

Eight-Car Trains During Peak Periods

Summary

This program will maximize the capacity of the existing Metrorail system by enabling operations of 100 percent eight-car trains during peak periods. Metro will upgrade, replace or expand:

- The rail car fleet
- Traction power substations
- Power cabling
- Third rail
- Train control systems
- Storage tracks and maintenance bays in the yards

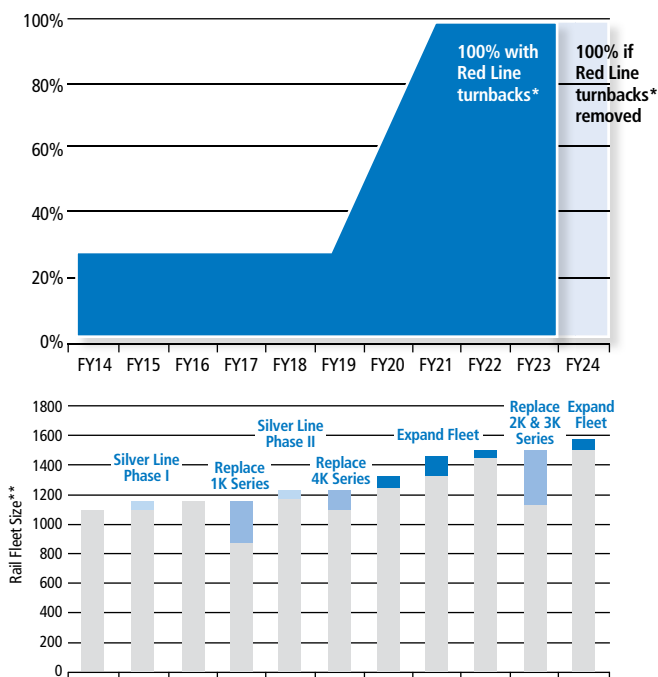
Purpose and Need

The Metro system's core is the destination or transfer point for 80 percent of all rail riders system-wide. Crowded conditions during peak periods exist currently and, without rail fleet expansion, most rail lines will be even more congested by 2025. Operating 100 percent eight-car trains during peak periods and increasing the capacity of transfer stations (under a related initiative) will provide adequate capacity through 2025.

Benefits

- Allows lines to carry 35,000 more customers per hour during the peak period
- Accelerates the modernization of the rail fleet
- Attains adequate system capacity through 2040
- Provides passengers with comfortable rides, including more seating
- Satisfies latent travel demand with the increased capacity
- Enhances reliability of traction power and related systems
- Allows comprehensive heavy repair and overhaul of

Figure 21: Projected Timeline to Operate 100 Percent Eight-Car Trains in the Peak Period



* Currently, during peak periods on the Red Line, Metro operates two routes: Shady Grove-Glenmont and Grosvenor-Silver Spring. Grosvenor-Silver Spring makes use of pocket tracks at these stations to "turn back" trains and create a shorter route, utilizing fewer railcars. Additional railcars, shown in FY24, would be needed to remove the turnback and operate the full Red Line route between Shady Grove-Glenmont with all eight-car trains.

** Does not include 50 railcar contingency.

Note: Prior to commencement of 100 percent eight car train operations during the peak period, power system and storage/maintenance facilities improvements are required. They are expected as shown in the timeline below.

aging rail cars in a new central facility

Considerations

- Upgrade of systems and expansion of facilities should be complete prior to delivery of the new rail cars.
- Improvements of core stations must be concurrent with this program (under a related initiative).

Figure 22: 100 Percent Eight-car Trains Timeline

7000-Series Fleet
8000-Series Fleet
Systems
Facilities

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025

■ Project Development ■ Procurement ■ Construction

- The long timeframe for developing the heavy repair and overhaul facility requires start in FY2014.
- Dulles Yard expansion should be part of MWA contract for the initial yard.

Status of Ongoing Projects

- 7000-series cars are being fabricated with options for additional cars, though not enough to attain 100 percent eight-car trains. An 8000-series car must be developed to supply the remainder.
- A survey of traction power conditions (2013) is identifying upgrades of traction power, cabling, third rail and train control.
- 100 percent Eight-car Train Program (2013) is being finalized that will detail all elements of the program.
- Rail Yard Plan (2013) will further define storage and maintenance needs.

FY2014-2019 Investments

These investments are already included and funded in Metro's current six-year Capital Improvement Program (CIP):

- Engineering and design of maintenance/storage facilities
 - Power upgrades
- Total - \$100 million*

Order of Magnitude Cost Estimate \$2 billion (\$2012)

- \$610 million: 220 railcars (7000 series)
- \$420 million: 140 railcars (8000 series)
- \$370 million: traction power and related systems upgrade
- \$600 million: storage and maintenance facilities expansion

Table 5: Metrorail System Peak Period Capacity

Without Fleet Expansion

	Peak Hour Passengers per Car (Maximum)				
	Location of Peak Direction Maximum Ridership (2012)	2012	2020	2025	2040
Red	Dupont Circle → Farragut West Gallery Place → Metro Center	✓	—	—	✗
Yellow	Pentagon → L'Enfant Plaza	✓	✓	✓	—
Green	Waterfront → L'Enfant Plaza Mt. Vernon Sq. → Gallery Place	✓	—	—	✗
Blue	Pentagon → Foggy Bottom	✓	—	—	✗
Orange/Silver	Court House → Foggy Bottom	—	✗	✗	✗

With Fleet Expansion to 100% Eight-Car Trains by 2020

	Peak Hour Passengers per Car (Maximum)				
	Location of Peak Direction Maximum Ridership (2012)	2012	2020	2025	2040
Red	Dupont Circle → Farragut West Gallery Place → Metro Center	✓	✓	✓	—
Yellow	Pentagon → L'Enfant Plaza	✓	✓	✓	✓
Green	Waterfront → L'Enfant Plaza Mt. Vernon Sq. → Gallery Place	✓	✓	✓	—
Blue	Pentagon → Foggy Bottom	✓	—	—	—
Orange/Silver	Court House → Foggy Bottom	—	—	—	✗

✓ Acceptable (average passengers per car (PPC <100) — Crowded (PPC between 100 and 120) ✗ Extremely crowded (PPC >120)