Safety and Operations Committee

Board Information Item III-B

8K-Series Update

Board Document

OVERVIEW			
PRESENTATION NAME	8000-Series Project Update	**DOCUMENT NO.**	300046
ACTION OR INFORMATION	Information		
STRATEGIC TRANSFORMATION PLAN GOAL	Service excellence;		
RESOLUTION	No		
EXECUTIVE OWNER			
EXECUTIVE TEAM OWNER	Dwyer, Brian P.;		
ORGANIZATION	Operations		
DOCUMENT INITIATOR	Milan Perazich		
OTHER INFORMATION			
COMMITTEE	Safety and Operations Committee	**COMMITTEE DATE**	7/10/2025
PURPOSE/KEY HIGHLIGHTS	The purpose of this presentation is to provide a status update on the 8000-Series Vehicle Procurement Project including key milestones, accomplishments to date, and next steps.		
DISCUSSION	Fleet initiated the 8000-series railcar procurement in 2018 and awarded the contact to Hitachi Rail USA in 2020. This procurement includes the railcars as well as spare parts and special tools, training and training aids, cab simulators for training, and all related manuals. Contract Option 1 will enable the retirement of the 3000-series fleet from revenue service with two additional options for up to 328 total railcars, plus an additional 216 railcars that may be procured at later dates. The new cab simulators align with Metro's		

	plan to build out a training Center of Excellence. The delivery of the first pilot cars is scheduled to occur by June 2027 after two extensions necessitated by the impacts of the COVID-19 pandemic and carbody design modifications. A third extension of six months is currently in negotiation as part of contract Modification 9. The project is currently delayed by an additional 12 months caused by Hitachi's: -Insufficient engineering and program management resources -Design document quality issues and long turnaround time -Aggressive scheduling for design review meetings and other key milestones -Coordination issues major suppliers, such as Automatic Train Control (ATC) and Friction Brake System suppliers Metro has and continues to work diligently to minimize and mitigate delays by: -Beating contracted turnaround time for submittal reviews (contracted at 30 days with an internal target of 20 days) -Minimizing non-critical comments -Planning for timely stakeholder participation, as needed -Increasing face-to-face meetings between Metro, Hitachi, and at sub-supplier locations Once we receive the first 8000-series railcars, Metro will complete commissioning and acceptance activities, such as testing at various load weights and system-level functional testing to ensure operational compatibility with our track, communications, and signaling systems required for safe operation. Hitachi is expected to deliver 80 railcars that will be revenue service-ready in 2028, including time for commissioning and acceptance, that will enable Metro to operate a combination of 6- and 8-car 8000-series trains consistent with current operating practices. The delivery schedule is based on an estimate of 16 cars delivered per month at full production capacity. Metro completed extensive public and internal stakeholder engagement to inform the design of the features important to customers as well as operators. Feedback from the public aligned well with input from the Accessibility Advisory Committee to increase the number of handholds and improve the digital onboard displays. The engagement process culminated in the Fleet of the Future Expo, during which more than 36,000 people toured a soft mockup of an 8000-series railcar and provided more than 6,500

	survey responses that helped inform the final design. The exterior design features offer several key benefits to advancing Metro's safety culture and mitigating operational risk. Intra-car barrier enhancements include high-visibility features and improved coverage of the intra-car gap. Platform monitoring cameras are a new feature that gives operators more visibility along the exterior of the train to improve situational awareness and confirm customer clearance before closing doors and moving the train. The open gangways increase customers' line of sight and ease of movement between cars, which can help reduce crowding and improve emergency egress. Finally, new undercar lighting will assist with mainline emergency response and enable inspection process enhancements. The 8000-series interior design features include additional high-visibility door status indicators to enhance customer awareness with placement for improved visibility for ADA customers. A new design feature is door indicators installed on each door post. The indicators will turn red, flashing in unison with the ADA warning light upon a receipt of a door close command, remaining so until the doors are fully closed and locked, extinguishing with the ADA warning light. The railcars will also have 24 more handholds and one new center door stanchion pole than prior fleets. Additionally, the fleet introduces new low-level exit path markings to help guide customers to exits in an emergency. These markings, similar to those in the aisle of an airplane, will be embedded in the floor to illuminate exit paths for up to 90 minutes in the event of lighting loss. In line with Metro's prioritization of safety and security, the 8000-series fleet will be equipped with improved surveillance capabilities through an upgraded video system that enables real-time video transmission to the control center over 5G and wi-fi networks. This builds on our ongoing work to enable real-time video monitoring on the 6000-series fleet and upgrading this capability on the 7000-series fleet. To improve the customer experience, the new railcars will have 28 onboard digital displays per car providing customers with: -Location, route, and transfer information for Rail and Bus; -News, weather, and service alerts; and -Station-specific venues and attractions. The displays will be 5G and wi-fi connected to provide customers with continuously updated information. Real-time update capability,

	particularly for Metro service alerts, is a new capability in the 8000-series fleet. The new fleet will also feature one additional center-door stanchion pole and 24 additional grab handles compared to the 7000-series railcars. Finally, the procurement of the 8000-series fleet will provide significant local economic benefits and cost savings for Metro. Hitachi's analysis showed its vehicle production in Hagerstown will provide up to 460 full-time jobs in the City of Hagerstown, up to 1,300 regional jobs, and a total $70 million investment in the region. The railcars were also designed with operational cost-efficiency in mind with the following features expected to create $37M in operational cost savings over 40 years of operation: -Radiant heated floors -Auto power-saving mode for railcars while in the railyard -Selective door close features for end-of-line terminals to contain climate control while maintaining customer access and comfort -Auto-brightness control for interior lighting and displays -Reduced car weight to enhance performance and reduce energy costs Designed with safety, security, and comfort of the customer and operators in mind, the 8000-series railcars will continue to enhance Metro's service excellence and financial stewardship in our day-to-day operations.
INTERESTED PARTIES	Hitachi, Hatch, Parsons
RECOMMENDATION/NEXT STEPS	Hitachi to deliver full-scale mockup in 2026, first pilot cars in June 2027
FUNDING IMPACT	No funding impact

Washington Metropolitan
Area Transit Authority

July 10, 2025

8000-Series Project Update

RD OR SV BL YL GR metrobus Metro Access

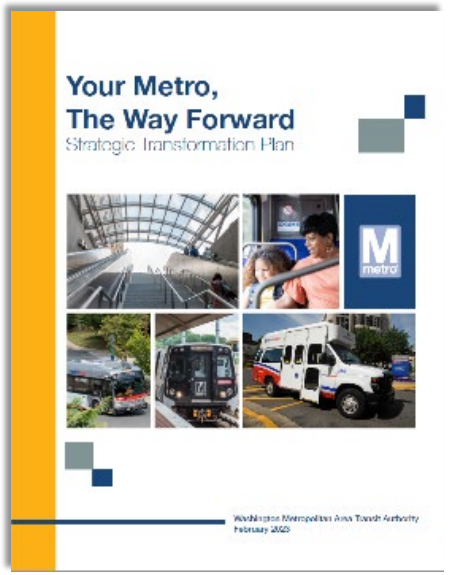
Purpose & Agenda

Purpose: Provide a status update on the 8000-Series Vehicle Procurement Project including key milestones, accomplishments to date, and next steps.

Agenda:

1. Project Overview
2. Stakeholder Engagement
3. Vehicle Design Highlights
4. Local Economic benefits and Cost-Saving Features

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

- Service Excellence
- Talented Teams
- Regional Opportunity and Partnership
- Financial Stewardship and Resource Management

Overview of base order and contract options

Base order

- Procurement of 256 railcars
  - Contractor: Hitachi Rail USA
  - Project award: November 2020
  - Notice to proceed: March 2021
- Deliverables
  - Spare parts and Special tools
  - Training and training aids
  - Cab simulator
  - Manuals

Vehicle options

- Option 1: 104 Railcars
  - For 3000-series railcar replacement
  - Exercise Due: December 2026
- Option 2: 104 Railcars
  - For service expansion
  - Exercise Due: June 2027
- Option 3: 120 Railcars
  - Exercise Due: At anytime prior to 5 years from the final acceptance of the last railcar of the most recent order

Other options

- Option 4: Vendor Management Inventory
- Option 5: Extended Warranty
  - Additional 2 years
- Additional 216 as required

Delivery schedule

Schedule

- **November 2020**: Contract awarded
- **February 2024**: Original pilot car delivery date
- **June 2027**: Current pilot car delivery timeframe

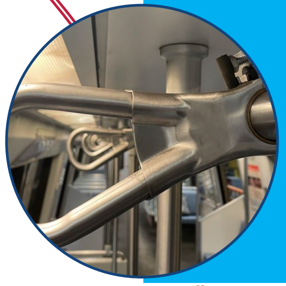
Market Conditions

- COVID-19 pandemic
- Global supply chain challenges
- Rail supplier consolidation

Hitachi Performance

- Inadequate engineering resources
- Impractical schedule
- Sub-optimal supplier coordination

Collaborative approach to design development



Public

- Open gangway connection
- Integrated system information on digital displays
- Additional handholds

Internal Stakeholders

- Larger operator cab space
- Improved accessibility to center door

Accessibility Advisory Committee

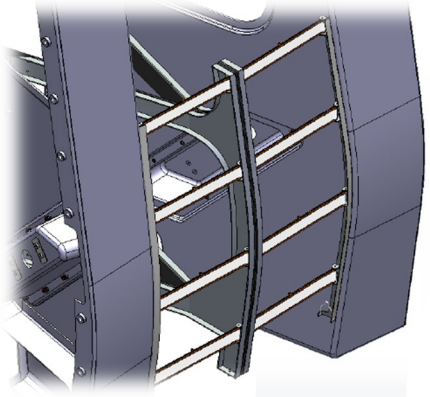
- Additional handholds
- Digital screen readability (high contrast display)

Key features - exterior design

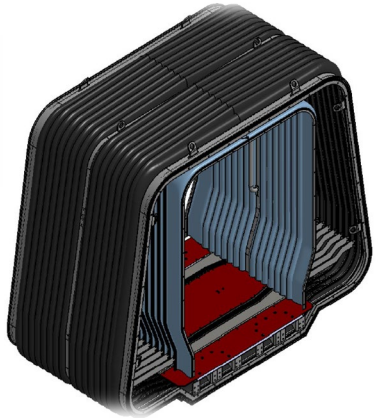
8000-series vehicles will introduce an enhanced exterior with a modern look and improved safety:

- Painted carbody with confetti-style finish
- Enhanced inter-car barrier for increased safety
- Platform monitoring camera for operator assistance
- Connected car interiors via Open Gangways
- Undercar lighting for maintenance and emergency response

8K exterior design



Inter-car barriers design concept



Gangway between cars

Key features - interior design

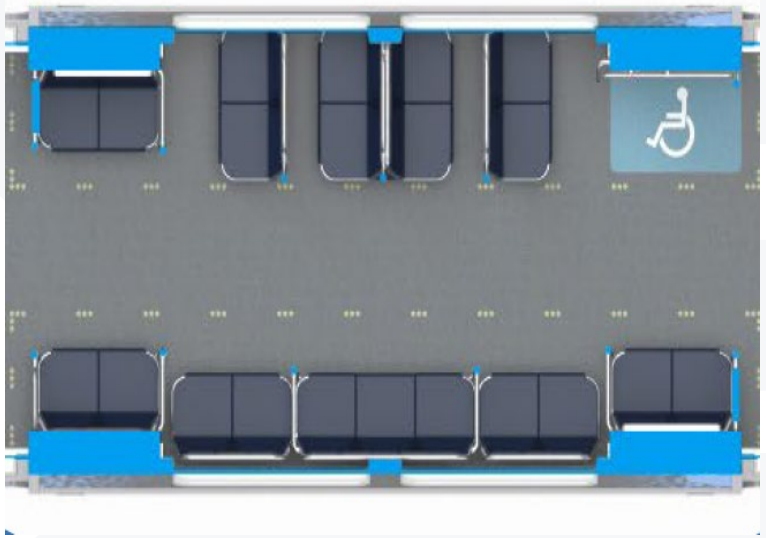
ADA compliance

- Fully ADA compliant interior and exterior design
- New additional door status indicators to enhance passengers and ADA awareness

Improved Interior

- Additional handholds and stanchion poles
- Multi-purpose area for strollers, bikes, and large luggage
- Low location exit path marking

Passenger Comfort



- Enhanced passenger seats design with hybrid seating arrangement
- Increased walkway width for better mobility
- Auto-brightness control for interior lighting

Integrated safety and security features

Video Surveillance

- Improved surveillance with upgraded video system
- Real-time video transmission to control center over 5G and Wi-Fi network

Open Gangway

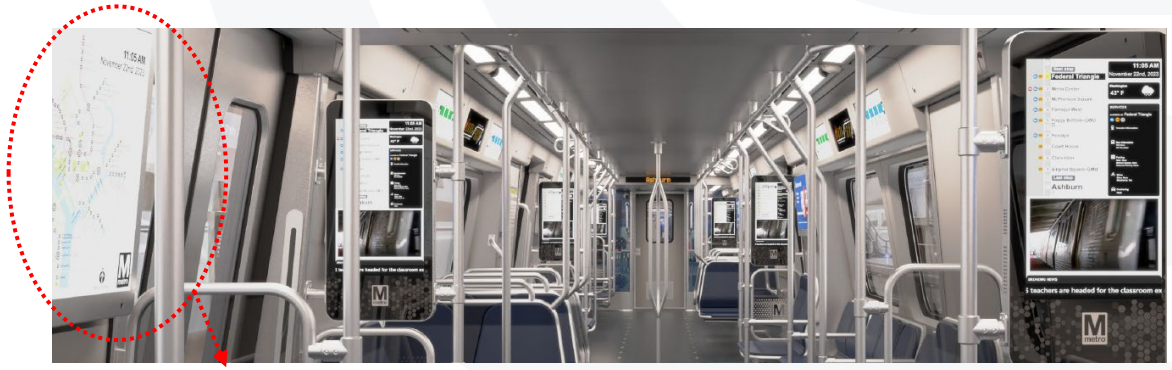
- Providing safe conditions for passengers to move inside married pair
- Improving visibility inside the train to allow easier monitoring of passengers and potentially deter criminal activities

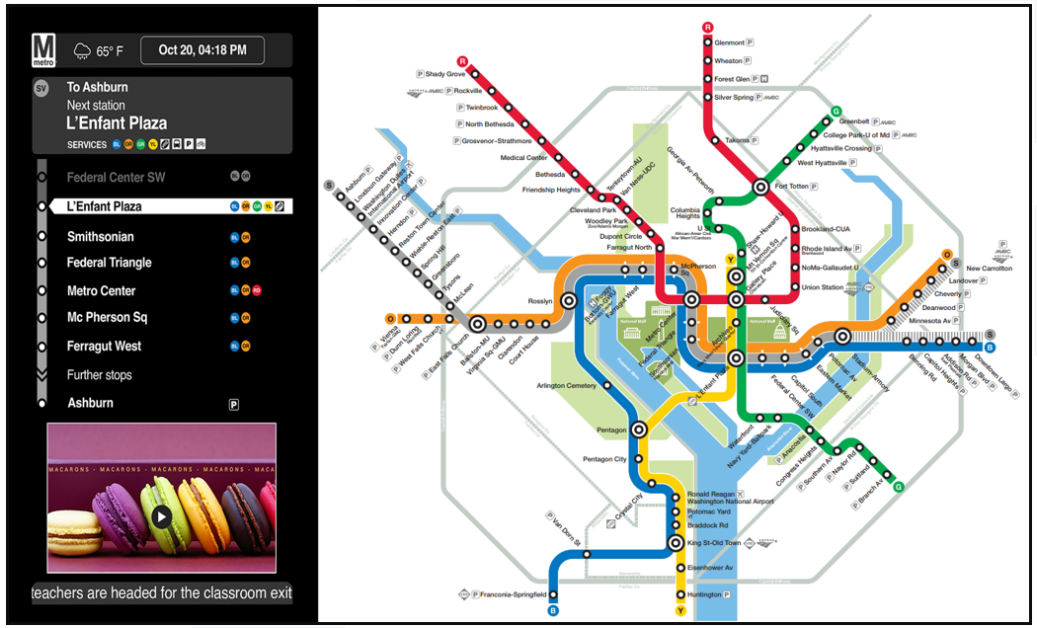
Cybersecurity

- Developed to latest cybersecurity standards
- Network intrusion detection capability

Enhanced passenger information system through digital modernization

- Realtime passenger information provided via 28 onboard digital displays
  - Location and route information
  - Transfer information
  - News, weather, system outage
  - Station-specific venues and attractions
- Continuous passenger information updates via 5G and Wi-Fi connectivities
- Creating opportunity for increased revenue





43” Dynamic Route Map Display

Local economic benefits and cost saving features

- Production of 8000-series vehicles at Hagerstown facility
  - Up to 460 full-time jobs in Hagerstown
  - Up to 1,300 regional jobs
  - Total $70M investment

- Design features for long-term cost efficiency
  - Radiant heated floor for comfort and efficiency
  - Auto power saving mode for railcars in yard
  - Selective door close features for end-of-line terminals
  - Auto-brightness control for interior lighting and displays
  - Weight reduction to enhance performance and energy reduction