.

In December 2020 BVG signed a €571 million framework agreement for Bombardier Transportation, now part of Alstom, to supply up to 117 trams from the Flexity family and provide spare parts for 32 years.

This included a €115 million firm order for an initial three 30-meter five-section and 17 extra-long 50-meter nine-section trams to be delivered from the manufacturer's Bautzen factory from this summer to 2026.

The shorter trams will be used on routes in the southeast of the city, while the longer ones will gradually replace pairs of GT6 trams on M4 from the first quarter of 2025.

Branded Urbanliner by the operator, they are 50.89 meters long and 2.4 meters wide. They have 92 seats and space for 220 standees, around 12 more passengers than a pair of GT6 trams. The Bauhaus-inspired styling includes large windows and cabs designed to provide the driver with good all-round visibility.



The first Alstom Urbanliner tram for Berlin, No. 5001. BVG photo

BVG said they are its first trams without exterior mirrors, with CCTV being used to improve the rear view and eliminate blind spots. A driver assistance system warns of obstacles ahead. The doors have warning sounds and green and red LED strips to clearly indicate when passengers can board, and the interior lighting changes between cold and warm white depending on the time of day and year.

Accessibility features include space for passengers with wheelchairs or pushchairs, and seats with a height of 510 mm for people with limited mobility and lower seats at 400 mm for smaller people. There are grab bars with a "golf ball structure" on the doors to improve orientation for visually impaired people when getting on and off, and gap bridging for barrier-free entry.

[METRO REPORT INTERNATIONAL](#), July 11

BILBAO, SPAIN

New Trains and CBTC

Metro de Bilbao has announced a €736 million plan to

increase capacity by 12 percent by upgrading its meter-gauge network and replacing its oldest vehicles.

Communication-based train control is to be installed at an estimated cost of €130 million. This would enable headways to be reduced and provide greater operational flexibility, improved punctuality and more accurate real-time train position information.

A €6 million modernization of the control center to enable real-time management of train movements would facilitate the operation of short workings and shuttle services to handle traffic peaks.



Two trains of Metro Bilbao at Bolueta Station on October 27, 2005.
Daniel Erler photo via Wikimedia

The largest element of the program is the planned €600 million procurement of 37 five-car trainsets which would have a higher capacity than the existing fleet dating from the early 1990s, as well as modern diagnostic and passenger information systems. The new trains would be 35 percent more energy-efficient, reducing the operator's annual electricity bill by up to €1.5 million.

The first are expected to enter service in 2027-28, with deliveries running to 2033.

Metro de Bilbao operates a two-line Y-shaped network totaling 44 kilometers. There is also a Line 3, which is operated by regional railway company Euskotren.

[METRO REPORT INTERNATIONAL](#), July 26

BOLOGNA, ITALY

Tender for New Trams

CAF is the sole bidder for the tram tender in Bologna, the city council announced on June 25. The municipality is currently evaluating the offer and it still hopes to sign a contract by the end of the summer.

Bologna municipality has called tenders worth €260 million for a framework contract covering the supply of up to 60 trams. They are intended for use on the 16.5-kilometer Red

Line, which is under construction from Emilio Lepido in the west to Parcheggio Michelino and Facoltà di Agraria/CAAB in the northeast, as well as on the 6.9-kilometer Green Line, for which civil works contracts are now in place. This will link Corticella in the north to Via dei Mille in the city center.

The six-year contract for the trams would include four years of maintenance and require testing and commissioning of the vehicles. An initial firm order is expected at a total value of €135.3 million.

The trams are to feature batteries which recharge when they run under catenary, and they will be used for traction on parts of the network in the historic city center where overhead wires will not be installed for aesthetic reasons.

The 33- to 35-meter-long, bidirectional, fully accessible trams are to be 2.4 meters wide and have a capacity of 205 passengers, of which at least 20 percent can be seated.

The procurement is being partly funded from the European Union's Recovery & Resilience Fund.

[METRO REPORT INTERNATIONAL](#), July 1

BUENOS AIRES, ARGENTINA

Metro Cars To Be Overhauled

Buenos Aires metro operator EMOVA has awarded manufacturer Alstom a contract to overhaul 60 Metropolis 300 cars used on lines D and H.

Alstom is to undertake the three-year project at its Los Hornos plant in La Plata.



A Metropolis 300 series train somewhere on Line H on June 24, 2016.
Government of Buenos Aires City photo

This contract is the first maintenance agreement for the Metropolis 300 concluded between EMOVA and Alstom since 2016, when Alstom sold a fleet of 180 cars to Subterráneos de Buenos Aires.

In 2022 EMOVA awarded Alstom contracts to overhaul 15 Metropolis 100 cars and 25 cars built by the former China Northern business, now CRRC.

[METRO REPORT INTERNATIONAL](#), July 29

BULGARIA

EMUs Ordered

Stadler Polska has been selected for a contract to supply 35 electric multiple-units. The contract will be worth 642.5 million leva, including 15 years of maintenance. The EMUs would be delivered within 28 months of the contract being signed to meet the deadline for the use of Recovery & Resilience Plan funding.

In April the ministry signed a contract for Stadler to supply seven double-deck EMUs, with an option for three more.

Negotiations are continuing with Talgo for the supply of 20 push-pull trainsets for long-distance services.

[RAILWAY GAZETTE INTERNATIONAL](#), July 10



Rendering of new Cologne S-Bahn train.

Alstom Advanced & Creative Design

COLOGNE, GERMANY

S-Bahn Cars Ordered

Transport authorities go.Rheinland and Verkehrsverbund Rhein-Ruhr have selected Alstom to supply and maintain 90 custom-designed Adessia Stream electric multiple-units for S-Bahn services through Cologne.

Alstom said the order announced on July 24 was the largest it had won in Germany, with an overall value of more than €4 billion including full responsibility for 34 years of maintenance. The authorities confirmed that Alstom had submitted the most economic offer in a multi-stage tender process, noting that the official signing of the contract would follow.

The order covers a mix of nine-car EMUs around 150 meters long with a capacity of more than 1,150 passengers and 11-car sets almost 170 meters long which will be able to carry up to 1,340 passengers.

VRR said the average journey length on the services where the 140 km/h EMUs would be deployed was around 25 minutes, but individual journeys ranged from short urban trips where people needed standing space to longer trips of up to one hour where people wanted a seat.

Alstom said the EMUs would incorporate a mix of innovative flexible modules to meet these different needs, with various interior arrangements and multi-purpose areas in each car providing space for baby carriages and bicycles.

The units will feature wi-fi, power sockets, and windows permeable to mobile phone signals. They will have powerful air-conditioning with environmentally friendly refrigerants to provide a comfortable experience at ambient temperatures from -25°C to +45°C.

Accessibility features will include a Bluetooth digital hearing system. Each end car will have a dedicated wheel-chair area and accessible toilet, together with gap-bridging devices to provide level access. Alstom said this would be the first time that a German S-Bahn train of this type would be equipped with toilets.

Development is to be led by the company's Hennigsdorf facility, with the trains to be manufactured at Bautzen.

Predictive maintenance is expected to increase availability while reducing costs, and the design aims to enable the continuous optimization of maintenance processes over the entire service life of the fleet.

The first EMUs are scheduled to enter trial operation from mid-2029 with all to be in service by 2033.

The units will be owned by the transport authorities, which will make them available to the operator. Earlier this year incumbent DB Regio was awarded a contract to operate Cologne S-Bahn services until December 2032, initially using its own rolling stock.

The S-Bahn network covers services S6 Essen – Düsseldorf – Cologne-Worringen, the future S10 Cologne-Nippes – Cologne-Dellbrück, S11 Düsseldorf Airport – Cologne – Bergisch Gladbach, S12 Horrem/Sindorf – Au (Sieg), the future S13 Troisdorf – Bonn-Oberkassel, S19 Aachen/Düren – Au (Sieg), the future S38 (formerly RB38) Bedburg – Horrem – Cologne Messe/Deutz and S68 Langenfeld – Düsseldorf – Wuppertal-Vohwinkel.

These services currently total 12.3 million train-km/year, but are expected to increase to 14.2 million in 2032 and 20.1 million in the longer term, following the completion of infrastructure enhancements in the Cologne area.

[RAILWAY GAZETTE INTERNATIONAL](#), July 24

ESSEN/MÜLHEIM, GERMANY

Ruhrbahn Deliveries Begin

Essen and Mülheim an der Ruhr transport operator Ruhrbahn has taken delivery of the first of 51 Type HF1 high-floor light vehicles ordered from CAF.

The LRVs are being supplied from the Spanish manufacturer's Zaragoza factory under a €150 million contract signed in June 2021. This includes 44 vehicles for Essen and seven for Mülheim an der Ruhr.

Two pre-series vehicles will be used for testing ahead of series deliveries from early 2025.



First HF1 high floor LRV for Essen and Mülheim. Ruhrbahn photo

From 2026 the HF1 LRVs will replace Ruhrbahn's existing Stadtbahn-B cars and the P86/P89 vehicles which were acquired second-hand from London's Docklands Light Railway. These will be offered for sale.

The HF1 has a similar cab and interior to Ruhrbahn's NF2 and NF4 low-floor trams, but at 28 meters long and 2.65 meters wide the high-floor cars are shorter and wider.

The LRVs are designed for 80 km/h operation. Ruhrbahn specified the use of air sprung trucks, based on the smooth running of the Stadtbahn-B cars.

Other features include air-conditioning, two multifunctional spaces for passengers with wheelchairs or pushchairs, and doors with a 970 mm entry height and visual and acoustic warnings when opening and closing.

Safety technology includes a driver assistance system and external cameras instead of exterior mirrors.

[METRO REPORT INTERNATIONAL](#), July 15

FLORENCE, ITALY

New Trams Ordered

Hitachi Rail has been awarded a contract to supply 46 trams equipped with batteries to avoid the need for overhead wires in the historic city of Florence.

The order announced on July 30 includes the supply of digital signaling, and operator GEST has also awarded Hitachi Rail a €17 million contract for the maintenance of the network's existing fleet of AnsaldoBreda Sirio trams.

The new trams are scheduled to be delivered from 2026 and will be suitable for use across all current and future routes on the network.

The trams will be 33.5 meters long with 54 seats and a maximum capacity of 278 passengers, and will feature large windows and an "innovative" air-conditioning system.

They will have a maximum speed of 70 km/h, with regenerative braking to return power to the batteries to reduce overall energy consumption.

The contract builds on Hitachi Rail's first trials of battery



Sirio 2043 (Hitachi Rail, 5/20017), from the newest tram order, operating on route T2 at Via Stefano Buonsignori on June 3, 2019. focus1965 photo via Urban Electric Transit

tram technology which were held in Florence in 2021. They saw a retrofitted Sirio operate in revenue service using battery power between Stazione-Alamanni and Fortezza.

[METRO REPORT INTERNATIONAL](#), July 31

HAMBURG, GERMANY

Metro Line 6 Train Design Revealed

Hamburg city transport operator Hamburger Hochbahn has signed a €2.8 billion framework agreement for Alstom to supply up to 374 metro trainsets and communication-based train control equipment.

The deal announced on July 10 covers up to 120 DT6-A driverless trainsets for GoA4 unattended automatic operation on the future Line U5, which is currently under construction, and 254 DT6-F (with driver) semi-automated trains to gradually replace the current DT4 fleet on the existing network.

There is an initial €670 million firm order for 41 DT6-F trainsets for the existing network and seven DT6-A trains and CBTC for the 5.8-km five-station first phase of U5 between Bramfeld and City Nord.

Production of the rolling stock at Alstom's Salzgitter plant is scheduled to start in 2026 for delivery from early 2028 ahead of the opening of the first section of U5 in 2029.

The stainless steel trainsets from Alstom's Metropolis family are intended to combine a high capacity with safety and comfort.

The four-car DT6 trains will be 40 meters long, the same as the three-car DT5 sets. The legacy infrastructure requires a maximum axle load of 10 tons, and Hochbahn said the additional truck would enable more people to be carried while the shorter car length would mean that the car width can be increased from 2.6 to 2.73 meters to provide more space for passengers and improve accessibility by reducing the gap at curved platforms.

Up to three trainsets will be able to operate in multiple, providing a capacity of 850 passengers with DT6-F sets and



Rendering of new DT6 train set. Alstom

almost 900 people with DT6-A sets which will not have space taken up by cabs.

The modern interior design will include USB charging points, air-conditioning, and large windows, with doors made almost entirely of glass to make the vehicles appear more transparent.

The internal layout aims to meet the needs of different user groups, including people with disabilities or pushchairs.

Seats will be arranged both in groups of four and length-wise, with multi-purpose areas near the doors for those who need a lot of room, space near the doors for people making short trips, and bays of seats for longer journeys.

Alstom's Berlin site is to supply the Urbalis CBTC, which will support 90-second headways to enable 270,000 passengers per day to be carried once the full 25-km long U5 with 23 stations is completed.

[METRO REPORT INTERNATIONAL](#), July 10

LUXEMBOURG

Tram Line Extended

The 3.7-kilometer five-stop Phase D extension of the city of Luxembourg's tramway south from Lycée Bouneweg to Stadion was opened on July 7.

The new terminus provides an interchange with bus services, and a park-and-ride facility is to open in October. The Howald Gare stop is expected to become a major tram, rail, and bus interchange for the south of the Grand Duchy.

Operation of the extended tram line has required the recruitment of 15 more drivers as well as additional maintenance staff.

Meanwhile, tracklaying is progressing on Phase E of the tramway, a 3.9-kilometer northern extension from Luxexpo to the airport at Findel which is scheduled to open in early 2025.

Studies are also underway for an interurban fast tram line linking Stadion with Leudelange, which is expected to open by 2028.

[METRO REPORT INTERNATIONAL](#), July 9



Urbos 3 No. 103 (CAF, 2017) is laying over on the turnback tracks north of the Luxexpo terminal on May 20, 2024. Luxtram's storage and maintenance facility is in the background. Jeff Erlitz photo

MADRID, SPAIN

Line 6 To Go Driverless

Metro de Madrid has announced more details of its plans for the automation of the 23.5-kilometer, 28-station circular Line 6, which is the busiest on the network with an average of 618,000 passengers on weekdays. Work on the €129 million project is scheduled to start in 2025.

The line is to be rebuilt with slab track and realigned where necessary to reduce noise and vibration. This will require two blockades, between Moncloa and Méndez Álvaro via Laguna from June to September 2025, and then between Moncloa and Legazpi via Avenida de América from September to December. A free replacement bus service will be provided.



Serie 5000 No. M-5548 (CAF, 1993) on Line 6 at Estación Príncipe Pío on February 17, 2011.

Aape Olander photo via Urban Electric Transit

The line's existing communication-based train control supports Goal of Automation (GoA)2 operation with the driver responsible for operating the doors and starting the

train at stations. This will be retained but migrated to GoA4 unattended operation. The stations will also be equipped with platform screen doors.

In June, CAF was awarded a €400 million contract to supply 40 six-car trainsets for Lines 6 and 8.

[METRO REPORT INTERNATIONAL](#), July 23

MAZYR, BELARUS

New Trams Delivered

The Mazyr tramway, which is owned and operated by the oil refinery which it serves, is about to take delivery of its first new trams since the 20-kilometer line opened in 1988.

In autumn 2024, BKM was awarded a contract to supply 10 Type T811 fully low-floor four-axle trams. The first four were scheduled to arrive in February, but they have been delayed because of the impact of international sanctions on the supplier.



New tram for Mazyr. BKM photo

The 1,524 mm gauge trams will be 16.5 meters long with 35 seats and a total capacity of 160 passengers. They will feature CCTV, air-conditioning, automatic fire extinguishing systems, GPS, wi-fi, USB sockets, audio-visual systems and ticket validators, and will be able to operate in multiple.

[METRO REPORT INTERNATIONAL](#), July 8

MELBOURNE, AUSTRALIA

Operating Contract Awarded

The state of Victoria has awarded the Yarra Journey Makers joint venture of Transdev and John Holland the next contract to operate the Melbourne tram network. This is the world's largest, with around 500 trams, 1,600 stops, 24 routes, more than 250 kilometers of double track and 147 million passenger journeys a year.

The A\$6.8 billion contract announced on June 28 runs for nine years from December 1, 2024. Services will continue to



Flexity Swift E No. 6033 (Bombardier Transportation, 2015) is operating on route 11 at Collins Street on November 24, 2016.

Mungojerrie photo via Urban Electric Transit

operate under the Yarra Trams brand, and YJM said it had a detailed plan in place for a seamless transition from Keolis Downer which has operated the network since 2009.

Keolis Downer had also bid for the next contract, as had a consortium of Kinetic, Go-Ahead, Globalvia and Acciona.

[METRO REPORT INTERNATIONAL](#), July 2

MÖSSINGEN, GERMANY

Tram-Train Design Unveiled

Project promoter Zweckverband Regional-Stadtbahn Neckar-Alb has unveiled the appearance of the Stadler Citylink tram-train vehicles ordered for the future regional light rail network. The first of the vehicles are currently being produced at Stadler's factory at Valencia in Spain.

The color scheme was developed by Tricon.

The 100 km/h tram-trains will be able to use 15 kV 16.7 Hz electrification on main line railways and 750 V DC on tramways.



Rendering of Stadler Citylink tram-train for Regional-Stadtbahn Neckar-Alb. Tricon

The three-section units will have four doors per side, all in the end cars which will have multi-purpose areas with space for bicycles and pushchairs. The center section without side doors is aimed at people traveling longer distances.

There will be 94 seats and a total capacity of 232 passengers, with facilities including air-conditioning, free wi-fi, power points, spaces for wheelchair users with handrails, and intercoms and an accessible toilet.

The Land of Baden-Württemberg's rolling stock agency SFBW has ordered 30 Citylink tram-trains for delivery from 2027, with options for 57 more. The orders are part of a January 2022 framework agreement awarded in partnership with five other transport bodies in Germany and Austria.

The overall framework covers the supply and maintenance of up to 504 tram-trains worth €4 billion, with an initial €1.7 billion firm order for the supply of 246 tram-trains over 10 years from 2024 and the provision of 16 years of maintenance.

[METRO REPORT INTERNATIONAL](#), July 24

NEWCASTLE UPON TYNE, ENGLAND

Tyne & Wear Metro Control Center Modernization

Tyne & Wear Metro operator Nexus has selected Sella Controls to undertake an £8.8 million two-year project to replace the Supervisory Control & Data Acquisition System (SCADA) which is used to manage the network's high and low voltage power supplies, fire and intruder alarms, lighting, lifts, escalators and tunnel drainage pumps.

They will be installing a completely new system which will replace a now life-expired system which was brought on line in the 1990s.



View of the current SCADA system at Tyne and Wear. Nexus photo

HIMA Group company Sella Controls is to supply its UK rail approved Tracklink suite, including a complete dual-redundant SCADA system, substation remote terminal

unit and control room overview mimic, as well as simulator and training tools. It will also provide long-term planned and reactive maintenance.

HIMA Group will be presenting its independent open safety platform and latest Tracklink product suite at the InnoTrans 2024 trade fair in Berlin during September.

[METRO REPORT INTERNATIONAL](#), July 12

SÃO PAULO, BRAZIL

Metro Line 6 Train Design Revealed

Alstom and São Paulo Metro Line 6 (Orange) PPP construction and operating concessionaire Linha Universidade have unveiled the design for the 22 six-car trainsets to be supplied for the future 15.3-kilometer route.

Production of the cars has begun at Alstom's Taubaté site in São Paulo state. The design process made use of the supplier's Lab 4.0 virtual reality laboratory, which enables detailed study of everything from the shape of the seats to the technical equipment.

The stainless-steel-bodied trainsets will have a design life of more than 40 years. They will be light in weight for energy efficiency, with a capacity of 2,044 passengers. The doors and the interior layout are designed to smooth passenger flows, with large windows to provide clear views. There will be dedicated spaces for people with reduced mobility.

The trains will be equipped for unattended automatic operation at up to 90 km/h.

Onboard technology will include a passenger counting system, dynamic maps, information screens, CCTV, and optical smoke detection with a fire extinguishing system. The styling features orange highlights, matching the color of the line.

[METRO REPORT INTERNATIONAL](#), July 2

SINGAPORE

Subway Post Office?

Singapore Post and metro operator SMRT are testing the use of metro trains for moving mail.

SingPost mail ambassadors will travel from collection points at Tampines and Raffles Place stations to the sorting facility near Paya Lebar station, traveling on off-peak East-West Line services between 11:00 AM and 2:00 PM.

The three-month pilot scheme launched in June will study the potential cost efficiencies and carbon emission savings. If the scheme is successful it could be expanded to further stations.

[METRO REPORT INTERNATIONAL](#), July 22

SWITZERLAND

Electric Locomotives Ordered

Südleasing has ordered 20 Siemens Mobility Vectron multi-system electric locomotives which will be leased by



A pair of Vectron electrics handle an SBB Cargo freight train. SBB Cargo International photo

SBB Cargo International under a long-term contract with a flexible term.

The locos are to be equipped with the XLoad package to increase haulage capacity, and approved for operation in Switzerland, Germany, Austria, Italy, and the Netherlands.

They will take the operator's Vectron fleet to 78 locos. The XLoad package will enable SBB Cargo to run longer and heavier trains in single traction through the Alps, eliminating the need for a more expensive six-axle locomotive.

The contract includes 15 years of maintenance by the manufacturer, and takes the number of Vectrons sold to 180 in Switzerland and almost 2,500 across 16 countries.

[RAILWAY GAZETTE INTERNATIONAL](#), July 19

TORONTO, CANADA

Service Changes

Only a few routes are changing on July 28, although TTC has hinted that major service additions are coming in the fall. Given the state of the TTC's budget, we will see in roughly a month just what that entails.

Rapid Transit Changes

2 Bloor-Danforth

Gap trains are removed from the weekday schedule due to a shortage of operators. This eliminates two trains in the AM and PM peaks, and five trains through the early and late evening periods. Four midday gap trains remain.

Night Service Changes

504/304 King

Three mid-evening trips eastbound from Humber Loop are added to provide a better transition between the 504B King and 501 Queen services west of Roncesvalles. There is no change to the 501 Queen nor to the 507 Long Branch schedule. Schedules for the 304 King Night Car will be adjusted for reliability. Cars will continue on their present

20-minute headway, but some driving time has been converted to terminal layover time.

305 Dundas

All-night service will be provided on Dundas over the same route as the daytime 505 with cars on a 30-minute headway.

306 Carlton

Because Dundas is now a 24-hour route, the 306 Carlton Night Car will operate to High Park Loop, and will continue on a 20-minute headway. (Note that although this is generally advertised as a 20-minute headway, it actually widens to 30 minutes after 3 AM.)

[STEVE MUNRO TRANSIT & POLITICS](#), July 24

TORUŃ, POLAND

Tram Framework Contract Awarded

Pesa Bydgoszcz has beaten Turkish company Bozankaya to win a framework contract to supply MZK Toruń with up to 20 low-floor unidirectional trams.

A firm order for an initial four trams is planned, with follow-on orders to be placed over 48 months subject to EU funding being secured. Ordering all 20 trams would take the contract value to 27.4 million, with associated support services taking the total to 289.6 million złoty.

Swing 122NbT No. 322 (PESA, 2022) is on route 2 just west of the Sztuki Piękne stop on August 10, 2023.



V. Cekota photo via Urban Electric Transit

The trams will be 32 meters long with six doors, including at least four double doors at least 1.3 meters wide. They are required to have a capacity of at least 200 passengers at five per square meter, including 28 seated. The share of components originating in the EU must exceed 50 percent.

[METRO REPORT INTERNATIONAL](#), July 3

Los Angeles Foothill Gold Line Update

July has been an historic month for the Foothill Gold Line. Earlier this month, crews utilized an unpowered light rail vehicle to complete initial clearance testing throughout the Glendora to Pomona corridor. Once approved to move forward, crews began active train testing, utilizing the light rail vehicle operated on its own power to test all elements of the new light rail system. The active train testing will continue through the end of the year, as crews continue to complete the final project elements and punch list items. Overall, the 9.1-mile, four-station Glendora to Pomona project is now nearly 90 percent complete. It remains on budget and on schedule to reach substantial completion and turn-over to LA Metro in just over five months.

Additionally, Governor Newsom and the California State Transportation Agency (CalSTA) this month announced the release of the SB125 funds to be used for transit capital projects statewide. LA Metro is projected to receive \$1 billion of those funds, and the Metro board this month once again reaffirmed their commitment to allocate \$798 million of the SB125 funds to complete the LA County portion of the final 3.2-mile, two-station Pomona to Montclair segment (that includes stations in Claremont and Montclair). Meanwhile, the procurement process to hire the design-build team for the Pomona to Montclair segment reached its next step when the Foothill Gold Line board approved short-listing the Kiewit design-build team at their July meeting, after several evaluation committees reviewed the team's statement of qualifications submittal and deemed the team qualified on all evaluation categories.

Crews earlier this month utilized an unpowered light rail vehicle (which was pulled by a truck) to complete initial clearance testing throughout the entire 9.1-mile Glendora to Pomona corridor. Crews moved and walked along the light rail vehicle back and forth between Glendora and Pomona to inspect and make sure that every inch of track was ready for trains to safely move through on their own power and at higher speeds. This was the first time a light rail vehicle was



Powered light rail vehicle moving across the Bonita Avenue/Cataract Avenue light rail bridge in San Dimas.

Foothill Gold Line Construction Authority photo

brought onto the project.

Following the successful completion of the initial clearance testing, crews began active train testing on July 8, which will continue through December 31. Crews are now running multiple light rail vehicles that operate on their own power to test all elements of the new light rail system from Glendora to Pomona, including the tracks, train control, power, communications systems and safety features. This critical phase of construction is called systems integration testing, and ensures that all of the new systems work together as designed. As seen in the photos above and below, the first week of active train testing was carried out during the day, and now has shifted to nighttime hours most of the time to allow crews during the day to continue construction on the rest of the project. So far, active train testing has taken place between San Dimas and Pomona. It will start soon through Glendora.

[FOOTHILL GOLD LINE E-NEWS UPDATE](#), July 2024

Book Review

Paul Grether (ERA #6933)

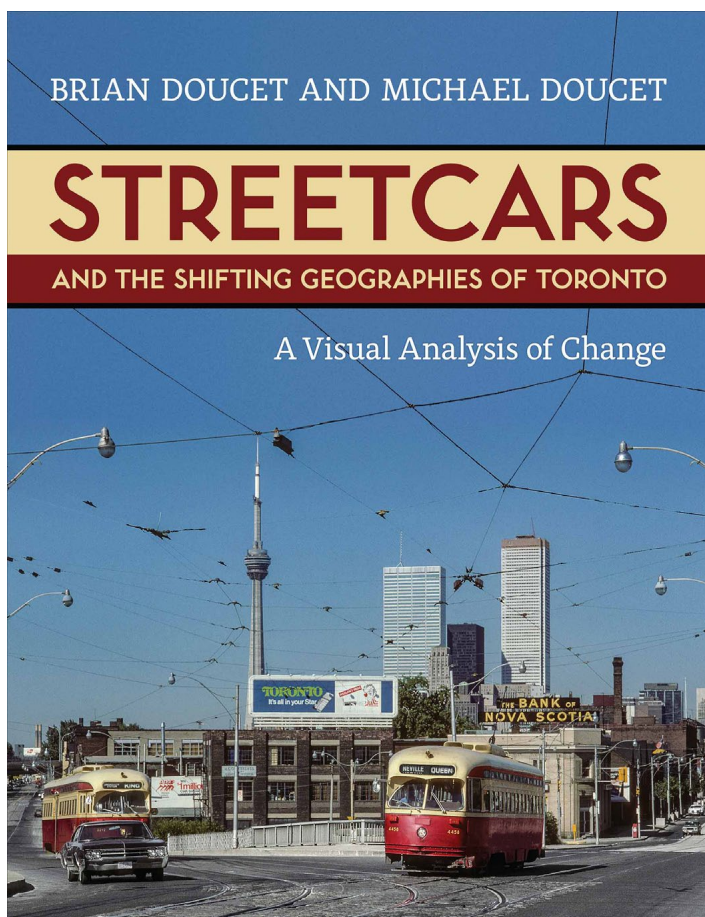
Streetcars and the Shifting Geographies of Toronto

by Brian Doucet and Michael Doucet, published by University of Toronto Press, Toronto, Buffalo, London in 2022, softcover, 298 pages, illustrated with color photos. ISBN 978-1-4875-0010-8.

This book is different than the “usual” subjects of this review column. *Streetcars and the Shifting Geographies of Toronto* can best be described as a hybrid in terms of appeal to various reader constituencies which will be described later; it is both a very engaging book about streetcars but also

an academic work about a city and urban planning.

For most of the population of North America there are few opportunities to interact and learn about streetcars. In many places trolley museums do yeoman's work providing the context of the vehicles often including a ride. What the museum usually lacks is the urban framework within which streetcars existed, operated, carried generations of urban residents and the subsequent removal of the same systems. This book provides the urban context using Toronto as



an example. Home to the largest remaining system in North America, the authors use their “re-photography” then-and-now technique to show both the changes in the streetcar system and the city within which it operates.

The book is generally divided in two parts: the first chapters describe the authors’ photography techniques and provide the history of the development of Toronto and the Toronto Transportation Commission streetcar system and the second part is a series of “Portfolios” of photographs of Toronto and the streetcar system. Liberal use is made of American and international examples of streetcar systems for context as well as macro-economic forces that have shaped the city and the streetcars. The use of streetcar city photography to demonstrate the factors at play and how they apply to other cities as decisions are made about urban planning (both land-use and transportation) is the unique appeal of this book.

For someone looking for rosters, technical vehicle details and in-depth turn-by-turn route descriptions this is probably not the book about Toronto to acquire. For those interested in how a legacy streetcar system has remained relevant in a city that has undergone massive change and growth from a mid-sized industrial city to a rapidly growing and densifying center of a North American mega-region this is the book for you. The book is equal parts text and high-quality photographs, including many curated contemporary and historical images from Toronto and around the

world. The use of Toronto as the case does not limit the appeal, this is of interest to those who have never been to Toronto but are interested in how streetcars can continue to be relevant in current urban affairs. The book seeks to address how the streetcars have evolved (or not) as the city they operate in them rapidly changes through re-development. The many building demolitions that are replaced with construction cranes and gleaming new high-rise residential towers are as much a part of the story as the streetcars as well as the changes to the generations of people riding.

This book teaches about the greater urban context of streetcar systems and cities. The father and son authors have written an engaging piece that will go beyond facts and figures, but facilitates critical thinking about streetcars and cities.

Included are over 260 pictures, tables, figures and maps.

Link to book information: www.libib.com/u/grether?solo=127278057



Toronto Transit Commission Flexity Outlook No. 4462 (Bombardier Transportation, 2018) is seen operating westbound on route 505 on Dundas Street West, approaching Bathurst Street, on July 26, 2024.
Paul Grether photo

Travels with Jack May

Britain and the Baltics — Part XXX

By Jack May (ERA #2275, photographs by the author)

With regard to the previous chapter on the Helsinki Metro, Olaf Olsen remarked about the relatively unusual (at least for the U. S.) use of under-running third rail. He indicated that the Sprague-Wilgus system had been originated on the New York Central Railroad, but the only other extant operation on this side of the Atlantic is the Market-Frankford Subway-Elevated in Philadelphia. Also, he wrote that the friction buffer-stops, shown in several of the photos from Central Station in Helsinki, “are also rare or nonexistent in the U. S., though common in Europe. Such ‘bumping blocks’ would have reduced the severity of NJ Transit’s deadly accident in Hoboken.”

Wednesday, August 30.

The Mariella docked in Stockholm a quarter of an hour late at 10:15 AM. Upon leaving the ferry we weren’t able to find a bus stop (we didn’t look that hard), so we walked (rather than rode) to the Slussen station of Stockholm’s Metro, approximately 1.2 miles along the harbor, observing the occasional bus passing us. Our hotel, the Tegnerlunden, was a six-station ride on the subway (or metro — in Swedish the Tunnelbana or T-bana) to Odenplan,* so our first order of business was the purchase of 72-hour passes, which cost 160 krona for seniors, plus an additional 20 krona for the reusable plastic card. With the conversion rate running about 11 cents to the krona, it entailed an expenditure of about \$20, not bad for three days. The pass is good for transit riding almost anywhere in the area, except to and from the airport where there is a fee for using the station, SEK 120 or about an additional \$13.20. But more about that later.

*(*From my original examination of Google Maps for the location of our hotel and its nearest subway station, I concluded that Radmansgatan, one stop further in, was closest. But then I looked more carefully and saw that the walk from Radmansgatan would entail the navigation of a staircase through a park, so we concluded we should use Odenplan, which is only slightly further. I made the mistake of not noticing something similar when traveling with Clare to Bern in 2014, and had to lug our bags up a steep set of stairs en route from a tram line to our hotel. Now I’m more careful.)*

My original plan for the final portion of the trip, prior to flying back to the U. S. on Saturday morning, September 2 through London (see original itinerary in the first part of this report), included spending two days in Stockholm, one in Norkkoping and about 8 hours between flights in London. That changed abruptly on August 25, when Clare called to inform me that my first cousin’s husband died and the funeral would be in Westport, Connecticut on September 2. Using my new smartphone from our hotel room in

Tallinn I was able to juggle my reservations on Norwegian to substitute a flight from Stockholm to JFK at 5:45 PM on Friday, September 1 for my previous ticket. Interestingly (and thankfully) there were no hidden costs and my payment of \$114 was just for the difference between the original cost of my Stockholm-JFK itinerary through Gatwick and the new Stockholm-JFK non-stop (in other words no penalties or cancellation charges). I was also able to cancel my overnight stay at Arlanda Airport at no cost. But now I would spend my remaining time in Europe totally in Stockholm (one full day and two halves).

It is said that Stockholm, the capital of Sweden, may have one of the best transit systems in Europe, with its network of subways, tram lines, independent rail lines and suburban/regional commuter trains (which are operated over the tracks of the national railway system). See <http://www.urbanrail.net/eu/se/stockholm/stockholm.htm> for a map.

The city is relatively small, with a population just short of one million, while another million live in suburban and exurban areas surrounding the municipal boundaries. This territory encompasses an entity called Stockholm County, whose principal government functions are the region’s health care and public transit system. All of the assorted transit modes are controlled by SL, Storstockholms Lokaltrafik (or Greater Stockholm Public Transport), which has created a coordinated network under a single fare system while contracting the operation of disparate parts of the network to various separately-owned companies. That aspect of the operation is transparent to the public, as all transit services run under the SL umbrella and connections between them have been made easy to navigate.

Since the beginning of 2018 there is a single fare zone for the entire area and passengers may travel to their destinations by any means of public transportation, as long as they stay within the time limits of the tickets they use. This was not exactly the case when we were there this past August, as at that time there were three zones, with fares dependent on which zones would be traversed — although our passes covered the entire tramway and subway network. But that was further simplified this past February as part of a total reorganization of fares.

The T-bana is the heart of Stockholm’s transit system and consists of three standard-gauge trunk lines (Green, Red, and Blue) with branches covering some 68 miles of route with 100 stations. The individual routes are numbered in a scheme that dates back to the city’s early tram lines. The first rapid transit line (Green — routes 17, 18 & 19) was built as early as 1950, but it wasn’t until 1957 that through

service through the city center was inaugurated. (The Red Line's route numbers are 13 & 14, and the Blue Line's are 10 & 11). Stockholm's original subway was based on New York City's network, but since then it strayed from that model, especially in terms of the evolution of the original SMEE rolling stock into today's lightweight Vagn 2000 cars.

My first trip to the capital was in 1960, when Sweden still drove on the left side and Stockholm had a large tramway network. Much of it was abandoned when the rule of the road was changed in 1967, but two suburban routes, which operated on private rights-of-way, were retained (Lidingobanan and Nockebybanan) and since then a third, the Tvarbanan, was added. Further, a heritage/museum line, operating from the city center to the island of Djurgården, which is one of the city's principal leisure areas and a major tourist destination, was upgraded into a modern streetcar service (route 7, also called the Sparvag City line), so now there are some 23 miles of tramway.* The rolling stock on all of the tram lines is made up double-ended low-floor articulated units, all less than 20 years old.

In addition there is the Saltsjobanan, a mostly single-track high-platform suburban electric railway with two branches that feeds the T-bana at Slussen. Running to Stockholm's eastern suburbs, unfortunately it was undergoing major infrastructure repairs and was out of service for the summer. Lastly, the Roslagsbanan consists of three suburban railway lines running to the northeast, which were once part of a regional network of narrow-gauge trains. Karl-Heinz and I would get to ride the remains of that system.

*All routes below are standard gauge, running at 750 v DC, except 27-29, which are narrow-gauge (just under 3 feet) and electrified at 1,500 v DC.

- Route 7 Sparvag City Streetcar: Central Station-Djurgården - 2.7 miles 11 stations
- Route 12 Nockebybanan: Alvik-Nockeby - 3.5 miles 10 stations
- Route 21 Lidingobanan: Ropsten-Gashaga Brygga - 5.7 miles 13 stations
- Route 22 Tvarbanan: Solna-Sikla - 11.4 miles 25 stations
- Routes 25 and 26: Saltsjobanan: Slussen-Saltsjobaden and Solsidan - 11.6 miles 18 stations
- Routes 27, 28 and 29: Roslagsbanan: Stockholms Östra-Karsta, Österskar and Nasby Park - 40.4 miles 39 stations

These nine lines are operated by three different companies, and then a fourth operator, which runs the T-bana and what was the national railway's suburban Pendeltåg service, has to be added. Complex? Yes, but it works.

We rode and photographed portions of all these lines except the Saltsjobanan in the single full day and two half days we were here. During this time frame we had some long periods of sunshine, but also encountered overcast skies and even rain. We decided to concentrate our efforts on the tramlines, so when the skies were blue we headed to those routes, and rode the others in between.

Rather than presenting the photos in strict chronological order, which was my approach in the previous parts of this

report, I've split our visit to Stockholm into three segments, organized more by subject matter as opposed to displaying my photos in the sequence of their exposure. Thus in this part, I'll provide the narrative for Wednesday, August 30, followed by illustrations of the Lidingobanan, Pendeltåg and T-bana. Part 2 will cover August 31 with photos of the Roslagsbanan, Nockebybanan and Tvarbanan, while part 3 will be September 1 and the tramway to Djurgården.

We arrived at our hotel at about 11:15 AM and were told that our room was not ready. The sun was out and it was a no-brainer to ask the desk clerk to take care of our bags to allow us to head out to our highest priority line, the Tvarbanan. I've visited Stockholm on a number of occasions and the last two were after portions of this line had been constructed. But I had never ridden the northern part, nor had Karl-Heinz, so that's where we went first. Our plan was to ride the Pendeltåg to Solna, but we got on the first train that stopped at Odenplan (there are two branches), so instead ended up at Sundbybergs centrum, which is also on the tramway, but not its northern terminal, which was to be our first destination. No matter, we first rode out three stops to Solna and then headed back to Alvik, the Tvarbanan's junction with both the Nockebybanan and the T-bana's Green Line. Of course we took photos along the way.

We then rode the light rail line to Nockeby and back, and then the Green Line to T-Centralen, the hub of the subway system, where we walked to Kungsträdgård, the temporary terminal of tram route 7. But it had clouded up, so instead of covering the streetcar line today, we decided to postpone that and headed back to T-Centralen. In the hope it might clear up later we rode the Red Line to Ropsten, its end-to-end terminal with the Lidingobanan. Clare and I had ridden the line on the island of Lidingö when we stopped in Stockholm on our Baltic cruise a year earlier, so after we walked across the pedestrian-bicycle-tram bridge to the island, Karl-Heinz made a round trip with stops on route 21, and I concentrated on taking photos along the inner portion of the line. The sun miraculously came out for much of the 90 minutes we spent on the island. We then took the Red Line back to T-Centralen and transferred to the Pendeltåg for the ride back to Odenplan. We walked to the hotel, arriving at about 6:00 PM and, of course, our room was now ready. Soon afterward we enjoyed a nice dinner at a nearby eclectic restaurant. I had my favorite, roast duck.

Photos of the Pendeltåg and T-bana follow those of our journey over the Lidingobanan.

The island of Lidingö, situated in the Stockholm archipelago northeast of the city, is separated from the mainland by a strait, the Lilla Vartan. It is a separate municipality with a population of just under 50,000, consisting of both urban and rural areas. Today's Lidingobanan, SL's route 21, has an interesting history. It was built between 1914 and 1916 and was initially connected to the mainland by ferry. Freight service was also operated, with the cars carried on barges until such traffic was withdrawn in 1982. In fact the line's legal designation wasn't officially changed from railway to

tramway until 2009.

The crossing, now called the Old Lidingö bridge, opened to Ropsten on the mainland for trams and motor traffic in 1925, and at that time service on the line was extended over the Stockholm tramway network to Humlegården, just outside of downtown, about two miles in from Ropsten, its current terminal. At that time it also received its number, route 21, which it still retains today. A second line to the northern part of the island, opened for tram service in 1909, also used the new bridge (on a separate single track), becoming route 20. The trackage on the island was mainly single, although today there are more and longer passing places.

In 1946 operations were rationalized and the rails on the bridge started to be operated as a double track line. Richard Solomon and I rode and photographed it in 1960, but had time only to ride one route, and of course chose the one that still survives, the 21. The whole operation was reorganized in 1967, when Sweden's rule of the road was reversed and Stockholm's local tramway lines were abandoned. Routes 20 and 21 were cut back to Ropsten, concomitantly with the opening of an extension of the T-bana's Red Line to its still-existing terminal at that point. With this change, the trams were now subway feeders.

Further changes occurred in 1971 when a New Lidingö bridge for motor traffic was opened. At that time route 20 was abandoned and the old bridge restricted to pedestrians, bicycles and the tramway. The line has been refurbished and reconstructed twice since, in 1983 and 2013, resulting in updated signaling and some realignment, with stations rebuilt for longer and wider trams, as well as handicapped access. A new carhouse and shop was also constructed. However, it remains mainly a single-track operation just under six miles long with 13 stations. In fact, when the Old Lidingö Bridge was renovated in 1983, the double-track was reduced to single, but placed on its own right-of-way away from foot and bicycle traffic. It is operated by Stockholms Spårvägar (SS), which also runs the the Sparvag City tram line (route 7), which connects the city center to the island Djurgården.

Off peak service runs every 20 minutes, which is doubled to six trams an hour in shoulder and rush hours. Arriva is the contract operator. Rolling stock consists of seven CAF Urbos AXL four-section trams delivered in 2014, replacing cars built in 1944. The 100-percent low-floor cars have a top speed of 56 mph. The line is very pleasant to ride, with operation through a rock cut just beyond the bridge, which then opens up into a wider undulating right-of-way.

The photos feature the inner portion of the line (I walked between the first three stations) with the final image at the outer terminal from 2016. Six of the Lidingöbanan's seven cars are shown.



An Urbos AXL tram smoothly comes to a halt at the Ropsten terminal of the Lidingöbanan. The facilities here are rather spartan, with two tracks and one covered platform. Doors behind the photographer lead to the inside of the adjacent T-bana station, which is accessed by passengers via turnstiles. All of Stockholm's tramways use Proof-of-Payment for revenue protection, with those riders without valid tickets being subject to a SEK 1,500 fine (\$165).



The Old Lidingö Bridge over the Lilla Vartan was converted to this bi-directional single-track configuration during the tram line's renovation between 1983 and 1985. Inbound car 551 is crawling across the 92-year old structure. All motor traffic uses the taller bridge at right.





(Left page bottom and above) The first way station on tram route 21 is Torsvik. In the view on page 24 the camera is pointed from the station's island platform toward the Old Lidingo Bridge, which this inbound tram will cross. The two overhead structures are ramps to the New Lidingo Bridge. The photo above shows an inbound tram about to open its doors along the narrow platform, and illustrates the rock cut traversed by route 21 cars. Note that right-hand running is utilized on this short section of double track.



End of the line. A Lidingobanan tram has pulled up to the bumper block at the Gashaga brygga station at the eastern tip of the southern portion of the island and will soon head back to Ropsten. Passengers may transfer to boats that serve various other islands in the archipelago (note the sea in the background). Also note the annunciator (countdown clock); such equipment graces all of the tramway's platforms.



Trams operate on bi-directional single track alongside the rockface between Torsvik and Baggeby stations. The pedestrian/bicycle path at right makes it easy to follow and photograph route 21. North of the bridge to Ropsten the paved trail occupies the right-of-way of the island's abandoned route 20.



Looking east toward the Baggeby station, a route 21 tram accelerates toward Torsvik and Ropsten along the most scenic portion of the Lidingobanan.

The Pendeltag is the suburban commuter service operating over the right-of-way of the national railway system, now known as SJ, but formerly Statens Järnvägar. The tracks are owned by the state railway, but service is operated by MTR Nordic (a subsidiary of the Hong Kong Mass Transit Railway), which also runs Stockholm's T-bana subway. Some six routes (40 to 44 plus 48) are operated over branches that leave the main trunk line on both sides of downtown — north (the SJ's route to Narvik via Uppsala) and south/west (to Gothenburg and Malmö/Copenhagen). A huge investment has been made in the Pendeltag over the last decade and from Odenplan through the city center the trains now run underground via a brand new tunnel separated from SJ's Central Station (which contain complicated throats at both ends of its 17 tracks). This has cut running times significantly and now offers user-friendly connections from the new Stockholm City station to the subway at T-Centralen.

I can't help thinking that the accomplishments achieved in the center of Stockholm are similar to what could be attained for Penn Station, New York, if it were made into an all through-running station with fewer tracks and wider platforms for better passenger circulation, instead of its present state as a terminal for LIRR and NJ Transit trains. Suggested by Rethink NYC, it would be much more complicated because of the existence of both overhead and third rail with currently incompatible rolling stock, but if men of good will put their minds to it, it could be accomplished.





(Above and below) Two views of the Pendeltåg at its Sundbybergs Central station. The commuter trains run between the mainline tracks and stop at an island platform. Rolling stock consists of 129 Alstom Coradia Nordic 6-section articulated trains, which were placed in service starting in 2005. Capable of 100 mph, the 90-percent low-floor (platform height) cars replaced all of the older suburban equipment because they are equipped to serve the new City Station, which has platform doors. The lower photo was taken on September 1 from a bridge that carries connecting Tvarbanan trams alongside, while the upper view is from August 30. The multi-modal Sundbybergs Central station is also a stop on the T-bana's Blue Line.

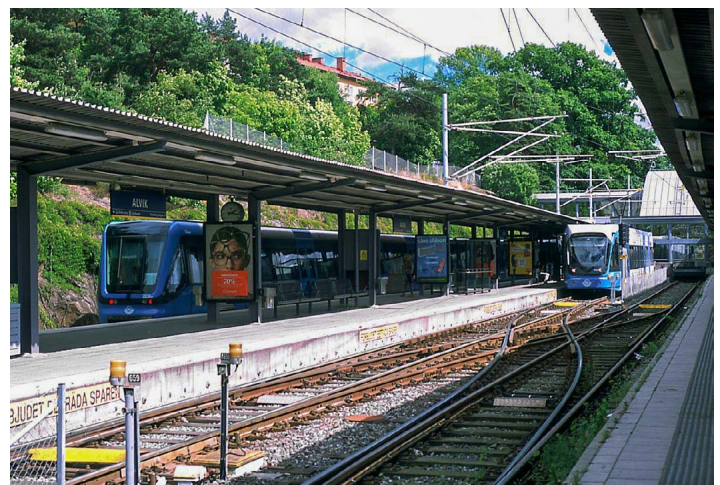
on most metro systems. Billed as the “longest art gallery in the world,” photos of some of the stations are available at <https://www.theguardian.com/artanddesign/gallery/2016/jun/04/underground-art-stockholms-colourful-metro-stations-in-pictures>.



(Above and below) Alvik station is the transfer point between the T-bana's Green Line and both the Nockebybanan and Tvarbanan light rail routes. The Metro runs left-handed, as shown in these views of trains of Vagn 2000 (C20) cars. The lower photo shows the rear of an inbound subway train across the platform from an inbound Nockebybanan tram, which has deposited its passengers and is about to navigate the scissors crossover; it will pick up new riders at the opposite platform. These route 12 trams use a second crossover beyond the station to achieve right-hand operation (photo to be shown in Part XXXI), a complication unnecessary before the 1967 changeover in the rules of the road. There are 270 of these Movia C20 cars (90 three-car sets) in service on the T-bana, which were built in 1997-2004 by the Swedish subsidiary of Adtranz (now Bombardier). Older traditional cars from the 1970s and 80s also provide service (mostly in rush hours), and will be gradually replaced by Bombardier cars (C30s) now under construction. Both photos were taken in 2016.



As mentioned earlier, the 68-mile T-bana was started in 1950 with rolling stock much like New York City's R10 cars. As it expanded it has gone through new generations of equipment, and now mostly employs Vagn 2000 lightweight units, although there are still some older trains on the active roster. The equipment, designed with a maximum speed of 56 mph, is limited to 43 mph on the Green Line and 50 mph on the Red and Blue Lines. I should also mention that the Blue Line is the showcase of the Tunnelbana, with futuristic looking stations far beyond the aesthetics found



This view transitions us into Part XXXI, which will include the narrative for August 31 and photos of the Nockebybanan, Tvarbanan and Roslagsbanan.