Safety and Operations Committee

Board Information Item III-A

World Class Transit

Board Document

OVERVIEW			
PRESENTATION NAME	World Class Transit	**DOCUMENT NO.**	300033
ACTION OR INFORMATION	Information		
STRATEGIC TRANSFORMATION PLAN GOAL	Service excellence; Regional opportunity and partnership; Sustainability;		
RESOLUTION	No		
EXECUTIVE OWNER			
EXECUTIVE TEAM OWNER	Webster, Thomas J.;		
ORGANIZATION	Planning and Performance		
DOCUMENT INITIATOR	Mike R. Collins		
OTHER INFORMATION			
COMMITTEE	Safety and Operations Committee	**COMMITTEE DATE**	4/24/2025
PURPOSE/KEY HIGHLIGHTS	Provide an overview of Metro's vision to achieve world class transit with a focus on actions to create a safer, more reliable, cost-effective system that provides additional capacity to meet growing ridership. Specifically, this presentation will provide context, benefits, and next steps for rail automation, frequent bus and bus priority, and our revised approach to addressing capacity and reliability challenges on the Blue, Orange, Silver lines. Rail Automation: Can deliver faster travel and more trains per hour from the same fleet, increase reliability of infrastructure, and reduce trespassing incidents on the roadway Frequent Bus and Bus Priority: Is more cost-effective, increases reliability, and can increase capacity of streets/roadways Blue, Orange, Silver Capacity and Reliability: Applying rail automation and bus priority with targeted station access		

	improvements may deliver a faster and more cost-effective approach to capacity and reliability challenges.
DISCUSSION	World class transit provides customers with frequent, reliable, and safe service that is cost effective to operate and has enough capacity to support growing communities. It includes all day, all week fast and frequent service, modern vehicles and infrastructure using state of the art technologies, streets that move people with enforced bus lanes and integrated signals, and an integrated system that makes it simple for people to plan, pay, and ride. Metro and the region have spent decades and billions of dollars investing in the DMV's transit system; however, many of the assets and infrastructure are underutilized. With the right investments, such as addressing bottlenecks on the railroad and areas of delay on streets and roads, Metro can operate additional service at a low incremental cost. However, unless we commit as a region to adopting global standard practices that more effectively use these assets - through rail automation and bus priority – we will approach the limits of future gains in safety, frequency, capacity, reliability, and efficiency. Rail Automation: There are three components of any rail automation program: (1) a modern signaling system using communications-based train control (CBTC), which enables communications between the fleet and wayside equipment, (2) a rail fleet compatible with that signal system, and (3) platform screen doors that fully separate customers on the platform from the train and tracks. Advancing rail automation can transform Metro's operations, and address the four main challenges of safety, reliability, capacity, and efficiency. Transit systems around the world are automating their operations, including to legacy systems, to take advantage of the benefits of these technologies: • Safer service: automated operations can eliminate human error, and platform screen doors prevent trespassing onto the tracks • Better service: more reliable and more frequent service – with more flexibility to adjust service. • Increased capacity: can deliver higher capacity service from the same number of assets. • Increased efficiency: decrease the marginal cost of operations, enabling cost-effective service delivery at all times of day. Frequent Service and Bus Priority Today, almost 50 percent of Metrobus customers ride on routes that operate 12-minutes or better, with another 14 percent on the 20-

	minute or better routes. In the Better Bus Network that launches this June, Metro is adding another 12 routes to the Frequent Service Network, adding service to corridors with adjacent jobs, housing, and other activities that help grow ridership. However, as traffic congestion continues to rise, these routes are getting slower. The region spends up to $70M annually for buses to sit in traffic. Slow buses sitting in traffic or at traffic signals also discourage bus ridership and make travel time unreliable and they result in unsafe driving from motorists who often engage in aggressive passing maneuvers, thereby decreasing safety for all road users. Bus priority measures enable buses to bypass traffic and maintain consistent speeds through congested areas. Each corridor is different and there is a spectrum of on-street treatments – from queue jumps and signal priority to red-painted lanes and fully separated transitways – to use. When the measures are implemented together, consistently across the day, and for a considerable length of a corridor, Metro, our customers, and the region can recognize benefits benchmarked from peer cities such as: • Reducing travel time by 25 percent (Paris); • Growing ridership by 20 percent (New York); • Reducing traffic accidents by 42 percent (New York); and • Reducing the subsidy per passenger by 18 percent (Los Angeles). Applying World Class Transit Solutions to the Blue/Orange/Silver Lines' Capacity and Reliability Challenges In 2019, Metro launched the Blue/Orange/Silver Capacity & Reliability Study (BOS Study) to identify the best and most cost-effective solutions to better serve the needs of our customers and the region. The crux of the challenge is the interlining of the three lines between Rosslyn in Virginia and Stadium Armory in the District. Operating three lines on one set of tracks limits the capacity of all three lines and our ability to run different service patterns to improve reliability of service. The study assessed a range of alternatives, including new rail tunnels and extensions to resolve the challenges. Given the realities of funding availability and desire to realize benefits sooner, Metro is taking the opportunity to revise the purpose and need of the study and apply the elements of world class transit to develop an alternative that can address the capacity and reliability challenges of this corridor. Metro will develop and analyze an alternative that incorporates rail automation, cross-regional bus priority from Rosslyn to Stadium Armory via Union

	Station, and localized station access and capacity improvements.
INTERESTED PARTIES	Deutsche Bahn E.C.O. NA, Hitachi, Kawasaki, Alstom, Knorr-Bremse, Parsons Transportation, HNTB, Kittleson, Jacobs, Foursquare ITP, Susan Fitzgerald & Associates, Mead & Hunt, Cambridge Systematics, Fehr and Peers, GeoConcepts Engineering, KGP Design Studio, Kimley-Horn and Associates, Mercado Consultants, Rhodeside & Harwell, VHB
RECOMMENDATION/NEXT STEPS	Rail Automation: Metro will continue to engage peer legacy systems who have successfully retrofit lines. The team will advance procurement this summer for preliminary design and platform screen door demonstration to occur in 2026. The team will also continue to develop a Rail Automation Business Plan, with delivery by December 2025. Bus Priority: Metro will continue to work with our regional partners through DMVMoves to advance a regional bus priority network and implementation framework focused on corridors with very frequent service, slow bus speeds, and the surrounding land uses to grow ridership. Blue/Orange/Silver Corridor Capacity and Reliability: Metro will revise the Blue/Orange/Silver Corridor Capacity and Reliability Study's purpose and need, develop a new alternative comprised of rail automation, bus priority, and station access improvements and deliver an updated approach and cost-benefit analysis by December 2025.
FUNDING IMPACT	Having a strategy around providing world class transit will impact future funding needs and future capital improvement program funding. Service and infrastructure investments are and will continue to be integrated in WMATA's annual budget and capital improvement program. Over a longer term, moving to rail automation is also anticipated to have operating budget impacts.

Washington Metropolitan
Area Transit Authority

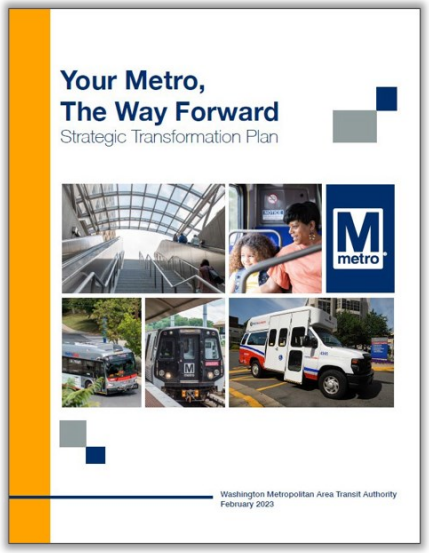
April 24, 2025

World Class Transit

Safety and Operations Committee

RD OR SV BL YL GR metrobus Metro Access

Strategic Transformation Plan: Guides long term strategy and day-to-day decision making of Metro over the next five + years



Guiding

Day-to-day decisions
- Customer interactions
- Service schedules
- Communications

Long-term strategy
- Budget allocation
- Capital improvements
- Priority projects

Goals — Our priorities to achieve the vision

Purpose

- Define world class transit investments and Metro's activities to advance rail automation and frequent bus service with bus priority
- Highlight how these two activities, applied systemwide, can maximize the region's infrastructure investments, improve safety and reliability, grow ridership, and add service for low incremental costs
- Review experiences of peer cities/regions and transit agencies
- Establish next steps for:
  - *Rail Automation: Develop and adopt Rail Automation Vision, Program, and Phasing Plan*
  - *Bus Priority: Through DMVMoves, develop regional bus priority network and implementation framework*
  - *Blue/Orange/Silver Corridor: Apply world class transit investments to address capacity and reliability challenges*

Metro's vision for world-class transit

Deliver best-in-class service that maximizes transit ridership and supports a thriving economy

Investments

Fast, frequent service all day/ all week

Modern vehicles, infrastructure, and technology

Integrated customer-focused system

Benefits to Customers, Metro, and the Region

Safer and cleaner system, fewer incidents

Consistent and **reliable** service

Maximize system **capacity**

Deliver **more service with same resources**

Thriving economy

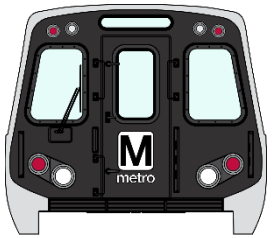
More access to jobs and activities

Enhance quality of life

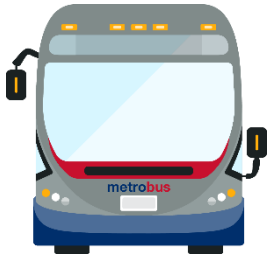
Higher ridership

Cleaner air

Metro is leveraging its resources to improve safety, reliability, capacity, and efficiency



Automatic Train Operations (ATO) provides faster, more reliable service, and enables Metro to deliver more frequent service for the same cost.



The **Better Bus Network** provides more frequent and reliable service and connections to more destinations for the same resources.

metro access

More customers using the **Abilities Ride** alternative improves the customer experience while reducing costs per trip.

Metro will continue to improve service and grow ridership while modernizing to deliver efficiencies and reduce costs

Region can add capacity, improve reliability at low incremental cost with smart investments

More people and jobs mean more congestion. By investing in world class transit, the region can use the system we already have more effectively to deliver more service and grow ridership

Metrorail

By addressing bottlenecks, the system can run more and longer trains, better utilizing tracks and other infrastructure.

Fleet Size

Yard Storage

Core Throughput

Terminal Capacity

Metrobus

By addressing sources of delay, streets can more efficiently move more people with high-capacity transit.

Road Congestion

Traffic Signal Delay

High-Capacity Fleet

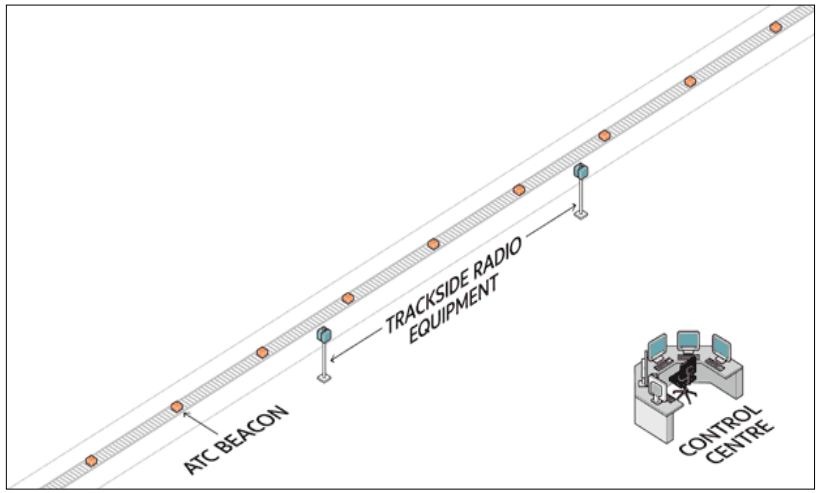
Bus Stops

The alternative is to build more roads and extend and expand the transit system at great financial, environmental, and social cost

Investments in Rail Automation and Bus Frequency and Priority are the way our region reaches World Class

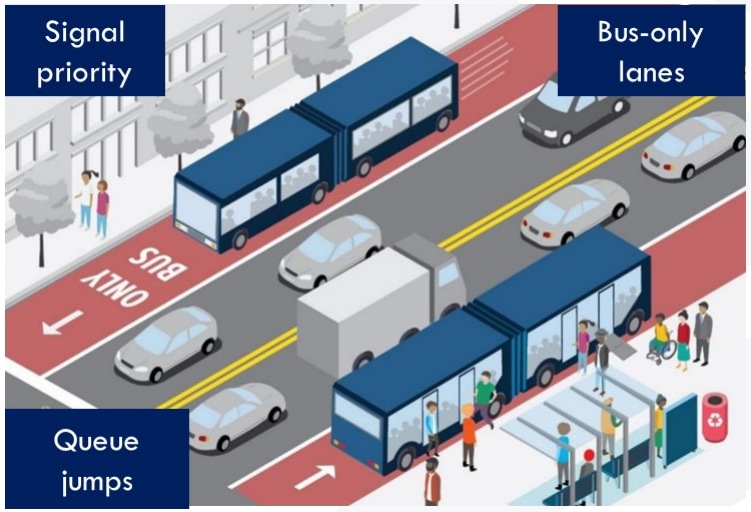
Metro continues to maintain assets, manage costs, and grow ridership, but the region needs to invest in modern technology and infrastructure to deliver world class safety, reliability, capacity, and efficiency.

Rail Automation



Deliver more service, improve the customer experience, and make the system safer and more reliable while reducing costs.

Bus Frequency and Priority



Move buses faster and more reliably on roads with priority treatments, enabling more service with the same bus fleet.

BL OR SV

Use rail automation, rapid bus, and station investments to address long-standing capacity and reliability needs in the Blue/Orange/Silver corridor.

World Class Transit: Rail Automation

1. Automatic Train Operations compared to Rail Automation
2. Metrorail's Opportunities and Challenges
3. What is Rail Automation
4. Benefits and Outcomes of Rail Automation
5. Approach to Implementation and Phasing
6. Return on Investment
7. Next Steps

Metro's history of automated operations

Increasing automation

Grades of Automation
Scale from 1-4 describing increasing levels of automation

Manual operation
Driver stops/starts the train

GoA 1
Operator controls train acceleration, braking, door operation, and monitoring the track

Metro designed for GoA 2 but operating in manual mode **(GoA 1)** since 2009

Semi-automated operation
Operator supervises train

GoA 2
Operator (in the cab) supervises the train, monitors track conditions, operates doors and train departure

We are Here: Metro returned to Automatic Train Operation **(ATO, GoA 2)** on the Red Line in Dec. 2024

Fully automated operation
No operator required

GoA 3
Train attendant (not in a cab) assists passengers and may operate the train if needed

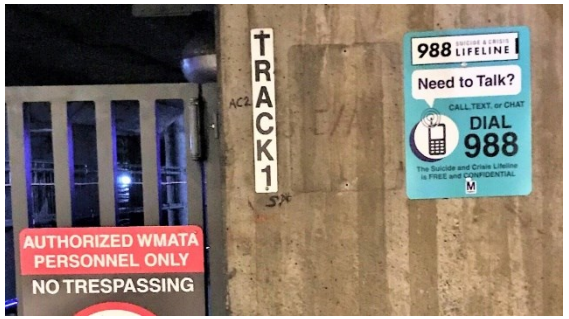
Next Steps: Planned return to ATO **(GoA 2)** on all lines

GoA 4
No operator or attendant required for normal operation

Program Plan: Evaluate a **fully automated (GoA 4) system**

Current Metrorail challenges

Safety



Ongoing trespassing incidents and on-track debris

- Trespassers, trash, and slips/trips/falls
- Human error in operation
- Challenging to mitigate with current system design

Reliability

Aging and unreliable infrastructure

- Human variability in operations and signal system failures cause delays
- Growing maintenance costs; replacement parts are difficult to source

Capacity

Insufficient room for long-term growth

- Bottlenecks at key locations limit service
- Expensive alternatives to adding capacity

Efficiency

Outdated concept of operations

- Rising operating expenses and inflexible service model

Components of fully automated transit

1. Signaling Systems

Metro Integrated Command & Communications Center (MICC)

Communications-Based Train Control (CBTC) that can control all aspects of train operations.

Adjust train movements in real-time for smooth traffic flow based on crowding levels, weather, incident recovery, and work zones.

2. Vehicles

Paris Metro: MP05 rolling stock

Railcars equipped with CBTC technology located onboard with less wayside infrastructure.

Precise, automated operations reduce variability – same operation every time.

3. Platform Doors

Honolulu Skyline: Hālawa station

Protect customers on the platform with physical barriers, such as platform screen doors.

Platform screen doors keep people and objects off the tracks.

Full automation is now the global standard

New Lines & Systems

Copenhagen Metro

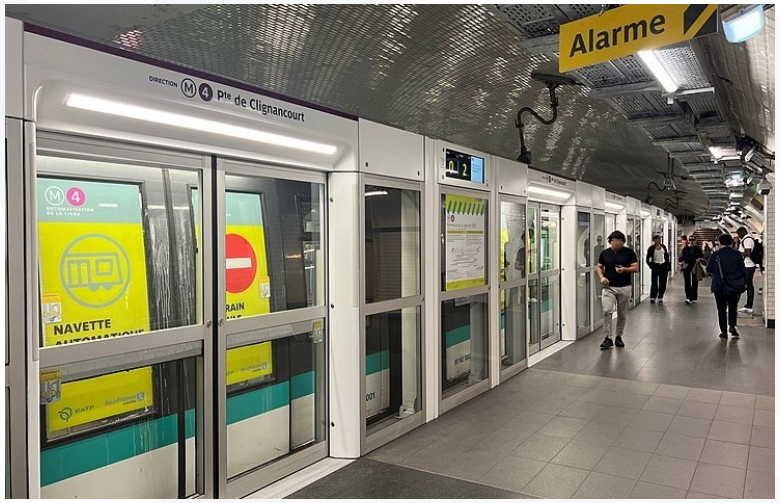
Designing for driverless operation is the global standard for newly built rail transit lines

Airports

Washington Dulles AeroTrain

25+ fully automated systems operate in US airports; some since the 1970s. These are often “must-ride” systems with no alternative, demanding high reliability 24/7

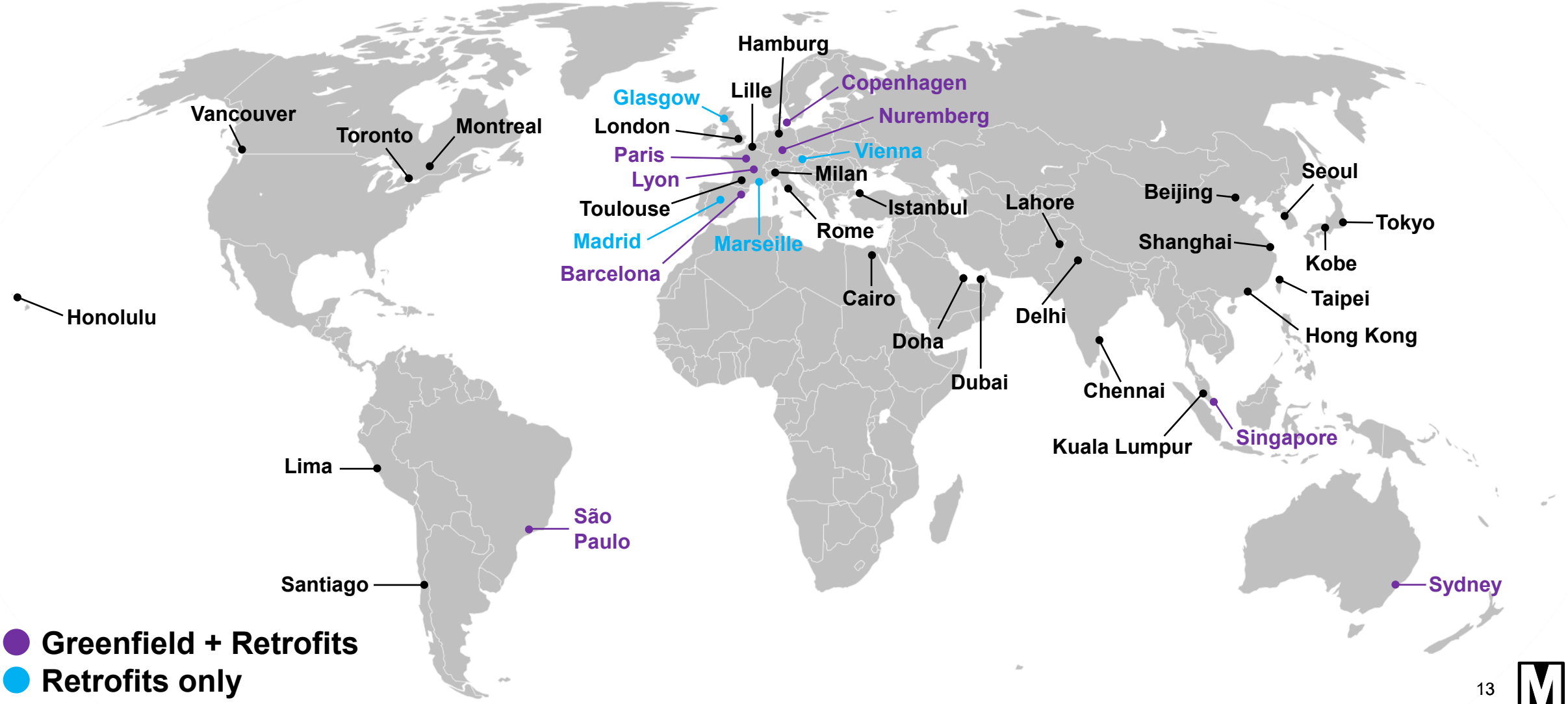
Retrofits



Paris Metro: Line 4 Platform Screen Door Testing

Cities are retrofitting conventional lines (including 100+ year old Lines 1 & 4 in Paris) for full automation to add capacity, improve service and decrease cost

Metros are automating across the world



- Greenfield + Retrofits
- Retrofits only
- Greenfield only

Selection of Grade of Automation 3/4 (GoA 3/4) lines, current and in development

Trespassing is an ongoing safety problem

Safety

Sections | The Washington Post — Democracy Dies in Darkness | Get one year for $40

Gridlock

Woman struck and killed by Metrorail train at Union Station

By Justin George

June 23, 2021 at 8:35 p.m.

A woman was fatal
Station on the Red

Emergency respon
firefighters from th
responded, shuttin
spokeswoman She
12:30 p.m. and inv
initially identified

Metro Transit

4 WASHINGTON

METRO (WMATA)

Man Struck by Train at Minnesota Ave.

Published February 14, 2020 • Updated on February 14, 2020 at

52° | DC NEWS NOW

MONTGOMERY COUNTY

Trains delayed after person struck, killed by train in Rockville, Metro says

by: Paola Belloso
Posted: Aug 30, 2024 / 11:12 AM
Updated: Aug 30, 2024 / 11:15 A

SHARE

ROCKVILLE, Md. (DC News No
and killed by a train on Friday

WMATA said Red Line trains w
because of the incident in bot

ains are also operating ever

ARLnow — Local is everything

News

Firefighters rescue person struck by a Metro train in Crystal City

By Jo DeVoe

Published March 10, 2023 at 12:45PM

Trespassing incidents have major safety & service impacts

Safety

RD Grosvenor-Strathmore

January 25, 2025, 5:26PM: Person fatally struck by train; Montgomery Fire & Rescue and Medical Examiner came to the scene

- Nearly seven hours of service disruption, delaying or canceling over 100 train trips
- Trains turned back to mitigate delays
- Resulted in 8,900 late customers

GR West Hyattsville

March 12, 2025, 2:56pm: Person struck by train; rescued by Prince George's Fire & EMS

- Three hours of service disruption, delaying or cancelling 48 train trips
- Service suspended between West Hyattsville and Hyattsville Crossing; cascading delays for Green and Yellow Lines
- Resulted in 15,000 late customers

Metro's signal system is aging and less reliable

Reliability

Metro's signal system is old & costly to maintain: few vendors, limited availability of parts and signals are the top cause of infrastructure-related service delays.

Both the infrastructure and technology are obsolete; track circuits of older design, at or approaching obsolescence.

The required investment in signals and rolling stock is an opportunity to plan rail automation.

Vital Relays and Local Control Panel

Track Circuit Module

Train Control Room

Metro will have fewer decentralized assets to maintain

Reliability

Today's System:
Relay-based track circuits
Grade of Automation 2

- 165 localized Train Control Rooms
- 700+ miles of copper cable
  28,000+ vital relays
- 3,500+ track circuits

- **Fewer parts**
- **Smaller & simpler footprint**
- **Better performance**

Modern, Automated Systems:
Communications-Based Train Control
Grade of Automation 4

- Centralized control; Significant reduction in train control rooms
- Fiber optic infrastructure
  Modern zone control
- Less wayside equipment; Railcar-based equipment

Automation increases capacity

Capacity

Higher signal system throughput and improved reliability enables higher capacity: Remove variability from service, reduce scheduled buffer time

- Improve on-time performance to 95-99%
- Increase throughput: more trains per hour
- Turn trains faster at the end of the line

Service flexibility: Automated systems can respond to unplanned events or surges in demand easier

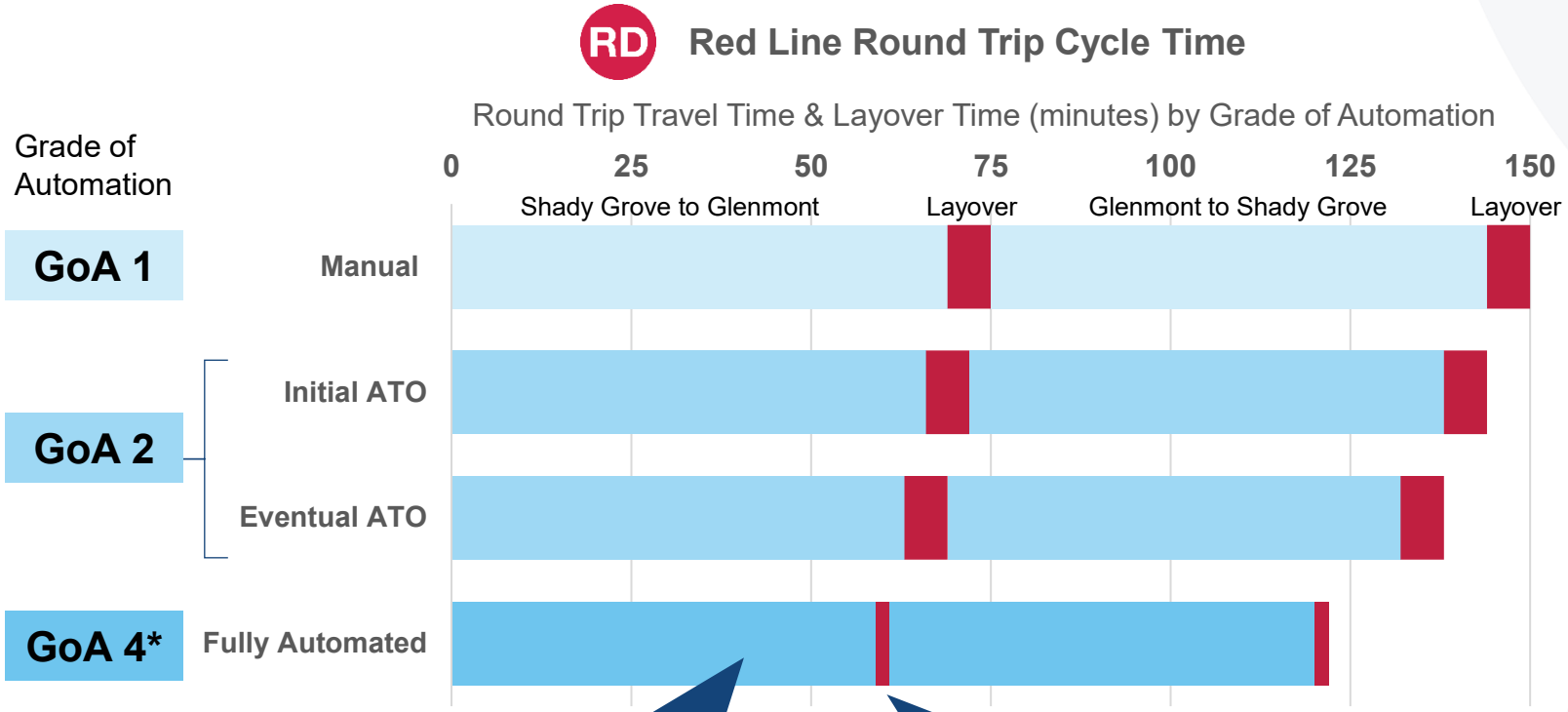
Copenhagen Metro

M3 Service operating in a different pattern to serve special events

Automation means better service

Automated operations are faster and more efficient, increasing capacity with the same infrastructure

Capacity



Cycle Time (minutes)	Trains Required for 5 min headway	Trains Required for 4 min headway
150	30	38
144	29	36
138	28	35
122*	**25**	**31**

Full Automation reduces scheduled buffer time, speeding up travel time compared to GoA 2

Automated turn-arounds and less delay recovery at terminals reduces scheduled layover time

Shorter cycle time enables same service with fewer assets

*Fully Automated cycle times are illustrative and hypothetical, based on performance of similar systems. Actual system performance will need to be determined.

Reliable, fast service drives efficiency

$ Efficiency

- **Higher Asset Productivity:** Provides more service and capacity from the same infrastructure and assets
- **Lower Operating Costs:** Costs are driven more by system uptime and less by level of service provided, enabling more service at low marginal cost
- **Higher Ridership and Revenue:** frequent and reliable service drives ridership growth

MRT – Singapore

Initial strategy to implement rail automation

Metro would take a regional, system-level approach to phase in automation

Implementation for automation would occur in phases across the rail network. Incremental benefits will be realized with each segment completed.

- Modernize signal system with Communications-Based Train Control (CBTC)
- Upgrade railcars for CBTC
- Install platform screen doors integrated with signal system
- Phased roll-out of automated operations

Critical to align fleet and signaling decisions

With the 8000-series fleet acquisition underway, now is the time to make decisions on rail automation

Fleet and signaling systems are highly interconnected

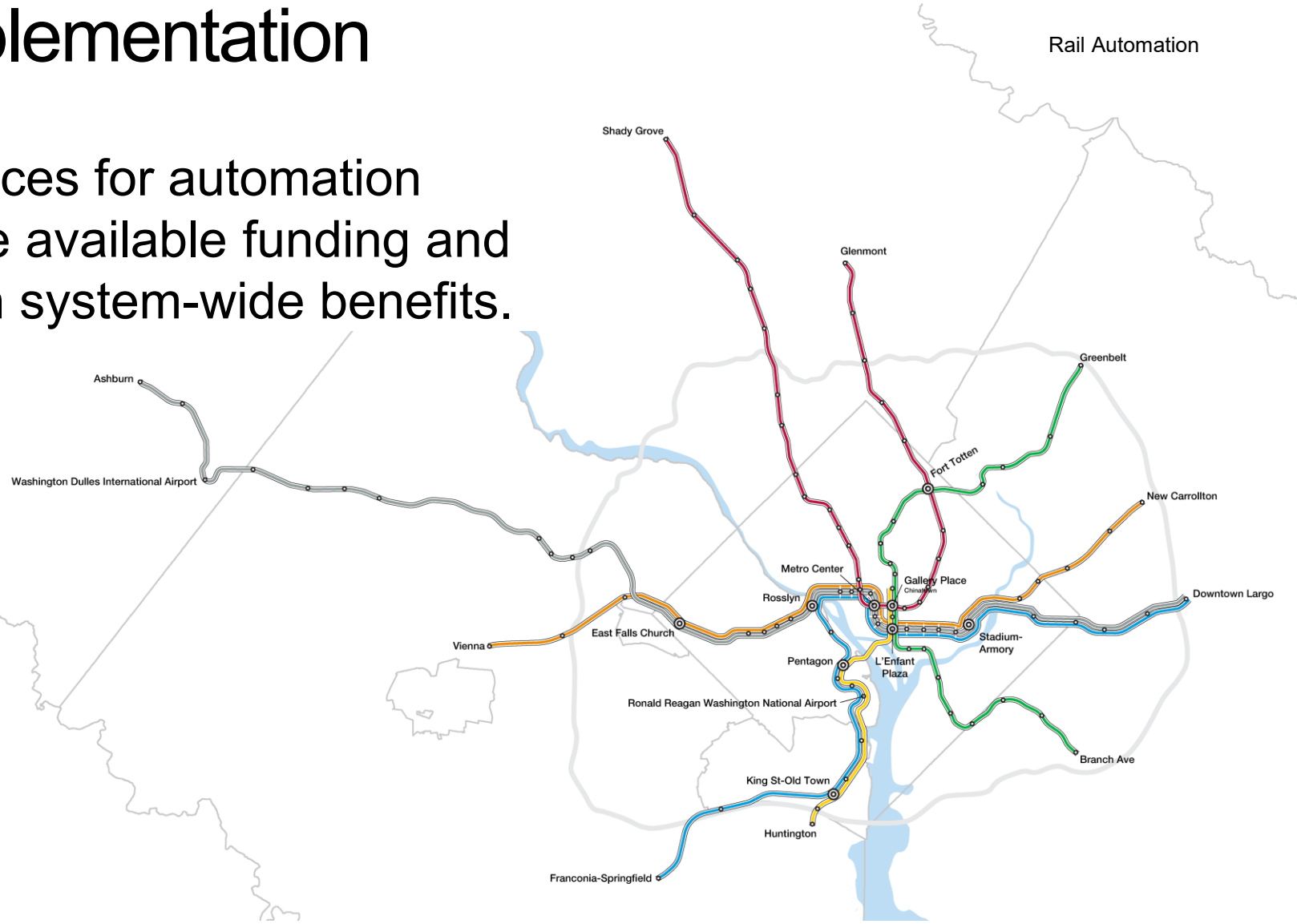
- Agencies typically make major decisions on signaling systems in conjunction with railcar purchases
- The 8000-Series are designed for conversion to CBTC and automation compatibility

Railcar Series	Entered Service	Current Fleet	Future Fleet
3000	1984-1988	276	-
6000	2006-2008	180	180
7000	2015-2020	748	748
8000	2028-	-	256 to 800
TOTAL		**1,204**	**1,184 to 1,728**

Potential Phased Implementation

Following industry best practices for automation retrofits, Metro would balance available funding and infrastructure constraints with system-wide benefits.

- Modernize signals by segment across the system, linking segments together
- Prioritize installation of platform screen doors by location, based on infrastructure needs and operational benefits
- Start automated operations once infrastructure and systems are in place



More direct delivery approach reduces costs

- **Commit to Rail Automation vision and plan**
  - Pursue system-wide automation utilizing a phased implementation strategy
- **Formulate an integrated program management team to reduce soft costs**
  - Utilize internal experts for project management and oversight to deliver the project with fewer consultants
  - Change the way we do things: Drive delivery efficiency by optimizing installation and testing practices
- **Combine benefits of staff expertise, repetition, and efficiency to reduce costs over lifespan of the project**
- **More details in December 2025 Business Plan strategy review**

Retrofitting for automation is less expensive and benefits the whole system faster than building new lines

	Automation Retrofit	New Build Rail Line
Cost per mile	$40 to 50m	$800 to 1,000m
	20x	
Rationale	Increase capacity and quality of existing system incrementally	Expand in one area, providing new connections, relieving existing bottlenecks

Conceptually, systemwide automation retrofit is achievable with incremental funding of $100 to 150 million per year and federal capital investment grants

Conceptual return on investment

Rail Automation Business Plan is underway, including detailed lifecycle cost analysis and alternative delivery options to reduce cost.

Preliminary results:

- **Faster, more efficient service:** Red Line service with automation would save 5 trains compared to manual operations
- **Higher capacity:** Automation enables productivity. The efficiencies from faster, more reliable service can be reinvested in service, increasing capacity
- **Lifecycle cost savings:** Efficient and productive service means saving money by purchasing fewer railcars to achieve the same capacity – requiring fewer yard expansion projects and avoiding lifetime maintenance costs for those railcars

RD Example: Red Line Automation

Grade of Automation	Trains Required for 5 min headway
GoA 1	30
GoA 2	28
GoA 4	**25**

Conceptual Impacts of Red Line Automation:

Automation saves five trains from manual mode; up to 40 fewer railcars to run the same service

~$220 million in lifecycle cost savings to acquire and maintain 40 railcars

Plus additional savings to avoid cost of yard expansion

Preliminary Costs and Benefits

Automation Program enables direct efficiencies and regional benefits

Capital Investments

$5.65b Automation Program Cost: Rough order of magnitude (FY2025 dollars)

- **Communications-Based Train Control:** $3.6b investment in upgrading signal systems and railcars to modern standards
- **Platform Screen Doors:** $2.1b for improved safety, customer experience, and full GoA 4 automation

Efficiencies

Automation investments make it possible to deliver more service at lower cost

- **Capital Cost Offsets:** $0.9b in lifecycle cost savings with a smaller, more productive fleet & avoiding yard expansion
- **Operating Efficiencies:** Transform Metro's cost structure with 5% to 10% reduction in annual net operating costs

Regional Benefits

Faster, reliable service benefits the entire region

- **Capacity Increases:** 10% to 25% increase in capacity
- **Safety Improvements:** Platform Screen Doors prevent trespassing deaths and injuries
- **Time saved for customers:** gives customers access to more jobs, and saves $100m to $215m of their time annually

Preliminary results. Detailed analysis of costs and benefits is underway as part of the Rail Automation Business Plan.

Rough Order of Magnitude Cost/Benefit Estimates. FY2025 dollars

Rail automation is the path to World Class Transit

Benefits have potential to transform Metro's operations

Safety

- ✓ Safer operations: reduce staff on roadway, keep trespassers off tracks, reduce track fires

Capacity

- ✓ Increased capacity with faster travel and more trains per hour

Reliability

- ✓ Increase service reliability up to 99%
- ✓ Less physical infrastructure to maintain

Efficiency

- ✓ More productive service with lower operating costs
- ✓ Grow ridership and revenue

Proposed Rail Automation Timeline

January 2025

- Initial Discussions: FY26-31 Capital Improvement Plan

April 2025

- Overview: Rail Automation Opportunities and Challenges

Summer 2025

- Procurement for preliminary design & platform screen door demonstration

December 2025

- Rail Automation Program & Business Plan
- Board Strategy Workshop

CY2026

- Platform Screen Door demonstration
- Board consideration and adoption of Rail Automation Program & Business Plan

Summer 2025 & Ongoing
Peer Studies & Learning

FY2026+
Implement Vision, Program, and Phasing Plan

World Class Transit: Frequent Bus Service and Bus Priority

1. Frequent Metrobus service
2. Opportunities and Challenges of Frequent Metrobus service
3. Benefits and Outcomes of Bus Priority
4. Next Steps

Customers respond to frequent service

Better Bus Network is adding more frequent service and with additional investment, we can continue to improve access and grow ridership with more frequent service

Current Bus Service Frequencies

Metro's Frequent Service Network

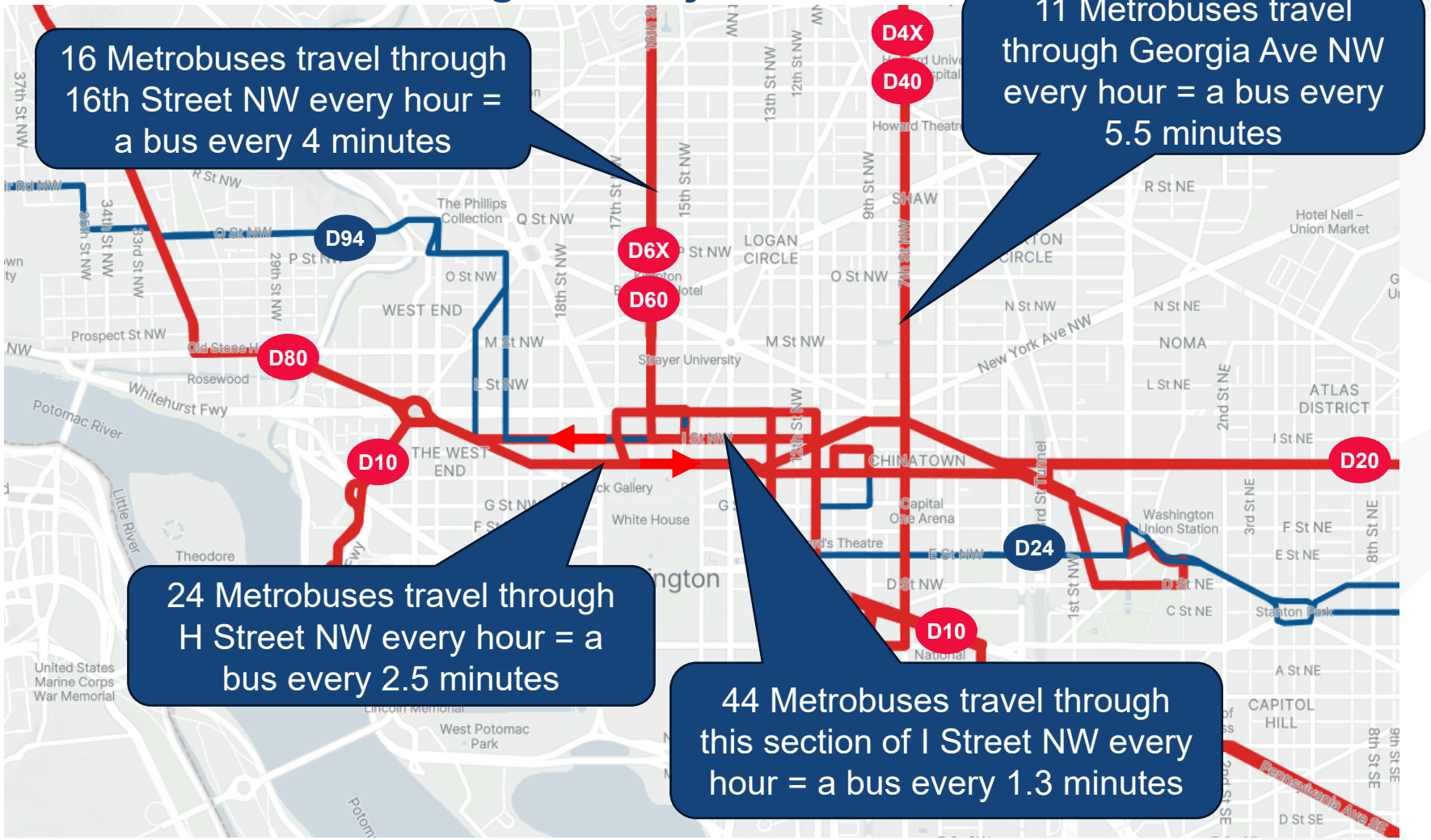
	Peak period frequency (min)
High Frequency	5-12
Medium Frequency	12-20
Coverage	20-60
Peak/ Commuter	Demand based

Vision for Future Bus Service Frequencies

	Peak period frequency (min)
High Frequency	5-10
Medium Frequency	10-20
Coverage	20-30
Peak/ Commuter	Demand based

Interlining multiple routes and operators can create even more frequent service corridors

Metrobus service during weekday rush hours



- 7 Metrobus routes serve I Street NW
- Service frequency ranges from 6- 20 minutes during peak hours (44 buses total)
- Additionally, OmniRide and other commuter services use H, I, and K street corridors
- Georgia Avenue carries over 23,000 customers daily, almost as many ride the Green Line between Greenbelt and Petworth

On-street infrastructure investments on major roads varies widely

No Priority

- **Service: 5-20 min peak frequency, 16 hr span**
- Bus Lanes: 0%
- Signal Priority: 0%
- Stop Spacing: 0.2-0.3 mile
- Bus Stop Infrastructure: Shelters

Bus Priority (aka BRT Lite)

- **Service: 5-10 min peak frequency, 16 hr span**
- Bus Lanes: 25 to 50% peak period or all-day, off-set or curb lane
- Signal Priority: 25 to 50%
- Stop Spacing: 0.2-0.3 mile
- Bus Stop Infrastructure: Shelters and potential all-door boarding

Bus Rapid Transit

- **Service: 5-8 min peak frequency, 18-20-hr span**
- Bus Lanes: 50 to 100% exclusive right-of-way
- Signal Priority: 75 to 100% and auto turning restrictions
- Stop Spacing: 0.3-1.0 mile
- Bus Stop Infrastructure: Shelters + Fast, all door boarding

Region's frequent service network provides the highest benefit for bus priority investments

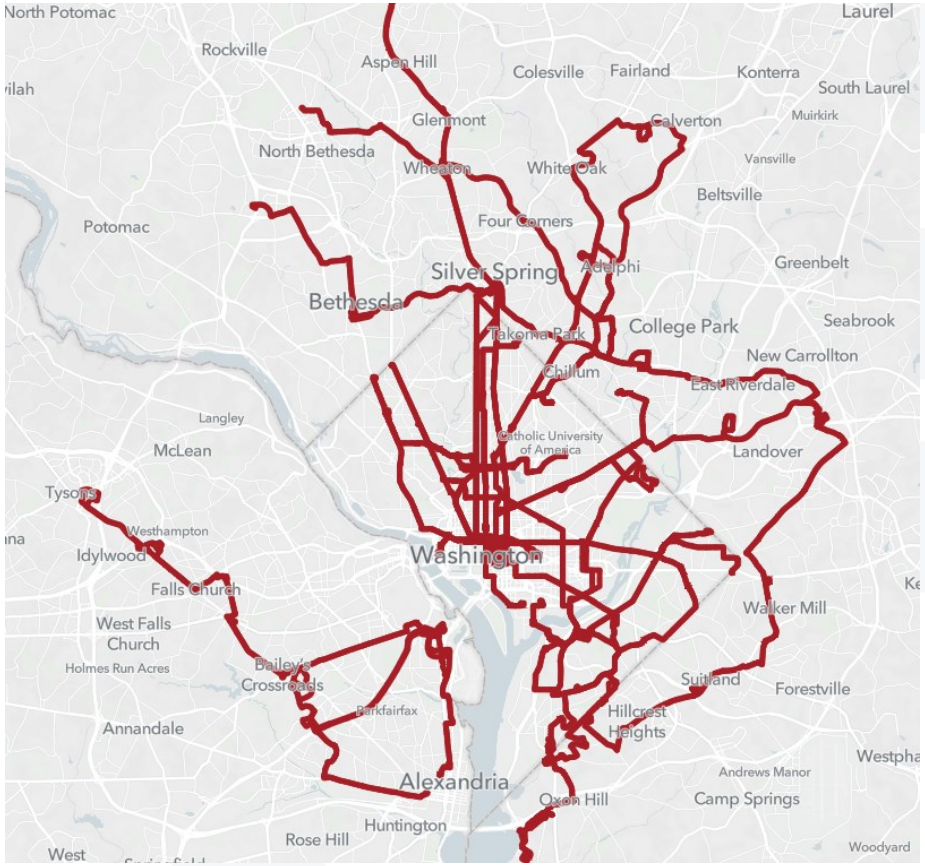
Customers want **frequent**, **reliable,** and **fast** service

High frequency routes (12-mins or better) carry almost **50% of bus customers** daily and have opportunity to grow ridership

Average **scheduled speeds** are **7-10 mph**, while **actual speeds** may be as slow as **3 mph**

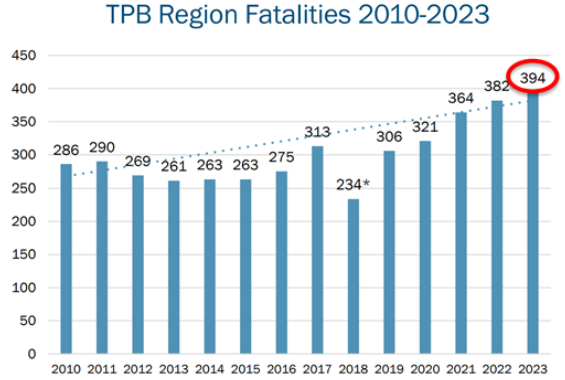
Opportunity to **expand this network** to include additional interlining with local and commuter bus providers

Region's Frequent Service Network of 12-min or better service



Challenges to maximizing benefits from our frequent Metrobus network

Safety



Our region's streets are increasingly unsafe

- 394 traffic deaths in 2023, a 10+ year high

Reliability

Congestion makes buses slow and unreliable

- **73% on-time performance** on the 12-minute bus network
- **45%** of late trips due to inadequate scheduled runtime or congestion

Capacity

Our streets are underutilized

- **1.1%** increase in congestion between 2019 and 2024
- **Cars are not space-efficient** and can't scale with growth

Efficiency

Slow Metrobus service costs taxpayer dollars

- **$70M+** annual cost for buses stuck in traffic

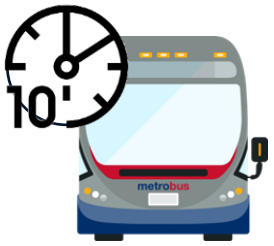
Our region's streets and traffic signals can and should work harder for transit and bus customers

*Source: Service Excellence Report FY2025, Q2; Streetlight, WMATA analyses

When congestion makes buses slower, we need more buses to run the same service

To keep buses running every…

10
minutes



On a route that takes…

50
minutes

Metro needs to provide…

5
buses and operators

When that service becomes **10 minutes slower** because of congestion...

60
minutes

+20%
time penalty for customers

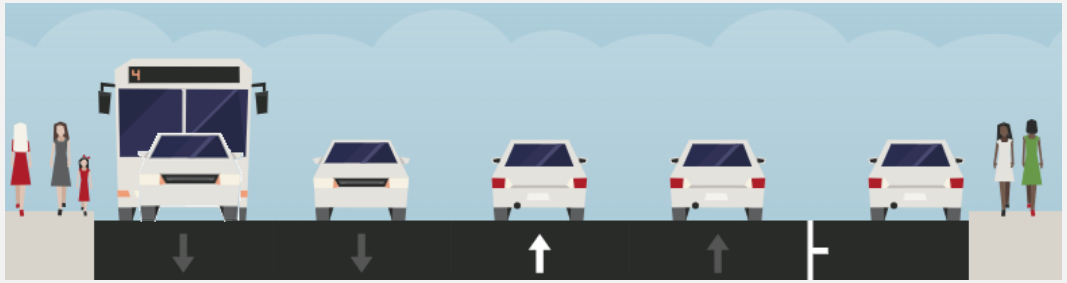
6
buses and drivers

+1
bus to purchase and maintain, additional bus operator to hire

With dedicated bus lanes, the same street can serve almost 50% more customers

FREQUENT BUSES[1] IN MIXED TRAFFIC

Person Throughput: **4,400** per hour

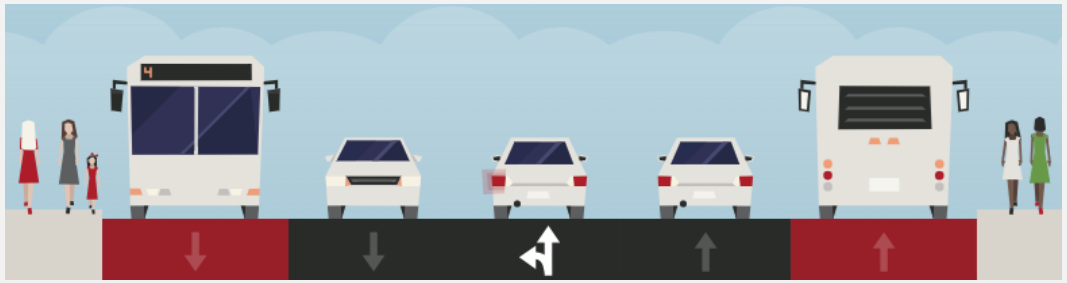


1,400 Mixed Traffic	800 Private Vehicles	800 Private Vehicles	1,400 Mixed Traffic	0 Parking Lane

[1]*Assumes buses at 6-minute headways*

FREQUENT BUSES[2] IN DEDICATED BUS LANES

Person Throughput: **6,300** per hour



2,100 Dedicated Bus Lanes	800 Private Vehicles	500 Turn Lane	800 Private Vehicles	2,100 Dedicated Bus Lanes

[2]*Assumes buses at 3-minute headways*

Investments may vary but length, continuity, and consistency drives speed and reliability outcomes

Frequent Bus and Bus Priority

16th Street NW (Peak Only Bus Lanes), DC
Frequency: 3 – 4 minutes

RapidRide G Line, Seattle
Frequency: 6 minutes

Livingston Avenue Busway, Brooklyn
Combined Frequency: 2 minutes

Rouen, France (BRT Silver)
Frequency: 2-4 minutes

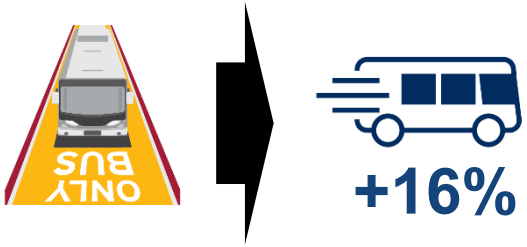
*Note: Gold, Silver, Bronze ratings via Institute for Transportation and Development Policy Bus Rapid Transit Standard

Bus priority in our region show promise and can do more with coordinated, scalable investments

Safety

- **28% fewer crashes** on 16th Street NW (DC)
- **56% reduction in injury crashes** on Pennsylvania Avenue SE (DC)

Reliability

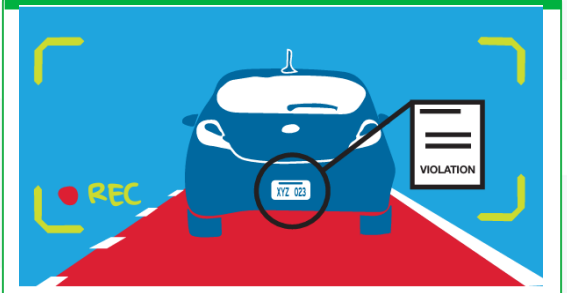


- Georgia Avenue bus lanes **sped up the slowest buses by 16%** (MD)
- **90% OTP on Metroway** compared to the systemwide Metrobus standard of 79% (VA)

Capacity

Georgia Avenue bus lanes **moved 900 more people** per hour in the same street space with dedicated lane (MD)

Efficiency



Clear Lanes (DC) improves bus stop access, allowing some paratransit customers to use buses instead of MetroAccess

- *Every paratransit trip that shifts to Metrobus **saves over $100***

*Sources: DDOT, MDOT, WMATA

Cities across the world have demonstrated the benefits of bus priority

Rouen France TEOR Bus Rapid Transit

A **high-quality bus-based transit system** can provide faster, more frequent, reliable service delivered faster and more cost-efficiently

Reliability

Travel Time

Up to **25%**
Paris

Capacity

Ridership

Up to **20%**
New York

Efficiency

Subsidy Per Passenger

Up to **18%**
Los Angeles

Safety

Traffic Collisions

Up to **42%**
New York

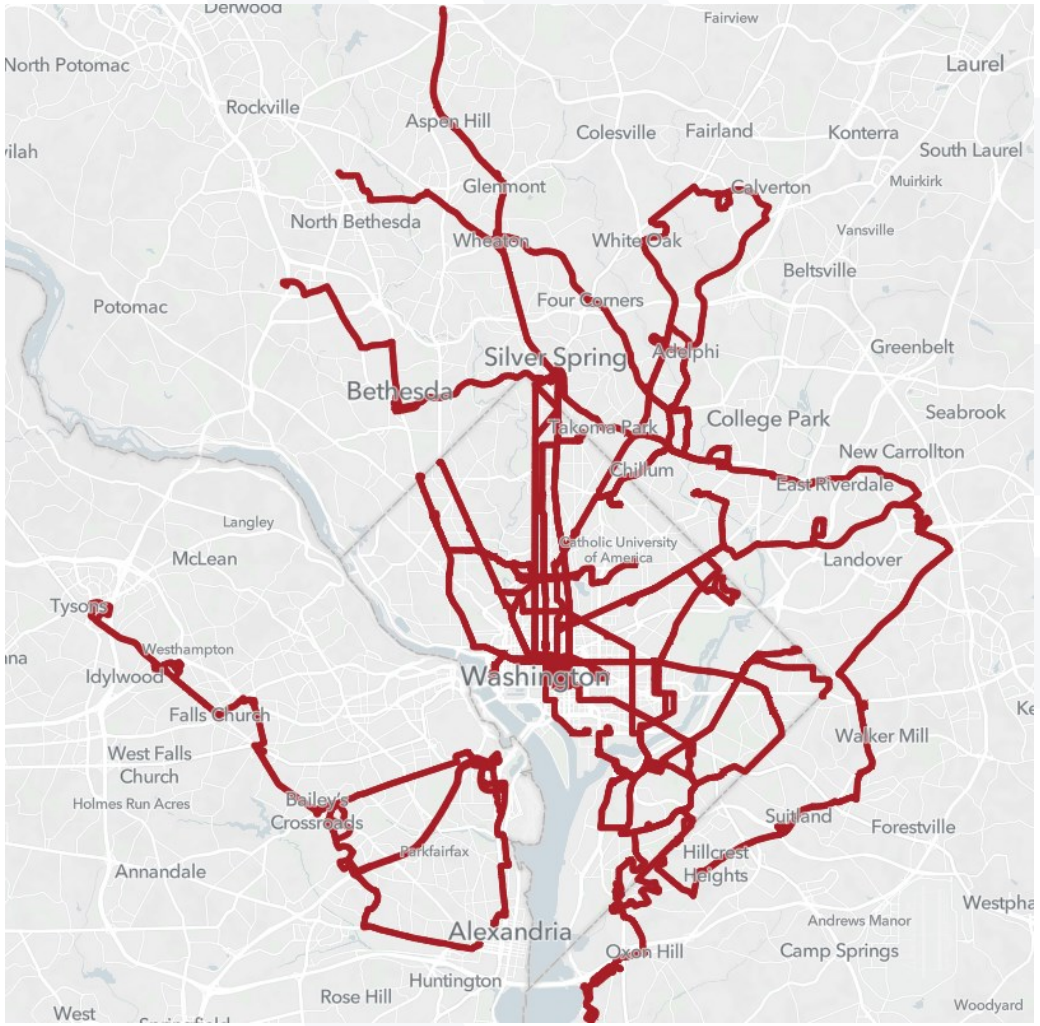
*Note:
Performance outcomes can vary significantly by corridor context and infrastructure investment.

Frequent bus service that is fast and reliable with bus priority is the path to World Class Transit

Through DMV*Moves*, develop regional bus priority network and implementation framework that maximizes benefits:

- Continuous, enforced bus lanes
- Consistent all-day hours
- Optimized transit signal priority
- Enhanced, widely spaced bus stops
- Fast, level boarding

Region's High Frequency Bus Corridors

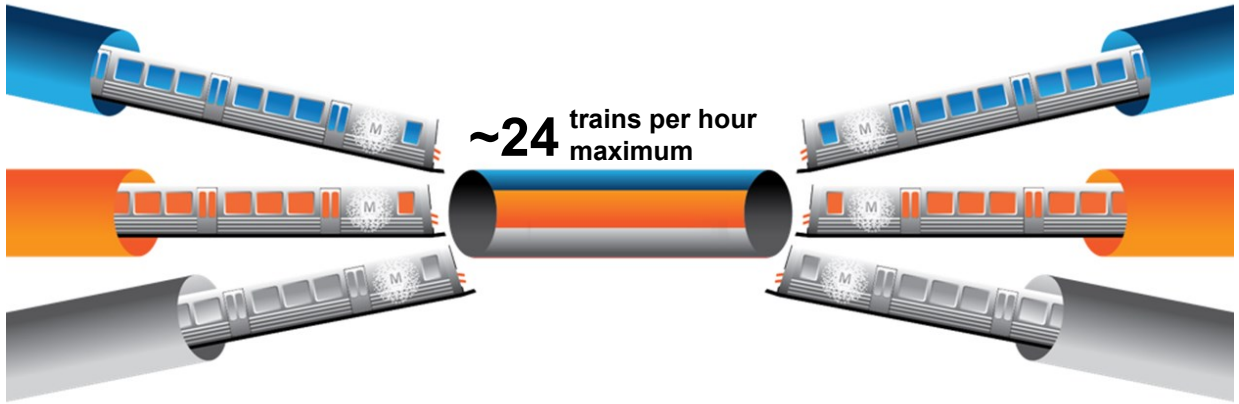


Applying World Class Transit Solutions to the Blue/Orange/ Silver Corridor

The Blue/Orange/Silver Study focused on addressing capacity and reliability challenges with rail extension

BOS Study Purpose and Scope

- Blue, Orange, and Silver lines share a tunnel and tracks between Rosslyn and Stadium-Armory stations
  - *Challenges: reliability and capacity*
- Investigated new rail tunnels and extensions to address these challenges



Option with Highest Benefits: Blue Line Loop

- Separated Blue Line with new tunnel
- High benefits to ridership, capacity, and ability to achieve regional goals
- $30-$35B in capital costs and decades of lead time to realize benefits

~$30-35B over ~20 years

Revising strategy to meet BOS corridor needs with a faster and more cost-effective approach

Blue/Orange/
Silver Corridor

1 Rail Automation

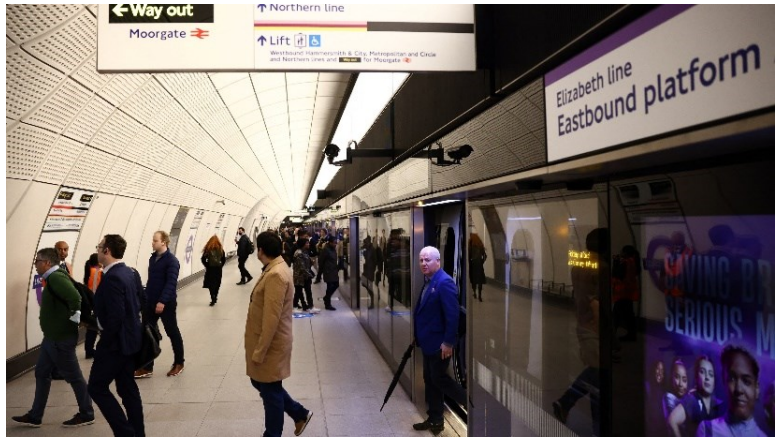
- Improves corridor's capacity, reliability and safety needs
  - *Significantly increases the number of trains per hour Metro could operate*
- Reduces customer travel time
- Makes rail service more cost-effective
- All of which could increase economic activity and growth

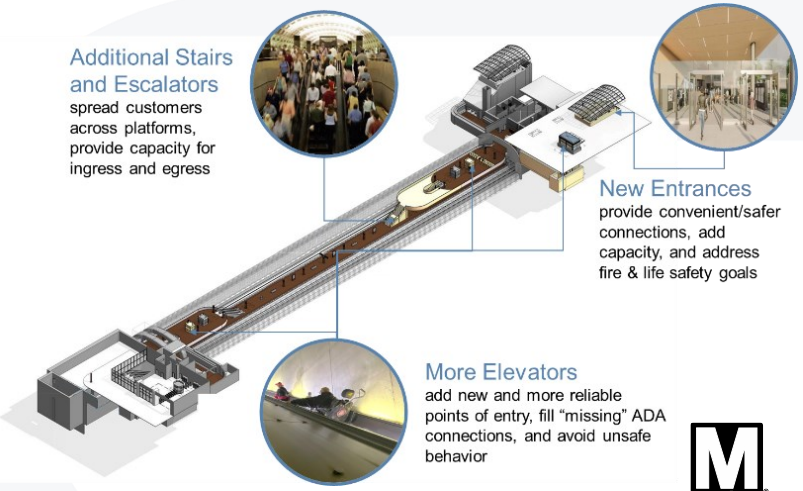
2 Cross-Region Bus Priority

- Provides connectivity from Rosslyn to Stadium Armory via Union Station
- Addresses corridor capacity needs and provides more travel options
- Leverages and supports redevelopment plans and priorities
- Multiplies transit connections and transfer opportunities

3 Station Access and Capacity

- Adds entrances, escalators, stairs, and elevators at undersized stations
  - A. *Farragut North & West connection*
  - B. *Foggy Bottom second entrance*
  - C. *Metro Center/Gallery Place connection*
- Ensures customers can move safely in, out, and through stations





Next Steps

Next steps to advance elements of World Class Transit in the DMV

Rail Automation

- Deliver a Rail Automation Program and Business Plan by December 2025, including a vision for automation and lifecycle cost approach
- Advance program delivery readiness – focus program approach on managing costs by using internal capacity to deliver with fewer consultants
- Continue to engage peer systems who have successfully retrofit lines & automated operations

Frequent Bus Service and Bus Priority

Through DMV*Moves*

- Advance regional bus priority network that connects high frequency bus service
- Develop implementation framework to maximize benefits across region

Blue/Orange/Silver Corridor

- Revise purpose and need to develop new alternative
- Update cost-benefit analysis
- Deliver updated approach by December 2025

Metro's vision for world-class transit

Deliver best-in-class service that maximizes transit ridership and supports a thriving economy

Investments

Fast, frequent service all day/ all week

Modern vehicles, infrastructure, and technology

Integrated customer-focused system

Benefits to Customers, Metro, and the Region

Safer and cleaner system, fewer incidents

Consistent and **reliable** service

Maximize system **capacity**

Deliver **more service with same resources**

Thriving economy

More access to jobs and activities

Enhance quality of life

Grow ridership

Cleaner air