



BULLETIN

Volume 67, Number 4 | April 2024

MTA Board Adopts Central Business District Toll Rates

On March 27, following a robust public comment period in which the MTA received 25,600 written comments and heard from 386 speakers at four public hearings, the Board, in its capacity as the board of the Triborough Bridge and Tunnel Authority, approved Central Business District toll rates by a vote of 11 to 1.

The approved toll rates align with rates recommended by the Traffic Mobility Review Board on November 30, 2023, and put forward for public review by the MTA Board on December 6, with a handful of clarifications provided.

Passenger vehicles and small commercial vehicles — sedans, SUVs, pick-up trucks, and small vans — paying with a valid E-ZPass will be charged \$15 during the day and \$3.75 at night, when there is less congestion, to enter the congestion relief zone in Manhattan below 60th Street. They will be charged no more than once a day.

Trucks and some buses will be charged a toll of \$24 or

\$36 during the day to enter the congestion relief zone, depending on their size and function, and \$6 or \$9 at night. The toll for motorcycles will be \$7.50 during the day and \$1.75 at night. Yellow taxi, green cab and black car passengers will pay a \$1.25 toll for every trip to, from, within or through the zone; those with app-based for-hire vehicles will pay \$2.50. As previously proposed, qualifying authorized emergency vehicles and qualifying vehicles carrying people with disabilities will be exempt. Also exempt will be school buses contracted with the NYC Department of Education, buses providing scheduled commuter services open to the public, commuter vans licensed with the NYC Taxi and Limousine Commission, and specialized government vehicles. A 50-percent discount will be available for low-income vehicle owners and a tax credit is available for low-income residents of the Central Business District.

[MTA PRESS RELEASE](#), March 27



Electric Railroaders Association

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Back Issues

PDFs of previous issues can be downloaded at erausa.org/bulletin

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Trip Notices

September 6-9, 2024: ERA convention in Edmonton and Calgary, Alberta, Canada. Visit <https://erausa.org/conventions/2024/> for all the details.

June 1, 2024: Motor Bus Society/MNYBS visit to the famous Spring Fling at the Museum of Bus Transportation in Hershey, Penn. In addition, there will be time to explore downtown Harrisburg. Dinner will be at the amazing Shady Maple buffet. For details and ticket order form, click here: <https://erausa.org/pdf/motor-bus-society/2024-06-metro-politan-ny-bus-association-trip-to-hershey.pdf>

June 7-9, 2024: Hoosier Traction/West Penn Trolley Meet at the Pennsylvania Trolley Museum in Washington, PA. Visit <https://erausa.org/regional-trips/2024/06/07/> for all the details.

Donations

The ERA Board of Directors express their deepest appreciation for these member donations in February 2024.

\$500 to \$999

Carl Jackson (In memory of Sandy Campbell)

\$100 to \$499

Anonymous (In memory of Peter Herman), Steven Siegerist

\$50 to \$99

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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

Friday, April 19, 2024 at 7:30 PM.

Presenting This Month: George Gula

Join George Gula on a historical ride through Philadelphia's streetcar system! This talk explores the city's transit journey, from horsecars in 1858 to modern SEPTA. See photos of iconic streetcars and learn how public transport shaped Philadelphia's economy, society, and workforce. Register now for this fascinating journey!

How to Join Our Zoom Meeting

The Zoom registration link for this meeting is: <https://us02web.zoom.us/join/register/tZwkd-mtrD8iHtFF-wjH30qVyCxsmRZhXeAll>. You can sign in at 7:15 PM. The show begins at 7:30 PM. If you have any problems, email Paul Grether at grether@mindspring.com, or on the night of the meeting, text or call Paul at 404-434-0453.

Cover Photo

The 1730 shuttle to 21 Street-Queensbridge, led by R-160A-1 8573 (Alstom, 6/2008), is seen at Lexington Avenue/63 Street moments before its scheduled departure. Operationally, these shuttle trains were part of the timetable but were advertised to the public as trains, the usual identification for shuttles. Jeff Erlitz photo

Worldwide Suburban Electric Railway, Metro and Tramway Openings in March 2024

Date	Country	City	Segment	Distance (miles)	Rail/Metro/Tram
3/4	Turkey	İzmir	Şehitlik to Kaymakamlık	0.4	M
3/5	Poland	Warsaw	Reduta Wolska to Szpital Wolski	1.1	T
3/6	India	Kolkata	Line 6: Kavi Subhash (New Garia) to Hemanta Mukhopadhyay (Ruby) Line 2: Howrah Maidan to Esplanade Line 3: Taratala to Majerhat	5.4 n/a n/a	M M M
"	"	Delhi	RapidX: Duhai to Modinagar North	10.6	R
"	"	Pune	Line 2: Ruby Hall Clinic to Ramwadi	3.4	M
"	"	Kochi	SN Junction to Thripunithura	0.6	M
"	"	Agra	Yellow Line: Mankameshwar Mandir to Taj East Gate	3.3	M
3/10	Turkey	İstanbul	Line M3: Kirazli to Bakirköy Sahil	5.2	M
3/11	Uzbekistan	Tashkent	Circle Line: Quruvchilar to Qipchoq	2.2	M
3/16	Iran	Tehran	Line 4: Allameh Ja'fari to Ayatollah Kashani	n/a	M
"	Turkey	İstanbul	Line M5: Çekmeköy to Samandira Merkez	4.0	M
3/17	"	İzmit	Mehmet Ali Paşa to Şehir Hastanesi	1.9	T
3/18	"	İstanbul	Line M9: Bahariye to Ataköy	7.5	M
3/19	"	"	Line M11: Kargo Terminali to Arnavutköy	5.3	M
3/23	Japan	Osaka	Kitakyu (Midosuji Line): Senri-Chuo to Minoh-Kayano	1.6	M
3/28	China	Changchun	Line 6: Shuangfeng to Changchun Movie Wonderland	18.4	M
"	Turkey	Bursa	M1: Emek to Gecit/Balat	0.7	M
3/30	Korea	Seoul	GTX-A: Suseo to Dongtan	21.7	R
3/31	China	Nanjing	Line 5: Wenjinglu to Jiyindadao	8.0	M

URBAN RAIL NEWS, MARCH 31

In Memorium: John W. Bremer, 1943-2024, ERA #2351

Long-time ERA member John William Herman Bremer passed away on March 13 at his home in Somerset. He was 80 years old.

John was born in Brooklyn but he was raised in Glendale, Queens, where his father owned a delicatessen shop. He attended Public School 113 in Glendale and then Richmond Hill High School. After completing high school, John attended the School of Commerce, Accounts and Finance of New York University.

After attending his freshman year as a full time student, he transferred to part time, while working full time with the Trailways Bus System at the Port Authority Terminal in Manhattan. In 1968, during which time his family moved to Huntington Station on Long Island, John was drafted into the US Army. While at the Reception Center, he chose to enlist for an additional year in so that he could attend the U.S. Army's Transportation School in Fort Eustis, Va. Upon graduation, John was then assigned overseas to the Transportation Office of the 7th

Infantry Division, which was then headquartered north of Seoul in the Republic of (South) Korea.



After being honorably discharged from the Army, John returned to work for the Trailways Bus System in Manhattan, initially as supervisor of the Telephone Information Department, and then a Sales Representative. While working full time, John also returned to school, completing his studies at NYU, graduating there in 1973 with a B.S. degree in Business Management.

Following graduation, John accepted a position with Suburban Transit Corporation in New Brunswick, N.J., where he relocated to. He served initially as Claims Manager and worked his way up to Safety and Risk Manager, a position he held for many years.

John's great love of trains and railroading took him to Japan and Germany, both of which have magnificent rail systems.

John joined the E.R.A. on December 1, 1958.

Rail News in Review

New York Metropolitan Area

NEW YORK CITY TRANSIT (NYCT)

Automatic Train Operation (ATO) Comes to IND Queens Boulevard Line **E F M R**

Starting on February 29 (and possibly a few days before this), what is probably the final stage of Communication Based Train Control (CBTC) implementation was placed in service on the IND Queens Boulevard Line. Trains with R-160 consists designated for ATO operation are now able to do so.

CBTC territory is composed of the following segments:

- Local Tracks D1/D2: Union Turnpike to south of Queens Plaza, including Tracks GD1/GD2 (60th Street Connection)
- Express Tracks D3/D4: Union Turnpike to 50 Street/Eighth Avenue and north of 47-50 Street/Sixth Avenue
- Tracks T1/T2 (63rd Street Line): South of 36 Street to 21 Street-Queensbridge

Trains had been operating under Automatic Train Protection Manual (ATPM) mode since at least February 22, 2022. This mode can be thought of as similar to the LIRR and MNR's automatic speed control where speed indications are displayed to the train operator/engineer but the train is operated manually.

It has been reported by some Queens Boulevard riders that there has now been a noticeable increase in train speeds in certain sections, especially in the Queens Plaza area.

Work is currently underway to extend the limits of CBTC on the Queens Boulevard Line from Union Turnpike to 179 Street.

Flushing Line **7** Renovation Work

Judlau Contracting, Inc. has been working on the renovation of the 82 Street-Jackson Heights and 111 Street stations. The initial work began May 15, 2023 on the southbound (Manhattan-bound) platforms with southbound local trains bypassing those two stations.

That work was scheduled to be completed on Sunday, March 17. However, the work has now been extended two weeks and is now scheduled to finish up on Sunday, March 31.

In other Flushing Line work, the joint venture of Skanska and Railworks has been performing a structural rehabilitation under the middle track (Track M) at 61 Street-Woodside station. This work also started last year, on June 26.

Due to unforeseen conditions, this work now needs to be extended from Saturday, March 16 to Monday, September 30. Even a casual observer will notice, from the street, from the LIRR platforms or the Flushing Line platforms, that there is a lot of structural work being performed here.

Stillwell Yard

Due to a minor derailment, some tracks in Stillwell Yard have

been undergoing rehabilitation. From January 2 to February 4, Tracks 3 through 5 were out of service in their entirety. On, or shortly after, February 4 and continuing until April 28, Tracks 1 through 3 are being rehabilitated.

IND 63rd Street Track Work Completed

Monday, April 1 saw the resumption of normal **F** and **M** service for the first time since August 28, 2023. That was when Tracks B6 and T2 were taken out of service from 57 Street to 21 Street-Queensbridge. That work was completed, and work was then shifted to southbound Tracks T1 and B5, on January 8.

Interestingly, the shuttle trains that operated between Lexington Avenue/63 Street and 21 Street-Queensbridge were signed up as **S** shuttles but, in fact, were still identified internally as **F** trains. Unusual for **F** service, these trains were only eight cars long instead of the usual ten. This was due to the fact that the train sets used were borrowed from the **M** service pool based at Jamaica Yard. Since the **M** was only operating to 57 Street, there was a slight surplus of equipment.



A view behind the construction barrier along Track T1 in Lexington Avenue/63 Street station on March 21. The new Type II-Modified track replaced the original Type VIII track. Jeff Erlitz photo

Another interesting aspect of this operation was that southbound shuttles, after discharging passengers at Lexington Avenue, continued south to clear the Lexington Avenue Interlocking. This, then, enabled the tower operator at 21 Street-Queensbridge (or Queensboro Plaza Master Tower) to "throw traffic." The signal system can be set for either the northbound or southbound direction but a train cannot be occupying the section of track for which the traffic direction is going to be changed.

For the duration, **F** service operated via 53rd Street in both directions, as it had done in the decades before the 63rd Street Connection opened for full service on December 16, 2001. **M** service from Metropolitan Avenue terminated at 57 Street/6 Avenue.



The 1720 **F** from 21 Street has arrived at Lexington Avenue, discharged most of its passengers and is now continuing south to just beyond the Lexington Avenue Interlocking before changing direction and heading back to Queens on the late afternoon of March 21. R-160A-1 8529 (Alstom, 4/2008) led the eight-car consist. The **F** shuttles were signed up as **S** shuttle trains. Jeff Erlitz photo



P32AC-DM 217 makes its debut in Penn Central colors at Croton-Harmon on March 11. MNR photo

New Haven commuter rail lines, which would later become the core rail lines that would make up Metro-North Railroad on January 1, 1983.

One of the stipulations of the subsidy agreement with the MTA was that Penn Central would rehabilitate some of its equipment and repaint it in the colors of New York State — bright yellow and medium blue colors.

FL9 locomotives 5014 (ex-New Haven 2014, EMD, 9/1957) and 5050 (ex-New Haven 2050, EMD, 10/1960) were the first two painted in this scheme, and these two locomotives were put into service on train 912 from Brewster to Grand Central Terminal on July 28, 1970. In addition to the freshly painted locomotives, a complete set of refurbished coaches filled out the consist of this inaugural run. This particular paint scheme of the yellow and medium blue could be seen on many of Penn Central's FL9 locomotives from 1970 until the start of Conrail operations on April 1, 1976. (*Editor's Note: The yellow paint on these FL9s quickly faded to a shade of off-white, which how many of them in this era were photographed.*)

All of the wrapped locomotives will remain in service for the foreseeable future.

[MTA PRESS RELEASE](#), March 11



R-160A-1 8484 (Alstom, 3/2008) is getting ready to lead the 1652 departure to Metropolitan Avenue at 57 Street on March 21. Jeff Erlitz photo

METRO-NORTH RAILROAD (MNR)

Fourth Heritage Locomotive In Service

MNR has rebranded a fourth locomotive with special colors and designs as part of a Heritage Series to highlight the railroad's 40 years of service to the public.

Workers at Metro-North's North White Plains Shop applied a vinyl wrap to P32AC-DM 217 (General Electric, 5/1998) paying tribute to the Penn Central Transportation Company.

The train made its debut run on the Hudson Line on Monday, March 11, departing Croton-Harmon station at 7:58 AM and arriving at Grand Central Terminal at 8:55.

In the spring of 1970, the MTA signed an agreement with Penn Central to subsidize the operations of the Hudson, Harlem and

April 7 Timetable Change

MNR will be placing a schedule update into effect on Sunday, April 7. The revision reflects minor adjustments to accommodate major infrastructure projects such as the Park Avenue Viaduct Replacement Project and the Walk Bridge Replacement Project, as well as general infrastructure improvement work.

With the completion of the Diamond Replacement Project, a switch replacement project occurring in tight quarters in the heart of Grand Central Terminal, the 10 peak-period trains which were suspended on January 16 are being restored to the schedule effective Monday, April 8.

Return of MNR's Yankee Clippers

The timetable change includes the return of game day



service to Yankee Stadium. The New York Yankees open their season at home against the Toronto Blue Jays on Friday, April 5 at 1:05 PM.

For Opening Day, MNR will operate shuttle trains between Grand Central Terminal, Harlem-125th Street and Yankees-E. 153rd Street Stations and will also make a stop at the stadium on several additional Hudson Line trains. Riders from the Harlem and New Haven lines may connect at Harlem-125th Street Station for the short ride to the stadium.

For evening games on weekdays and all games on weekends, Yankee Clippers are special game day trains which provide a direct one-seat ride from the railroad's East of Hudson lines to the stadium.

Return of Getaway Trains and Enhanced Off-Peak Service on Friday

“Getaway service” for the summer holidays returns starting on Memorial Day Weekend with afternoon service for riders getting a head start on the weekend. The railroad will also operate getaway service for Independence Day and Labor Day.

Also included is a change to Friday schedules to enhance off-peak service on the Hudson and Harlem Lines to better serve ridership patterns, adding the following trains to its Friday schedule:

- Hudson Line: 8:50 AM train from Poughkeepsie to Grand Central; 2:18 PM from Grand Central to Poughkeepsie
- Harlem Line: 9:54 AM train from Southeast to Grand Central; 2:24 PM from Grand Central to Southeast

[MTA PRESS RELEASE](#), March 26

NEW JERSEY TRANSIT (NJT)

Hoboken Terminal Resiliency Project

NJT continues advancing resiliency upgrades at Hoboken Terminal as part of Phase 2 of the Long Slip Fill and Rail Enhancement Project. The NJT Board of Directors approved a contract for the construction of six new tracks, three ADA-accessible high-level platforms, and a new passenger/rail personnel facility. A separate contract was also approved for special track work to be done as part of the ongoing project.

The Long Slip Fill and Rail Enhancement Project area is located within the Hoboken Rail Yard along the Hudson River Waterfront near the boundary of southern Hoboken and northeastern Jersey City. NJT was awarded a Federal Transit Administration competitive resiliency grant for the project to provide flood protection, surge protection for rail yard equipment and infrastructure, and flood resilient commuter tracks and platforms.

Phase 1 of the project, completed in June 2023, extended the municipal sewer that permitted the former canal to be filled in. NJT is now authorized to enter into a contract with Schiavone Construction Co., LLC of Secaucus, New Jersey, in the amount of \$211,134,822.00, plus 10 percent for contingencies, for Phase 2 of construction services.

Additionally, the Board approved a separate contract with

Voestalpine Railway Systems Nortrak, LLC of Birmingham, Alabama, for the purchase of Special Trackwork in the amount of \$1,898,198 + five percent for contingencies. This Special Trackwork, which is also part of Phase 2 of the project, refers to five wood timber turnouts, four concrete crosstie turnouts, one wood timber crossover, and one wood timber double slip switch, totaling 11 individual special trackwork packages.

(Editor’s Note: Voestalpine supplied many of the new “submersible” switch machines at the IND 207th Street Yard as part of that yard’s “resiliency” project.)

[NJ TRANSIT PRESS RELEASE](#), March 12

PORT AUTHORITY TRANS-HUDSON (PATH)

Normal Weekend Service Resumed at Grove Street Station...For a While

Beginning the weekend of March 16, normal service resumed on the PATH system following completion of the first phase of rehabilitation work at the Grove Street Station. Journal Square-bound and Newark-Penn Station-bound trains resumed weekend service at the station. The second phase of the project will begin the weekend of April 6.

The first phase was completed on time, with extensive station rehabilitation work conducted on the Journal Square-bound and Newark-Penn Station-bound platform over 10 weekends without any disruption to weekday service.

During the second phase of work, from the weekend of April 6 through approximately late June, World Trade Center-bound and Hoboken/33 Street-bound trains will bypass the station. These bypasses will occur from 6 AM Saturdays until 11:59 PM Sundays.

[PORT AUTHORITY PRESS RELEASE](#), March 15

TAPP Expands to Additional Stations

The Total Access PATH Payment (TAPP) system has now been expanded to the five terminal stations in the PATH system. The first phase of the rollout was completed the week of March 18 with the installation of 12 TAPP turnstiles at the World Trade Center, the system’s busiest station.

PATH has recorded more than one million TAPPs since the system’s launch in December, indicating a quick and seamless adoption by riders. On an average weekday, nearly 20,000 TAPPs are recorded among passengers entering the PATH system.

Following the installation of TAPP turnstiles at the World Trade Center terminal, TAPP is now available through select turnstiles at 33 Street, Newark-Penn Station, Harrison, Journal Square and Hoboken. These six stations are the system’s busiest, accounting for 67 percent of total ridership in 2023. The TAPP rollout will move to the system’s remaining stations over the coming months.

TAPP is an open-loop contactless payment system, which allows riders to use any contactless credit/debit card or the digital wallets in their own devices at PATH turnstiles, instead of specific PATH-issued SmartLink cards or pay-per-ride

MetroCards. During phase-in and for a substantial period thereafter, equipment supporting SmartLink and MetroCard will remain operational as customers become familiar with the new system. New TAPP turnstiles will continue to be installed gradually throughout the system.

[PORT AUTHORITY PRESS RELEASE](#), March 20

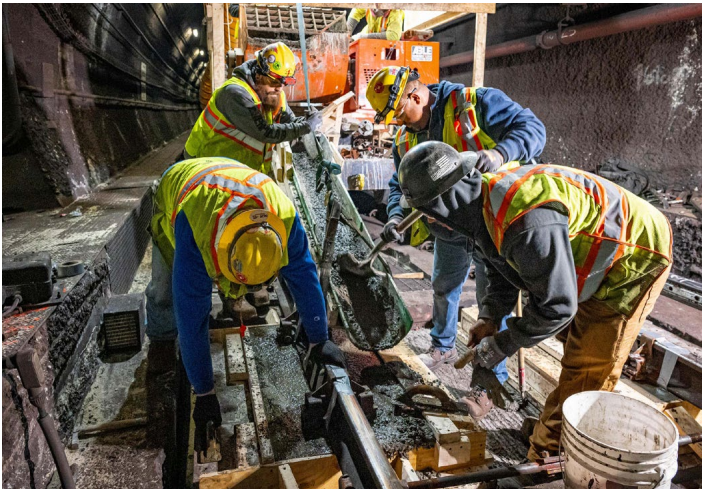
Other U.S. Systems

BOSTON, MASS.

More Speed Restrictions Removed

Track work on the Green Line was completed, which removed 11 speed restrictions. Crews accomplished this work due to unencumbered access to track areas while Green Line service was suspended on the B branch between Copley and Babcock Street, on the C branch between Copley and Cleveland Circle, and on the D branch between Copley and Brookline Hills from February 20–March 8.

Located near Ayr Road and Beacon Street in Brookline, one speed restriction removed during the suspension on the C branch was the oldest in the system at over 900 days old. Removing this restriction means the MBTA does not need to suspend service on the C branch in the fall as previously planned.



Track work being performed on the Green Line. MBTA photo

Additionally, a thorough inspection confirms no relation exists between this Green Line work and the derailment that occurred on Saturday, March 9, near Kenmore Station. Prior to reopening the Green Line at 5 AM following the latest construction work, testing was conducted, including running multiple test trains. More than 70 Green Line trolleys had safely traveled through Kenmore Station prior to the incident. The post-derailment inspection corroborated the results from the post-diversion testing, confirming that the switches were functioning without any defects, that all track and switch replacement work was successfully

accomplished, and that the replaced track and switches are performing well. The investigation into the cause of the derailment is now isolated to the incident car itself. The MBTA will continue to provide details as they are confirmed.

In addition, trackwork was completed on the Orange Line. Crews accomplished this work while Orange Line service was suspended between Jackson Square and North Station for four days from March 18–21. As a result, six speed restrictions were removed last week with a seventh removed over the weekend following final completion work.

[MBTA PRESS RELEASE](#), March 11

[MBTA PRESS RELEASE](#), March 25

CHICAGO, ILL.

Red Line Extension Funding

The Federal Administration announced 14 large transit projects in 11 states could receive nearly \$4 billion in federal support for construction as part of the Fiscal Year 2025 Budget Request to Congress. The Chicago Transit Authority's (CTA) \$3.6 billion Red Line Extension (RLE) project has been recommended to receive \$350 million in 2025.

The CTA's RLE project, which will extend the Red Line 5.6 miles to the Far South Side of Chicago, is one of three projects in the nation that is being proposed in the 2025 federal grant pipeline, which were recommended in prior budgets but have not yet entered into a construction grant agreement.

The CTA was notified last year that it was in line for \$1.973 billion in critical grant funding needed to build the project. CTA then began the engineering phase of the project, which includes further design and engineering needed to build the project and identifies the federal grant dollars CTA can receive for the project once the engineering phase is completed and approved by FTA. The engineering phase of the project is expected to continue this year, and CTA anticipates a Full Funding Grant Agreement by the end of 2024 subject to federal review and approvals.

All funding sources for the \$3.6 billion RLE project have been identified and include:

- \$1.973 billion: Federal "New Starts" – this includes the \$350 million recommended in the FY 2025 budget request
- \$950 million: Local Transit TIF
- \$130 million: Congestion Mitigation and Air Quality Improvement/Carbon Reduction Program
- \$365 million: State funding (anticipated)
- Remaining funding (~\$182 million): CTA bond funds and other sources

[CTA PRESS RELEASE](#), March 13

PORTLAND, ORE.

Expanded Gateway Transit Center Reopens

TriMet's Gateway Transit Center was reopened to MAX trains on March 4, with its first expansion in nearly 40



S70 Avanto 410 (Siemens, 2009) at the new Gateway North station.
TriMet photo

years. The opening of the Gateway Transit Center also marks another step toward completing the A Better Red MAX Extension and Reliability Improvements Project through a \$99.9 million grant from the Federal Transit Administration and financial support from local partners.

Oregon Metro allocated nearly \$9 million in formula-federal funds to the project and the Port of Portland provided another \$2.3 million. Altogether, federal and local partners contributed about half of the overall cost of the project.

TriMet notes MAX Red Line trains are now able to travel on a double set of tracks between the Gateway area and Portland International Airport, which has improved reliability of the MAX system. Red Line trains heading to downtown Portland and farther west now have a faster, more efficient route and serve a new station, Gateway North.

The reopening of the Gateway Transit Center and grand opening of Gateway North mark the end of major construction of A Better Red on the east side. Since the project broke ground in fall 2021, crews had been working on a series of major changes between Gateway and Portland International Airport, a stretch of the MAX system that is now more than two decades old.

[MASS TRANSIT](#), March 5

Metropolitan Area Transit Authority's Metrorail, three MARC commuter rail lines, Amtrak and a host of regional and local bus services.

Due to the dense, urban environment of the project, coupled with significant vehicular and pedestrian traffic, the project has and continues to face challenging construction conditions. Following the completion of project-related work being completed by the agency, the MTA and Purple Line Transit Partners collaborated to reassess the project schedule and mitigate delays. Despite ongoing mitigation efforts by the project team, including rescheduling work to run concurrently and extending work hours, the delayed work impacted the remaining project schedule.

In addition to the extension of the project's Revenue Service Availability deadline, the MTA will provide compensation to Purple Line Transit Partners of up to \$425 million. Payments will be made over five years upon the achievement of certain project milestones, such as the arrival of the first light-rail vehicle in Maryland, completion of major construction work on the University of Maryland College Park campus, reopening of the Capital Crescent Trail and commencement of systems testing.

The Purple Line has achieved significant progress during the past year, with the total project more than 65 percent complete. MDOT MTA says 13 of 21 stations are in active construction, nearly 17,000 linear feet of track has been laid at multiple locations (Ellin Road, Campus Drive, Plymouth Tunnel) and Talbot Avenue in Silver Spring has been completed. Additionally, the Glenridge Operations and Maintenance Facility will begin receiving the first light-rail vehicle later this spring.

As part of the modification, Purple Line Transit Partners agreed to provide \$4 million to extend a program currently in place to provide grants to businesses impacted by revenue loss due to extended project construction.

[MASS TRANSIT](#), March 4

International

WASHINGTON, D.C. AREA

Purple Line Delayed

The Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) is seeking Board of Public Works approval of a modification to the Purple Line Public-Private Partnership Agreement that extends the contractual deadline for achieving Revenue Service Availability to winter 2027.

The Purple Line, which was previously targeted to open in spring 2027, is a critical infrastructure project that will expand transit opportunities between Prince George's and Montgomery, Md., counties, two of the most populated counties in the state. The 16.2-mile, 21-station light-rail line will provide east-west transit access and connections across the region, with links to three branches of Washington

AGRA, INDIA

Metro to the Taj Mahal Opens

Prime Minister Narendra Modi inaugurated the first section of the Agra metro by teleconference on March 6, with passenger services starting at 6:00 AM the following day. The cabinet approved plans for the two-line Agra metro network in 2019, and construction was formally launched in December 2020.

The initial section of the Yellow Line runs 5.3 kilometers from Taj East Gate to Mankameshwar Mandir with three underground and three elevated stations. A further eight kilometers is under construction to extend the line from Mankameshwar Mandir to Sikandara in the northwest. The second line will be the 15.4-kilometer Blue Line, which will run from Agra Cantt in the south to Kalindi Vihar in the north on an elevated alignment with 14 stations.



Taj Mahal metro station opening. UPMRC photo

Uttar Pradesh Metro Rail Corp. awarded Bombardier Transportation — now Alstom — a €245 million contract in 2020 to supply 28 three-car trainsets for Agra and 39 for Kanpur along with Cityflo 650 communications-based train control. The orders were combined with the aim of replicating the rapid timescale of Lucknow metro Phase 1A, which UPMRC described as the fastest metro implementation in India at the time. Alstom said the use of the same design of trainset reduced the time needed for commissioning the Agra trains by almost a year.

The stainless steel Movia trainsets were designed at Alstom's engineering center in Hyderabad and manufactured in Savli. Each three-car set has a capacity of 960 passengers. They have Flexx metro trucks and Mitrac traction equipment, with a maximum speed of 90 km/h and operating speed of 80 km/h. The interiors include passenger information systems, areas for passengers with reduced mobility and air-conditioning which adjusts to the loading by measuring CO₂ levels inside the vehicles. The Cityflo 650 signaling was developed in Gurgaon and Bangkok. Larsen & Toubro supplied the 750v DC third rail electrification equipment. [METRO REPORT INTERNATIONAL](#), March 7

In other news from India, Prime Minister Narendra Modi inaugurated one new metro line and two extensions in Kolkata on March 6, totaling 11.5 kilometers.

The initial 5.4-km, five-station southern section of Line 6 (Orange) has opened between Kavi Subhash and Hemanta Mukhopadhyay; it was built at a cost of Rs14.4 billion. The line is expected to relieve the busy Eastern Metropolitan Bypass. Currently isolated from the rest of the line, the 4.8-km, four-station western section of east-west Line 2 was opened from Howrah Maidan to an interchange with Line 1 at Esplanade. This challenging section includes a deep tunnel under the Hooghly River, which is claimed to be India's first underwater metro bore. A 30-meter deep station serves Indian Railways' Howrah terminus. Cost of this section was Rs49.7 billion. Completing the route, the 2.2-km central

section between Esplanade and Sealdah is now expected to open by the third quarter of the year.

A one-station, 1.25-km northern extension of the under-construction metro Line 3 (Purple) from Taratala to Majerhat has also opened, at a cost of Rs 5.3 billion. [METRO REPORT INTERNATIONAL](#), March 25

BOCHUM-GELSENKIRCHEN, GERMANY

Modernized Light Rail Vehicles

Stadler has completed work on the first of 25 Bochum light rail vehicles which it is to extensively modernize over the next four years. The B80D LRVs dating from the 1980s are being redesignated B80-Neo following the work which Stadler is undertaking in Berlin.

The car body has been inspected and repainted, and the trucks, pantographs and compressors overhauled. Ramps have been installed at the doors, the interior refurbished with LED lighting, new seats and the addition of multifunctional areas, and the cab redesigned to modern ergonomic standards.



The first rebuilt B80-Neo is seen being loaded onto a flatbed trailer for its journey to Bochum. Bogestra photo

Operator Bogestra will deploy the B80-Neo LRVs on the U35 Campus Line linking Bochum and Herne.

[METRO REPORT INTERNATIONAL](#), March 12

FRANKFURT AN DER ODER, GERMANY

Trams for Three Cities Under Construction

Officials from Frankfurt an der Oder, Brandenburg and Cottbus have visited Škoda Group's factory at Plzeň in the Czech Republic to see the first of the ForCity Plus FCB trams being produced under a joint order.

An initial €110 million contract for a total of 24 trams was placed by the three cities in 2021, and another 15 cars have since been ordered under related options.

The three-section unidirectional 70-percent low-floor



One of the new trams under construction. Škoda photo

trams will all have air-conditioning, multifunctional spaces for wheelchairs, baby carriages or bicycles, an easy-to-understand information system and CCTV. However, there are various operator-specific requirements, and the vehicles are being supplied in two widths to fit the legacy infrastructure in the different cities.

[METRO REPORT INTERNATIONAL](#), March 4

LE MANS, FRANCE

Trams to Be Lengthened to Boost Capacity

Le Mans Métropole has awarded Alstom a €57 million contract to extend the city's 34 Citadis trams from 32 to 44 meters. This will increase capacity by 85 passengers to 296.

The project also includes updates to the CCTV and tachometric control units and the installation of new lubrication and anti-drift systems.



Citadis 302 No. 1033 (Alstom, 2013) has paused at the Atlantides-Sablons stop along the Boulevard Winston Churchill on July 5, 2023. Operating on route T2, it is heading towards its eastern terminal at Espal - Arche de la Nature, three stops away.

František Vaňásek photo via Urban Electric Transit

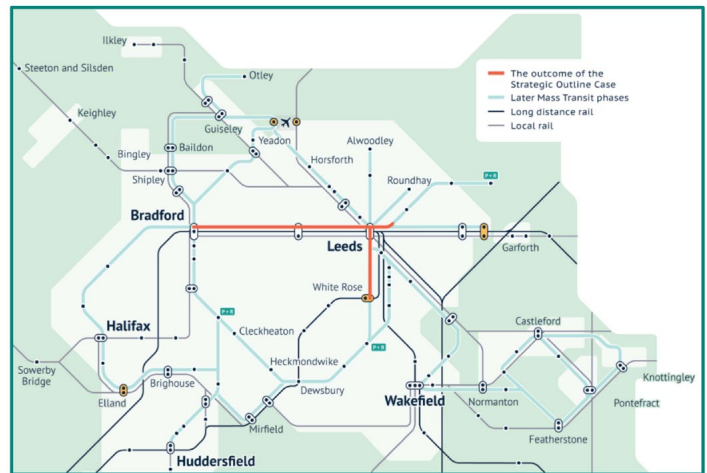
Announcing the contract on March 12, Alstom said the work on the first tram would be undertaken at its La Rochelle site for completion in 2026, with the rest to be lengthened at operator Setram's workshop by Alstom Services teams from La Rochelle and Crespin.

[METRO REPORT INTERNATIONAL](#), March 13

LEEDS, ENGLAND

Trams in West Yorkshire Mass Transit Plan

Plans for two tram lines in Leeds and Bradford have been set out by West Yorkshire Combined Authority, ahead of the Mayoral election in May. The Leeds Line would start at St James' Hospital and run through Leeds city center and Elland Road to reach the White Rose Shopping Center.



West Yorkshire Mass Transit Phase 1b outline map. West Yorkshire Combined Authority

The Bradford Line would share the route from St James' University Hospital to Leeds city center, before taking a route to Bradford Forster Square and a proposed new railway station south of Bradford city center.

Submission of the strategic outline case to the Department for Transport is set to be approved by members of the West Yorkshire Combined Authority on March 14.

The estimated £2 billion+ project would then be subject to a full business case and approvals process, including public consultation on the exact routes. A Transport & Works Act Order would then be sought. The Combined Authority hopes that construction could begin in 2028.

A £1 million development fund will support work with Kirklees Council to look at a potential White Rose to Dewsbury line, and in the longer term the network could reach other destinations in Wakefield, Kirklees and Calderdale.

[METRO REPORT INTERNATIONAL](#), March 12

LONDON, ENGLAND

Quantum Train Location Testing

Researchers are using a London Underground train to test whether quantum inertial navigation systems could be used to provide accurate location information for condition-based monitoring, train control and signaling applications without needing satellites or lineside equipment.

This forms part of a wider program to develop an alternative to global navigation satellite systems which would be able to work underground, would not be degraded in the shadow of buildings and cannot be compromised by hostile action.

Current train location systems use both satellite-based systems as well as inertial sensors and gyroscopes to assess how far a train has moved and work out where it is in three-dimensional space. The aim is to take this to the next level by replacing the sensors with quantum systems.

Satellite systems can provide locations to around one meter, or better with more advanced technology, but they suffer from drift and accuracy is significantly reduced with poor reception. Quantum systems are expected to achieve an accuracy of 10 centimeters or better, without any drift.

The project brings together a range of research and industrial partners, including a team from Imperial College London who specialize in using atom interferometry to make highly accurate inertial sensors and accelerometers.

Also part of the team are physicists from the University of Sussex, researchers at the University of Birmingham, the University of Birmingham's spinout company MoniRail Ltd (who will lead the project), PA Consulting and defense technology company QinetiQ.

The trials will be used to help development of a commercialization roadmap, and Unipart is looking at how the technology could be manufactured commercially. It is estimated that a commercial product could be available on a five- to 10-year horizon. Funding is being provided by the Department for Science, Innovation & Technology, and Innovate UK.

The equipment is being tested on an out-of-service passenger train, running on London Underground's District, Circle and Hammersmith & City Lines.

The partners see rail as an ideal environment for testing. It offers relatively harsh conditions, with vibration and a complex electromagnetic environment, and sensors suitable for rail use would be able to work in other applications.

The equipment is currently somewhere between a refrigerator and a shoe box in size, and while it will get smaller as it is further developed, this is a scale suitable for on-train use.

While the technology is not cheap, the price point could be a good fit for rail as it removes the need to install lineside equipment and the expense and difficulty of sending people out to maintain it.

[METRO REPORT INTERNATIONAL](#), March 5

MILANO, ITALY

Funding for Metro Extension and Interurban Tram Refurbishment

The national government has allocated €145 million to help fund a 3.3-km western extension of metro Line M1 from Bisceglie to Valsesia, Olmi and Baggio at an estimated cost of €543 million.



Leonardo trainset 5015+3415+4015+4016+3416+5016 (AnsaldoBreda, 2017) is seen arriving at the Villa Pompea station on Line M2 on August 14, 2023. These Leonardo trainsets were the newest on the system before the current order from Hitachi Rail started to arrive last year. Moliva photo via Wikimedia Commons



Trailer-motor-trailer set 535+503+536 (Tallero, 1950-51) is laying over at the Comasina M3 terminus of the Milano-Limbiate tramway on August 10, 2011. These "blocked sets" are called "Bloccati" in Italian. Moliva photo via Wikimedia Commons

It has also allocated €88 million towards the anticipated refurbishment of the Comasina to Limbiate interurban light rail line at an estimated total cost of €179 million. The 1,445 mm gauge

route has been out of service since September 2022, but 10 new trams are already on order as part of ATM's framework contract for up to 80 Stadler Tramlink vehicles signed in September 2020.

The city's Mobility Councilor Arianna Censi told local media that confirmation of the government funding contributions would allow tenders to be called later this year for work to start by the beginning of 2025. The metro extension is expected to take 5½ years to complete and the light rail line 3½ years.

[RAILWAY GAZETTE INTERNATIONAL](#), March 26

MOSCOW, RUSSIA

New Metro Trains Enter Service

Moscow Metro put the first Moscow-2024 series trainset into service on March 11 as part of a three-year renewal of the Line 2 fleet. The trains are being produced by Transmashholding subsidiary Metrowagonmash.



Moscow-2024 metro train. Moscow Metro photo

Features include wider aisles and through gangways to increase capacity by 17 passengers per car, wider seats with improved upholstery, USB chargers relocated from the seats to the handrails for more convenient access, wider doors and end cars designed for passengers with reduced mobility.

Development of the Moscow-2026 series is now underway. [METRO REPORT INTERNATIONAL](#), March 13

PARIS, FRANCE

More Metro Trains Ordered

Paris transport operator RATP has awarded Alstom a firm order to supply a further 103 five-car MF19 metro trainsets. The order comprises 67 trains for Line 13, 22 for Line 12 and 14 for Line 8. They will have driving cabs when they enter service from 2027, but will be suitable for future conversion to automatic operation.

The €800 million order announced by Alstom on March 7 is being 100-percent financed by Île-de-France Mobilités, which approved funding in February. It had been placed under a



A Paris MF19. Alstom photo

December 2019 framework agreement which included an initial batch of 44 trainsets for use on Lines 10, 7bis and 3bis from 2025.

Production is underway at Alstom's Crespin and Valenciennes-Petite Forêt sites, with testing of the first train about to begin. The trains will have wide gangways, modern passenger information systems, large windows, LED lighting, ergonomic seating, heating and air-conditioning, USB sockets for recharging mobile devices, CCTV and integrated cybersecurity protection.

[METRO REPORT INTERNATIONAL](#), March 11

PORTO, PORTUGAL

Pink Line Signaling Contract Awarded

Metro do Porto has awarded Alstom a contract to supply signaling, safety and control systems for the Pink Line project.

The first section of the Pink Line will run underground for three kilometers from São Bento to Boavista-Casa da Música, serving four stations and improving access to the city center. Metro de Porto plans to gradually expand the line to form a circular route.

Announcing the order on March 12, Alstom said it would supply its Cityflo 250 signaling, including a state-of-the-art interlocking and real-time monitoring. The project will be managed from its site at Maia in Porto.

[METRO REPORT INTERNATIONAL](#), March 15

SCHWERIN, GERMANY

Parcels By Tram Project Ends

The transport of parcels on trams in Schwerin is not viable, operator NVS and DHL Group have concluded following a pilot project. The pilot scheme was launched in October 2022, with a tram carrying roll containers running once a day from a DHL distribution center. The tram was not permitted to carry passengers at the same time as the parcels.

A DHL spokesman told the Schweriner Volkszeitung newspaper that the project was only a trial to assess the feasibility of transporting parcels by tram, and NVS's



Schwerin parcels tram. DHL/Jens Schlüter photo

managing director said demand was too low. [METRO REPORT INTERNATIONAL](#), March 21



Citylink 399 202 (Vossloh, 2016) has come to a halt at the Cathedral stop on Church Street on July 31, 2022. Seven of these Citylink trams were added to the fleet between November 2015 and November 2016, supplementing the original 25 Siemens-Düwag Supertrams built in 1993 and 1994. Jesper O photo via Urban Electric Transit

SHEFFIELD, ENGLAND

New Fleet and Expansion Proposed

Fleet renewal and network expansion are included in the ambitions South Yorkshire Mayoral Combined Authority set out when it took over management of Sheffield Supertram following the end of Stagecoach's operating contract.

From March 22, services are being operated by South Yorkshire Future Tram Ltd, a newly formed, publicly owned arm's length company.

Existing staff have transferred over. Passengers are not expected to see many immediate changes, although Stagecoach bus and tram tickets are no longer valid for tram travel; tram-only products purchased on the Stagecoach website and app will be accepted until they expire.

There will be a 10-percent discount on one, five, seven and 28-day tram-only fares until June 30, and a new ticketing app has been launched with multi-modal journey planning capability to be added.

The stops and shelters are to be deep cleaned, and there will be a review of the tram timetable looking for opportunities to better cater to passenger demand.

There will be a new website, with a survey seeking views on personal safety, cleanliness, condition and maintenance of seating, tram stop information, bike facilities and being able to take a dog on a tram.

There are plans for the tram fleet to be refurbished by March 2027, and a whole new fleet rolled out by 2032, subject to government funding; an investment case was submitted this week.

A new stop is to open later this year at Magna in Rotherham, and opportunities are being explored for tram-train expansion to Stocksbridge, Barrow Hill and Chesterfield.

Sheffield's second-generation tramway opened in 1994-95, initially being run by the South Yorkshire Passenger Transport Executive before being taken over by Stagecoach

in 1997 under a contract running to 2024.

The transfer to public operation was announced in 2022 as part of SYMCA's ambitions to position Supertram as part of a fully integrated transport network. This includes exploring opportunities for renewal, improvement and even extension of the network.

The authority said taking the tramway under public control will enable integration with buses, train and active travel to create "a London-style fully integrated public transport system." [METRO REPORT INTERNATIONAL](#), March 22

STOCKHOLM, SWEDEN

Metro Trains Ordered

Transport authority SL has awarded Alstom a firm order to supply a further 20 Movia C30 metro trains for the Stockholm Metro.



Movia C30 train. Alstom photo

The order announced on March 7 has been placed using an option on a SKr5 billion 2013 contract with Bombardier

Transportation which covered an initial 96 four-car articulated trains with an option for 80 more, and takes the total order to 116 trains totaling 464 cars.

The C30 metro trains entered service in 2019 and they currently run on the Red Line. They are approved to also operate on both the Blue and Green lines.

The latest order has been placed as part of a program to modernize the network and increase capacity to more than one million passengers per day

Alstom said the design is straightforward and Scandinavian. The trains have woolen seat covers sourced from Sweden, and the ventilation holes under the windows incorporate playful elements such as the computer game character Pacman. There is a cab at each end, and the trains are designed for future conversion to driverless operation.

[METRO REPORT INTERNATIONAL](#), March 11

Science Centre; an emergency exit building; and interfaces with the operations and maintenance depot, Eglinton Crosstown LRT Line 5 and sections of existing Metrolinx-owned corridor where Ontario Line trains will operate.

On February 20 Infrastructure Ontario announced that a Development & Master Construction Agreement under a progressive design-build contract had been signed.

This incorporates a development phase during which project owner Metrolinx and contracting partner TGP will work together to finalize the scope, risk allocation and pricing. This is expected to take up to 20 months, though early works construction can commence during this phase.

Metrolinx will then have the option to sign a final target-price agreement with TGP, which would include final requirements on detailed designs and a negotiated price.

[METRO REPORT INTERNATIONAL](#), March 5

TORONTO, CANADA

Ontario Line Guideway and Stations Contract Awarded

Infrastructure Ontario and Metrolinx have selected Trillium Guideway Partners to build the elevated guideway and stations for Toronto's Ontario Line metro project.

TGP comprises:

- Applicant leads: Acciona Infrastructure Canada and Amico Major Projects
- Design: WSP Canada
- Construction: Acciona Infrastructure Canada and Amico Major Projects

The Ontario Line will run for 15.6 kilometers from Exhibition Place to the Ontario Science Centre. The metro is being developed partly to alleviate overcrowding on the Yonge-University Line 1.



Rendering of an Ontario Line train at the King-Bathurst Station.
GFG Rail

The elevated guideway and stations contract covers three kilometers of viaduct; five elevated stations at Riverside-Leslieville, Gerrard, Thorncliffe Park, Flemingdon Park,

WROCLAW, POLAND

First of the New Trams Delivered

Pesa has delivered the first of 40 Twist 146N tram vehicles it is supplying to Wrocław.

Operator MPK Wrocław awarded Pesa Bydgoszcz a 204 million złoty firm order in December 2021 for the supply of 24 low-floor trams. It subsequently exercised options for 16 more, taking the total value of the order to 337.5 million złoty.



The first Pesa Twist, 3401, arrived in Wrocław on February 24.
MPK Wrocław photo

The first car was delivered on February 24. The 29-meter long three-section trams will gradually replace the city's obsolete fleet of high floor Konstal 105 vehicles.

Wrocław already has eight Pesa Twist 2010NW trams in service, which were ordered at the end of 2014.

[METRO REPORT INTERNATIONAL](#), March 1

Harrisburg Power Director's Office Now Open

By Paul Grether (ERA #6933)

This past March 9, the Harrisburg Chapter of the National Railway Historical Society held their annual train show, but there was something new this year. Thanks to a deal between the Chapter and Amtrak that was signed in May 2022, the Chapter leased the ex-Pennsylvania Railroad Harrisburg Power Director's Office (PDO) from Amtrak for the purpose of preservation and opening the PDO to the public.

Kristen Fredriksen (ERA #7406) and I met in Harrisburg to attend the train show, tour the previously restored 1929 Harris Tower and especially to see the newly opened PDO. We were not disappointed.

Fittingly, I traveled from New York to Harrisburg in the last series of cars in the Amtrak Heritage Fleet, cab control car #9633. The car was built by Budd in 1967 for the Pennsylvania Railroad as Westinghouse-equipped Metroliner Coach 830. It was rebuilt for Amtrak by General Electric at Erie in November 1979 and de-motored, converted to a cab car and renumbered to 9633 by Amtrak in October 1987.

The PDO was placed into service in the mid-1930s as the last of four PDOs on the Pennsylvania Railroad's electrification. It was also operated by Penn Central and Conrail until electric freight ceased in 1982. It closed in 2013 when Amtrak consolidated all remaining power dispatching to the Centralized Electrification and Traffic Control (CETC) at Wilmington.

The Chapter spent much of late 2022 and 2023 cosmetically restoring the facility. The successful restoration was completed by a knowledgeable and dedicated group of volunteers. Our first impression was the overwhelming scale of the electric operation. Panels and controls supervise and remotely control various utility feeds, substations, breakers, switches, etc. Communication was through an internal telephony network with lineside towers, dispatching offices and other PDOs. Even wide-angle photographs do not do justice to the size of this PDO.

The PDO is located in the 1887 Harrisburg station in room 217. Hours and opportunities for visiting are detailed on the Chapter website at <https://www.harrisburgnrhs.org/pdo> which includes a link to a detailed fact sheet.

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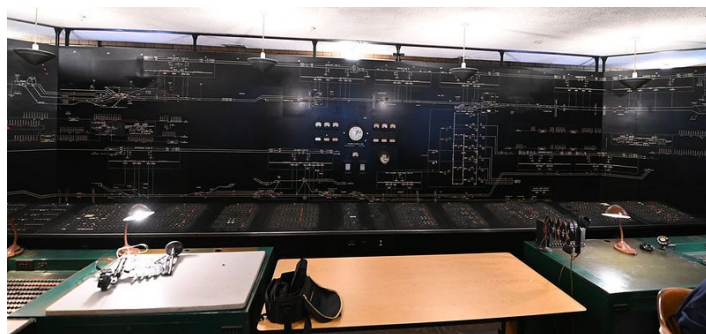
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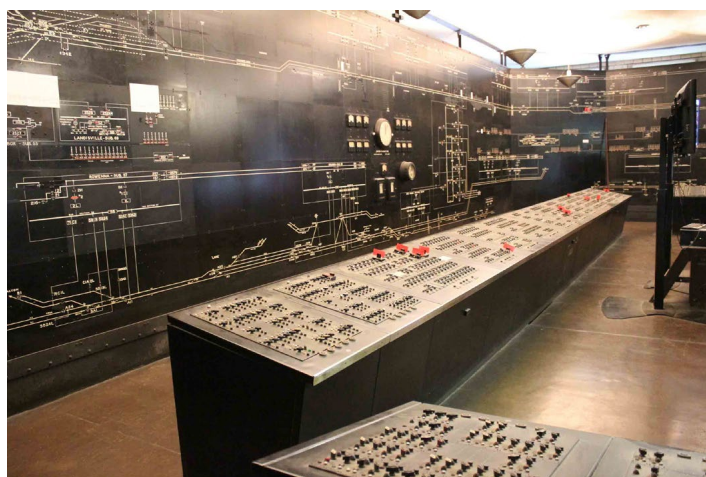
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Amtrak cab car #9633 prior to departure from New York-Penn Station on train #653 on March 8. Paul Grether photo



Harrisburg Power Director's Office on March 9. Paul Grether photo



Another view of the Harrisburg PDO. Harrisburg Chapter, NRHS photo

Book Review

By Paul Grether (ERA #6933)

Wired for Success: The Butte, Anaconda & Pacific Railway, 1892-1985 by Charles V. Mutschler, published by Washington State University Press, Pullman, Wash. in 2002, softcover, 192 pages, illustrated throughout with black & white photos, maps and diagrams. ISBN 9780874222524.

The Butte, Anaconda & Pacific Railway (BA&P) was a pioneering electric railway. It was created when the Anaconda Copper Company became fed up with rate negotiations with the Montana Union Railway over the costs of hauling copper ore between mines and its smelters. The company incorporated its own railway and operations started in 1893. Mutschler documents the colorful early history of the BA&P in the steam era, including significant labor unrest, and the inadequacies of steam technology to haul the heavy ore trains. By 1910 an alternative in the form of a joint project with General Electric was started to electrify the line.

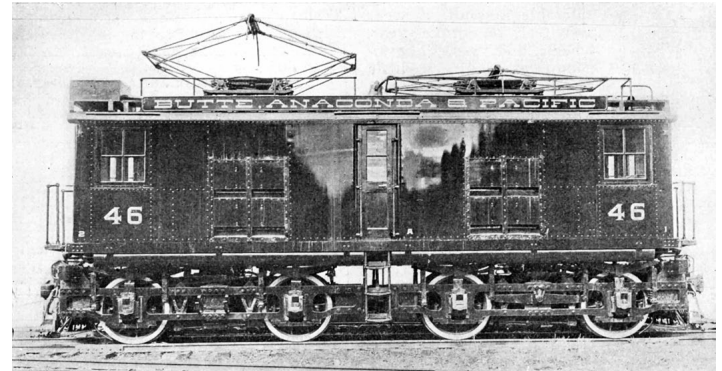
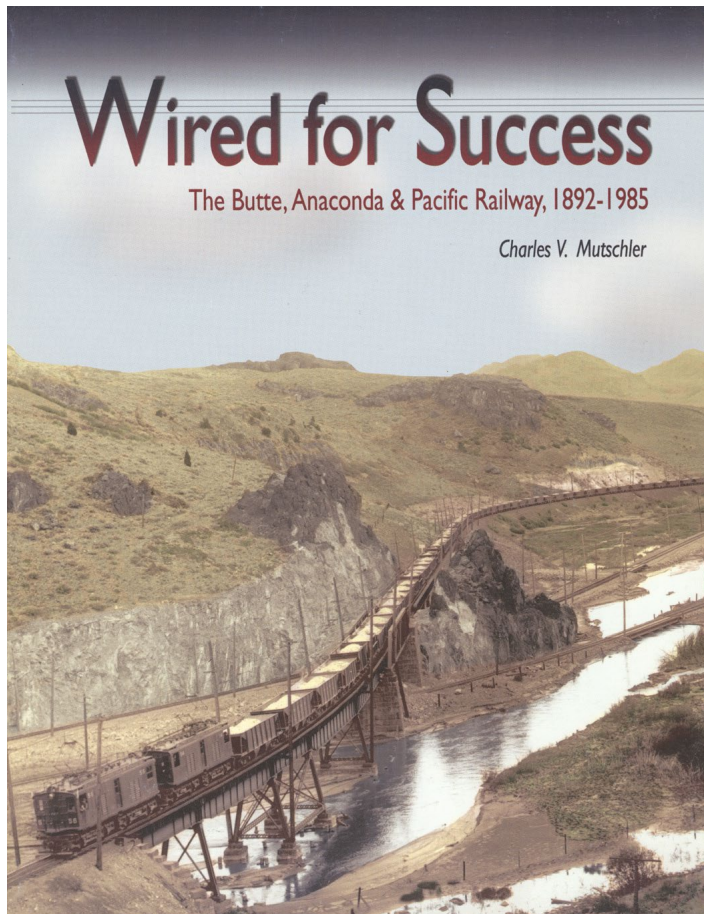
Electrification and the (then innovative) 2,400V DC electric operations of the line are covered in detail. The adjacent Chicago, Milwaukee, St. Paul and Pacific Railroad studied the BA&P and with encouragement from General Electric used it as a case study for its own subsequent major electrification investment. For many years both electrified mainlines paralleled each other and the railroads interchanged freight.

The quality of this monograph is in the level of research that

is evident in developing it. Every chapter contains detailed end notes, and at the end there is a full locomotive roster with dispositions, an index and bibliography. Chapters include descriptions of the origins of the line, the success, electric (freight and passenger) operations that resulted in the BA&P being considered one of the busiest railroads in the world, complete dieselization and turning off of the power in 1967, and finally the end in 1985 with the closing of the smelter and sale of the railroad into short-line operation, as it continues today. Finally, an Epilogue provides expert opinion on the level of success and impact that the BA&P had during its existence, and whether its use as a model for other railroad electrifications was prudent.

This book will appeal to those interested in early electrification projects and in particular the business and influence of a specific set of operating challenges on investment and operating decisions.

Link to book information: www.libib.com/u/grether?solo=90077570



General Electric builder's photo of BA&P passenger electric locomotive No. 46, December 1, 1914.
Public domain photo via Wikipedia



Boxcab No. 47 on display at the Anselmo Mine, Butte, Mont. on August 10, 2010. James St. John photo via Wikipedia

Travels with Jack May

Britain and the Baltics — Part XXVI

By Jack May (Photographs by the author)

Sunday, August 27 (Continued)

Karl-Heinz and I rode a few suburban trains in the afternoon, during the period bookended by our coverage of Tallinn's tramway. After breaking away from the charter we rode a tram to Tondi and took a few photos, as mentioned in Part XXV. With timetables posted on the platforms of the Tondi railway station, we saw that an inbound train would soon be coming by, and knowing that our day tickets were good for riding the railway within the transit system's service area, we got aboard a diesel MU set and made the seven-minute run (1:48–1:55 PM) to Tallinn's main railroad station, which is also called Baltic station (Balti jaam in Estonian). Like the railways in the other Baltic states and Finland, the gauge is five feet and the lines are compatible with those of the Russian and other post-Soviet railways as well. The streetcar systems in Riga and Daugavpils also employ that gauge

(Author's Note: The five-foot gauge of the Russian railways dates back to the original line between Moscow and St. Petersburg in 1851. Five feet translates to 1,524 mm, but since the late 1960s the Russian government has used 1,520 mm as its official gauge. The four-millimeter difference is less than a quarter inch smaller. So did that mean all track was relaid? No, because published railway guidelines indicate that there is a tolerance of some three to four mm in each direction (smaller and greater, three for light track, four for heavy), so using a four-mm tolerance, any number between 1,516 and 1,524 mm would work and be safe for railroad trucks. [This also would explain why Philadelphia Transportation Company streetcars could have been easily operated over Red Arrow track and vice versa, as PTC's gauge was officially 5' 2¼" while Red Arrow's was 5' 2½".] Actually, even if Russia's has changed, the official gauge in Finland remains 1,524 mm. With its desires to be integrated further into the European Union, a new standard-gauge railway will be built through all three Baltic states, to link with the railways in Poland [see <http://www.railjournal.com/index.php/high-speed/route-finalised-for-rail-baltica-high-speed-line.html>]. A new station will be built in Tallinn to serve that line.)

We had no problems photographing at the station, which was reasonably busy for the middle of the afternoon. In fact, we were present when the train from Moscow to Tallinn arrived, with a diesel locomotive at the point. As you will see from the photos, all of the multiple-unit cars, electric- and diesel-powered, are up to date. Estonian railway system operations are divided in a manner similar to the British model, with separate companies providing passenger service, freight services and infrastructure. However, a privatization attempt failed, and now almost everything is owned again by the government.

All suburban and intercity/regional services are provided by



(Above and below) Two views of activity at Baltic Station in Tallinn. The top photo shows three Stadler FLIRT EMU trains, while the lower shows a similar DMU train.



Stadler FLIRT EMU and DMU cars, all purchased in 2013 and 2014 (the last of the older Soviet-era cars were retired early in 2016). The numbering system applied to the 18 electrics and 20 diesels are descriptive: the first digit is 1 for 3,000v DC electric cars and 2 for diesel. The second digit indicates the number of units in the specified articulated MU and the last two digits are sequential numbers.

Service is provided on four different lines, and based on the timetables displayed in the station, we decided to ride the 2:38 PM train on the Eastern line out to Vesse, the end of Zone 1, for which our day tickets were good. However, when we arrived there, the train door at which we were waiting wouldn't open, and by the time we realized that and raced to another one the train had begun accelerating, so we had to



(Above and below) The Arukula station is not in the center of town, but patronage seemed to be pretty good with passengers boarding and alighting for both trains. Estonian trains run right-handed, and I was able to board the DMU on the left immediately after getting the lower photo.



stay aboard. When we finally found the conductor and told him about our problem, we had passed through Zone 2, and had to wait one more station before we were able to get off — at Arukula in Zone 3. But at least we weren't charged a supplemental fare. We arrived at 3:03 and saw that there was a return train at 3:51, so we had some time, and found a coffee shop/convenience store near the stop where we took in some refreshment (coffee and ice cream). We were charged for our return trip, €1.90, which was probably the step-up between Zones 2 and 3. We rode only as far as Ulemiste (4:07 PM), two stops before Baltic station, as from there it was only a short walk to tram route 4. We rode in comfortable DMUs in both directions. The Stadler FLIRT website indicates that the cars are capable of a top speed of 120 mph, but we didn't travel anywhere near that velocity.

After riding tram route 4 back to Tondi, where we had started several hours earlier, we finally got our ride in an EMU, back to Baltic station on the Western line. Upon our arrival at 4:47 we completed our photography for the day. We also observed the loading of the train to Moscow

via St. Petersburg, which was scheduled to depart at 5:03 PM. The equipment had been turned since its arrival and was now receiving passengers. Eight clean-as-a-whistle passenger cars, with fully uniformed female porters standing at attention at each door, plus a matching dining car made up the consist. Having ridden in Russian-style trains before, I was sure the passengers would enjoy their rides and the amenities. At the point was a spanking clean diesel locomotive painted in the color scheme of the operator, GoRail, a partially-privatized Estonian company. A minute or two before departure time the porters boarded, but kept their heads peeled at the dutch doors. At 5:03 PM precisely, the whistle blew and the train got under way. My last photo of the day was of the required 2-10-0 steam locomotive that was plinthed near the station's entrance.

In Part XXVII we move on to Helsinki.



This view of GoRail's Tallinn-St. Petersburg-Moscow train was taken upon its arrival in Tallinn. The consist was the same for its return trip.



The street side of Tallinn's railway station. We were not surprised that a 2-10-0 steam locomotive was on the scene. We had to wait for the sun to duck under a cloud to take photos as otherwise its rays would have pointed directly into our lenses.