



## **Overview**

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## **Benefits of Investment in MARC**

- Better service for current riders
  - Addresses existing problems with capacity, frequency and reliability
- Provide framework for mobility in Central Maryland
  - Provides fast, reliable transportation in key corridors
  - Strengthens economic and social ties between Baltimore and Washington
  - Serves BRAC-related travel markets
  - Offers mobility choice for commuters and regional travelers
  - Efficient and environmentally sustainable (air, water, energy) transportation investment
  - Reduces need to expand highways in areas with limited/expensive construction opportunities
  - Encourages efficient regional land use development and transit-oriented development
  - Provides backbone for integrated Baltimore region transit system
    - Supports more efficient rail freight movement



# **Objectives**

- Ridership
  - Increase passenger-carrying capacity threefold
  - Increase share of trips by MARC during peak travel periods
- Service
  - Increase peak service:
    - ► 15-minute headways on Penn Line
    - ▶ 20-minute headways on Camden and Brunswick lines
  - Increase off-peak service:
    - ▶ 30-minute headways on Penn Line
    - ► Increased mid-day service on Camden and Brunswick lines
  - Provide express and limited stop service
  - Provide late evening service
  - Provide weekend service
  - Improve reliability to 95% on-time or better





**Existing Service** 







# **Existing System Description**

	Penn Line	Camden Line	Brunswick Line
Owner/operator	Amtrak	CSX	CSX
Stations	12	11	18
Route-miles	75	40	75
Weekday trains	47	18	19
Train sets	6	5	9
Frequency  • Weekday peak	25 mins (Wash-Balt) 45 mins (Perryville)	30 mins	30 mins (Brunswick) 60 mins (Frederick)
Weekday off-peak	Hourly (Wash-Balt) None (Perryville)	None	One mid-day train
Weekend	None	None	None
Daily passenger trips	19,000	4,500	7,000
On-time performance (FY 07)	89%	91%	89%





# Ridership Trends

- Ridership is at an all-time record level: 30,000+ daily trips
  - Recent growth has been at over 6% per year during past decade
  - Ridership now exceeds peak period system capacity of approx. 27,000 daily trips
- Ridership demand expected to continue to grow
  - Baltimore City residential revitalization
  - Suburban population growth
  - Strong employment growth in corridors served by rail including BRAC-related effects
  - Continuing regional highway congestion
  - Expanded federal fare subsidy programs

High cost of gasoline



# **MARC** is Running Near Capacity

- Capacity constraints threaten the ability of the MARC system to meet this demand with acceptable level and quality of service
- Parking lots at or near capacity
  - Perryville, Aberdeen, Edgewood, Martin Airport, Penn Station, West Baltimore, Halethorpe,
     Odenton, Brunswick, Point of Rocks, Germantown, Laurel
- Existing trains are crowded; standees on 60% of Penn Line trains in peak 2 hrs.
- Insufficient spare equipment
- Insufficient train storage
  - Overnight at Penn Station (no room to expand)
  - Mid-day at Washington (currently exceeds MTA-Amtrak agreement)
- Equipment maintenance shops are at capacity cannot accommodate a larger commuter rail fleet
- MARC scheduling flexibility and ability to expand service constrained by infrastructure and presence of other operators (Amtrak service & freight)





# **Major Programmed Investments**

	Completion Date	Cost (\$M)
Washington Mid-Day Storage	2012	\$47
Track Capacity (all 3 lines)	2011	\$30
Mid-Life Overhaul of MARC II Coaches	2012	\$25
Mid-Life Overhaul of GP40/AEM7 Locomotives and/or Procurement of New Diesel Locomotives	2012	\$61
Riverside Shops – Acquire from CST for Maintenance Facility	2012	\$25
Paul Sarbanes Transit Center (Silver Spring)	2010	\$66
Edgewood Station Improvements	2009	\$3
Halethorpe Station Improvements	2011	\$11
Misc. Other Improvements		\$94
FY 08 – 13 TOTAL		\$369



Note: This level of investment maintains the existing MARC level of service; it is <u>not</u> sufficient to meet or drive future growth.



## **Major Assumptions**

- CSX or Amtrak cooperation required, since MTA doesn't own or control:
  - Right-of-way
  - Washington Union Station, Baltimore Penn Station, and other major stations
  - Train dispatching and operations
  - Equipment maintenance priorities
- Investment will need to comprehensively address system capacity needs in multiple areas
  - Rail infrastructure upgrades and expansion
    - ▶ Additional main line tracks
    - Improved crossovers and track connections
    - ► Upgraded signaling and Penn Line electrification systems
  - Train storage and maintenance facilities
  - Rail cars
  - Station parking





### **Phased Growth and Investment Plan**

#### Timeframes

- ► Immediate (within 9 months)
- **▶** 2010
- **▶** 2015
- **▶** 2020
- ► Long-range (2035)





# **Immediate Improvements**

#### To be initiated or completed within 9 months

- Rail Service Improvements
  - Add one PM peak train on Penn Line
  - Add late evening train on Penn Line
  - Initiate weekend service on Penn Line
  - Add mid-day train on Camden Line
  - Purchase additional seating capacity on Amtrak off-peak trains for MARC passengers
- Customer Service Initiatives
  - Passenger information systems fast track existing program to upgrade P.A. system and signage
  - Aesthetic improvements at stations
  - Replace seats in MARC bi-level coaches
  - Washington Union Station improvements
  - Enhancements to MARC Tracker and customer e-mail systems
  - On-line Trip Planner
  - On-board Wi-Fi
- Other
  - Initiate acquisition of new environmentally-friendly diesel locomotives
  - Complete parking expansion at Point of Rocks, Brunswick; initiate Aberdeen
  - Increased car cleaning
- Adds capacity equivalent to approx. 1,500 daily seats
- Cost impact
  - Capital: approximately \$10m
  - Operations & maintenance: approximately \$6m/yr.

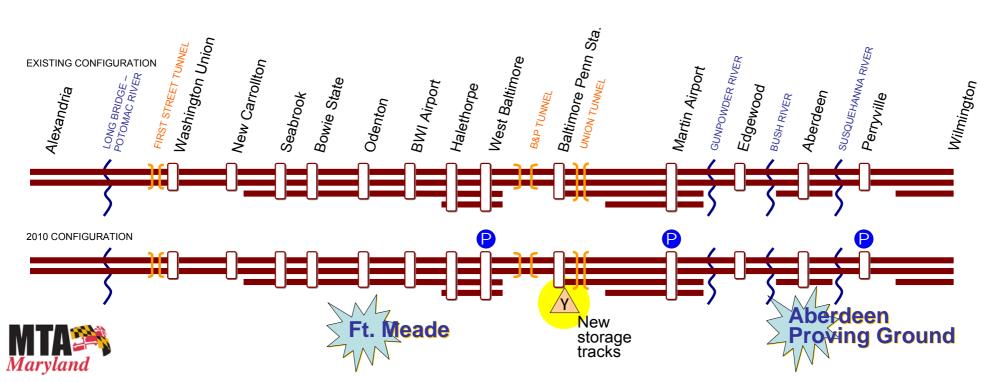




#### 2010 Plan - Penn Line

- Incremental Seating Capacity
  - +3,400 daily seats
- Rail Service Improvements
  - Lengthen existing trains to accommodate growing ridership demand
  - Additional peak and reverse-peak service
  - Late evening & weekend service

- Incremental Capital Investments ~\$83m
  - Procure new coaches
  - Expand Baltimore area overnight train storage
  - Station platform lengthening, as required
  - Station parking expansion: West Baltimore, Martin Airport, Perryville
- Incremental Operating Cost ~\$7m/yr.

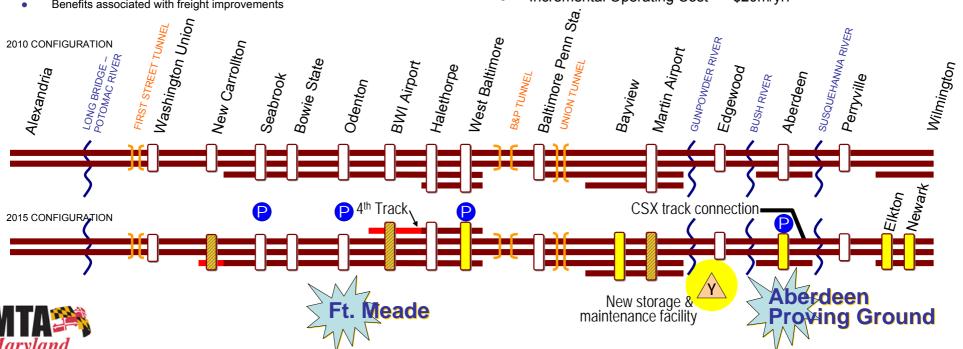




#### 2015 Plan - Penn Line

- Incremental Seating Capacity
  - +12,000 daily seats
- Rail Service Improvements-Washington-Baltimore
  - Increased peak and reverse-peak service (15-20 minute headways)
  - 30-minute headway off-peak service
- Rail Service Improvements North of Baltimore
  - Aberdeen: expansion of peak service and introduction of limited off-peak service
  - Martin Airport: expansion of peak service and introduction of hourly off-peak service
  - MARC peak service extended to Elkton, Newark
- More reliable service, with additional capacity and increased MARC-Amtrak separation
- Significant rail service provided for BRAC markets enhanced service at Odenton and Aberdeen
- Transit-oriented development opportunities at several stations
- Connectivity with Baltimore region transit
  - Red Line at West Baltimore
  - Red Line at Bayview
- Improved reliability
  - 93% on-time performance
- Benefits associated with freight improvements

- Incremental Capital Investments ~\$990m
  - 4 main tracks, West Baltimore-to-BWI Airport
  - Reconstruct BWI Airport Station
  - Relocate West Baltimore Station
  - New crossovers, BWI Airport-to-New Carrollton
  - Additional island platform at New Carrollton Sta.
  - Relocate Aberdeen Station
  - New Bayview Station and associated track improvements
  - Martin Airport Station improvements
  - Track A upgrade, Baltimore-to-Gunpowder River
  - New Elkton Station and associated track improvements
  - Odenton Station improvements
  - Station parking expansion
  - Additional rail cars
  - New overnight storage & maintenance facility
  - Aberdeen: CSX track connection for freight
- Incremental Operating Cost ~\$20m/yr.

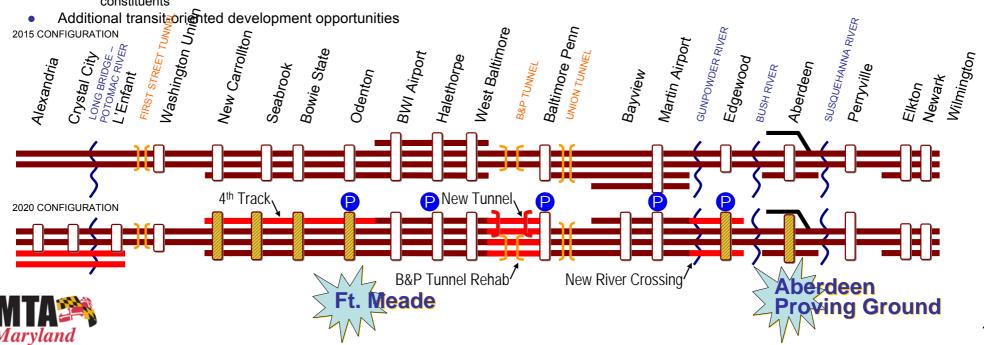




#### 2020 Plan – Penn Line

- Incremental Seating Capacity
  - +16,000 daily seats
- Rail Service Improvements
  - BRAC and BWI Airport Access Markets
    - Provides expanded service aimed at BRAC, airport and regional business travel markets, e.g. limited-stop trains at 30-minute headways
  - Washington-Baltimore
    - Expanded peak and reverse-peak service
    - Additional peak express service
    - Off-peak local and limited stop service
  - North of Baltimore
    - ► Extension of core Penn Line service to Aberdeen, with 20-30-minute peak headways and hourly off-peak service
- MARC service extended to L'Enfant Plaza and Northern Virginia
  - Implementation and cost-sharing partnership with other rail constituents

- Incremental Capital Investments ~\$1,320m
  - New Gunpowder River crossing (total of 4 main tracks, enables increased MARC service to Aberdeen)
  - 4 main tracks through Edgewood Station
  - 4 main tracks, BWI Airport-to-New Carrollton
  - Station modifications to support 4 main tracks:
     Odenton, Bowie State, Seabrook, New Carrollton
  - Amtrak B&P Tunnel replacement (by Amtrak, approx. cost \$1B);
     Rehab of existing tunnel for MARC use
  - Additional station parking expansion at Odenton, Halethorpe, Baltimore Penn Station, Martin Airport and Edgewood
  - Additional rail cars and locomotives
  - Freight corridor improvements, Baltimore-to-Perryville
- Incremental Operating Cost ~\$14m/yr.

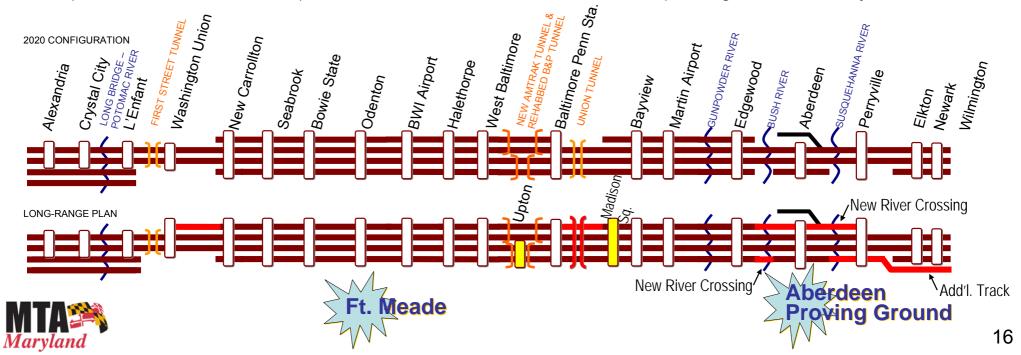




#### 2035 Plan – Penn Line

- Incremental Seating Capacity
  - +13,000 daily seats
- Rail Service Improvements
  - Full 4-track railroad provides MARC with flexibility to optimize service to meet and anticipate demand
  - Enables "transit-like" service through Baltimore
- Achieves high degree of reliability
  - 95% on-time performance
- Connectivity with Baltimore region transit
  - METRO Green Line at Madison Square
  - METRO Green Line at Upton
- Additional service extensions possible (not included in cost estimates)

- Incremental Capital Investments ~\$570m+
  - Union Tunnel expansion complete 4-track railroad through Baltimore City
  - New Bush River crossing (total of 4 main tracks)
  - New Susquehanna River crossing (total of 4 main tracks)
  - Extend 4 track railroad through Perryville
  - 3 main tracks, New Carrollton-to-Washington
  - New Madison Square and Upton Stations, with convenient transfers to/from Baltimore Metro
  - Additional station parking expansion
  - Additional rail cars and locomotives
- Incremental Operating Cost ~\$20m/yr.





# **Penn Line Plan Summary**

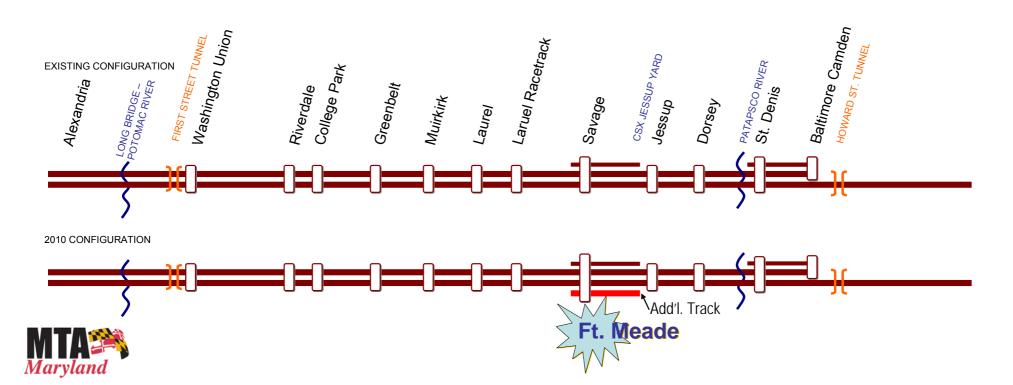
	2010	2015	2020	2035
Additional Daily Seats	3,400	12,000	16,000	13,000
Rail Service Improvements	<ul> <li>Lengthen trains</li> <li>Additional peak and reverse peak trains</li> <li>Late evening and weekend service</li> </ul>	<ul> <li>Additional peak and reverse peak trains</li> <li>Increase frequencies to Aberdeen</li> <li>Peak service to Elkton and Newark</li> <li>Connectivity to Baltimore Core services</li> </ul>	<ul> <li>Introduction of limited stop trains at 30- minute intervals</li> <li>Additional peak express service</li> <li>N. VA extension</li> </ul>	<ul> <li>Full 4-track railroad with "transit-like" service through Baltimore</li> <li>Connectivity to Baltimore Subway</li> </ul>
Incremental Capital Investments	\$83 million	\$990 million	\$1.3 billion	\$570 million
Incremental Operating Cost	\$7 million/yr	\$20 million/yr	\$14 million/yr	\$20 million/yr





- Incremental Seating Capacity
  - +400 daily seats
- Rail Service Improvements
  - Lengthen existing trains to accommodate growing ridership demand
  - Additional mid-day afternoon train
- Improved reliability 93% on-time performance

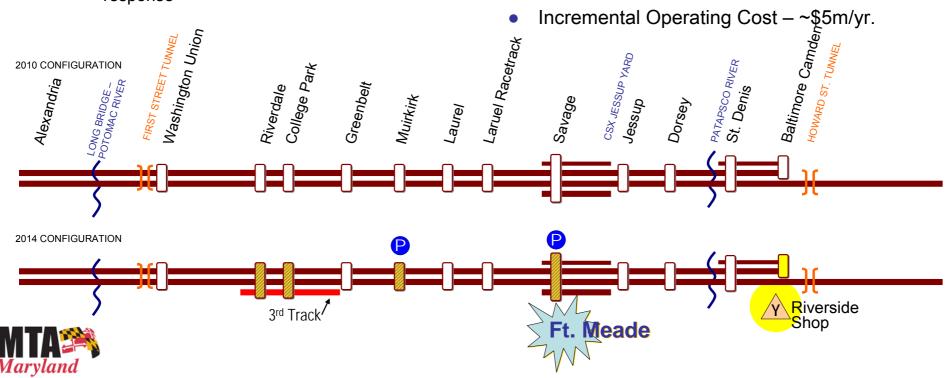
- Incremental Capital Investments ~\$53m
  - Procure new coaches
  - 3 main tracks plus yard siding, Savage-to-Jessup
  - Aesthetic improvements and upgrades to stations
  - Station parking expansion
- Incremental Operating Cost <\$1m/yr.</li>





- Incremental Seating Capacity
  - +2,200 daily seats
- Rail Service Improvements
  - Additional peak and reverse peak trains
  - Improved rail-bus transfers and connecting bus service to Ft. Meade area from Savage Station
- Continued reliability improvement
  - Major failure avoidance, improved incident response

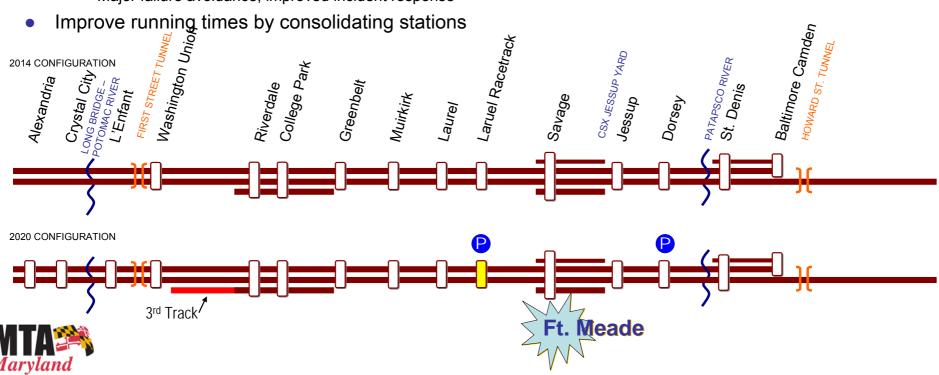
- Incremental Capital Investments ~\$125m
  - 3 main tracks, Greenbelt-to-Riverdale
  - Camden Station new station building
  - Muirkirk Station ADA access and station improvements tied to ICC completion
  - Savage Station improved rail-bus transfer facilities
  - Additional station parking expansion at Savage, Muirkirk
  - Additional rail cars





- Incremental Seating Capacity
  - +6,600 daily seats
- Rail Service Improvements
  - Peak headways reduced to 20 mins.
  - Limited mid-day service
  - Extension of service to L'Enfant Plaza and Northern Virginia
- Continued reliability improvement
  - Major failure avoidance, improved incident response

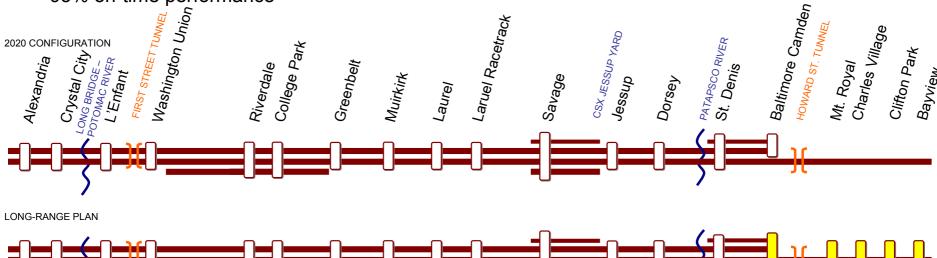
- Incremental Capital Investments ~\$120m
  - Signal system upgrade
  - 3 main tracks, Riverdale-to-Washington
  - Station improvements and parking expansion at Laurel Racetrack
  - Additional station parking at Dorsey
  - Additional rail cars and locomotives
- Incremental Operating Cost ~\$3m/yr.





- Incremental Seating Capacity
  - +4,000 daily seats
- Rail Service Improvements
  - Increased peak and off-peak service
  - Weekend service
  - Extension of service through Baltimore City to Bayview (requires prior relocation of CSX freight traffic to new tunnel)
- Continued reliability improvement –
   95% on-time performance

- Incremental Capital Investments ~\$110m+
  - Additional triple tracking
  - Investments to support service extension to Bayview, including new lower level platform at Camden Station, Howard Street Tunnel infrastructure & life safety upgrades, new stations, train storage facilities
  - Additional station parking expansion
  - Additional rail cars and locomotives
- Incremental Operating Cost ~\$5m/yr.+





# **Camden Line Plan Summary**

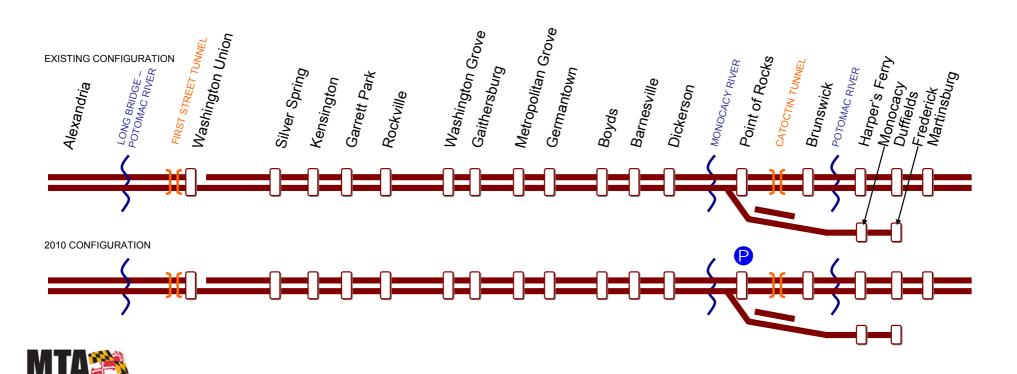
	2010	2015	2020	2035
Additional Daily Seats	400	2,200	6,600	4,000
Rail Service Improvements	<ul><li>Lengthen trains</li><li>Additional mid-day train</li></ul>	<ul> <li>Additional peak, reverse peak trains</li> <li>Connecting BRAC buses</li> </ul>	<ul> <li>Peak headways reduced to 20 min.</li> <li>Limited mid-day service</li> <li>Northern VA extension</li> </ul>	<ul><li>Increased peak and off peak trains</li><li>Weekend service</li><li>Bayview extension</li></ul>
Incremental Capital Investments	\$53 million	\$125 million	\$120 million	\$110 million
Incremental Operating Cost	<\$1 million/yr	\$5 million/yr	\$3 million/yr	\$5 million/yr





- Incremental Seating Capacity
  - +200 daily seats
- Rail Service Improvements
  - Lengthen existing trains to accommodate growing ridership demand
- Improved reliability 93% on-time performance

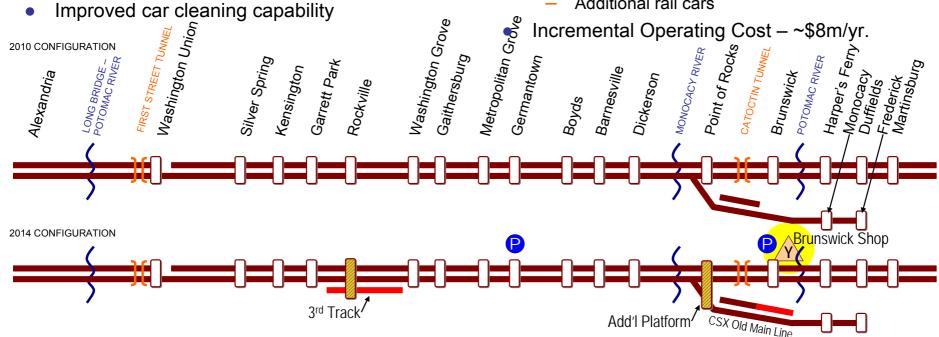
- Incremental Capital Investments ~\$63m
  - Procure new rail cars
  - Aesthetic improvements and upgrades to stations
  - Complete station parking expansion at Point of Rocks
- Incremental Operating Cost <\$1m</li>





- **Incremental Seating Capacity** 
  - +3,800 daily seats
- Rail Service Improvements
  - Improve Frederick Branch service 30 min. peak headways (increase number of trains from 3 to 6)
  - Increased limited stop and express service
- Continued reliability improvement
  - Major failure avoidance, improved incident response

- Incremental Capital Investments ~\$140m
  - 3 main tracks, Rockville area
  - 2 main tracks, Old Main Line / Frederick Branch
  - Point of Rocks: new platform on Frederick **Branch**
  - Germantown Station parking garage
  - Brunswick Station parking expansion
  - Brunswick maintenance facility expansion
  - Additional rail cars

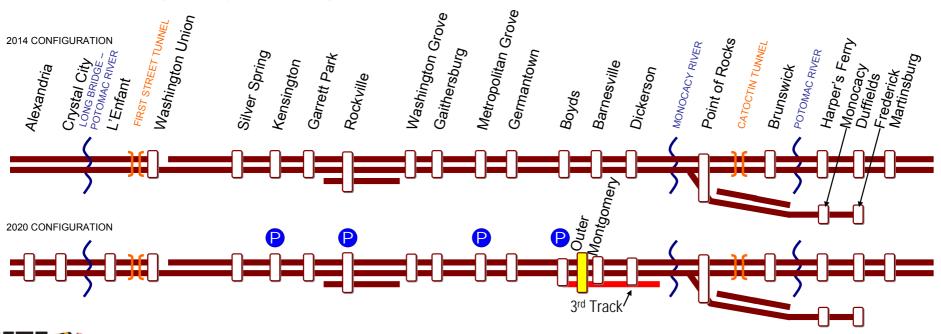






- Incremental Seating Capacity
  - +8,400 daily seats
- Rail Service Improvements
  - Reduce peak headways to 15-20 minute range
  - Limited reverse-peak service
  - Limited expansion of off-peak service
  - Extension of service to L'Enfant Plaza and Northern VA
- Continued reliability improvement
  - Major failure avoidance, improved incident response
- Improve running times by consolidating stations

- Incremental Capital Investments ~\$140m
  - 3 main tracks, Barnesville Hill
  - Outer Montgomery station
  - Additional station parking expansion at Metropolitan Grove, Rockville, Kensington
  - Additional rail cars and locomotives
- Incremental Operating Cost ~\$5m/yr.

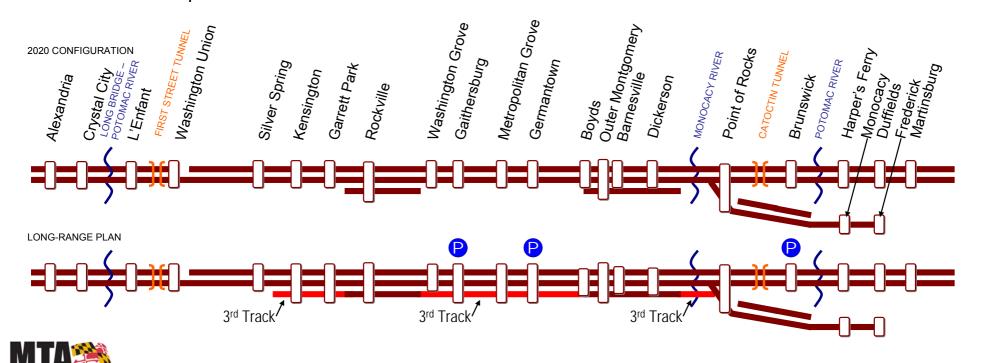






- Incremental Seating Capacity
  - +7,000 daily seats
- Rail Service Improvements
  - Increased peak and off-peak service
  - Reverse-commute service
  - Weekend service
- Continued reliability improvement –
   95% on-time performance

- Incremental Capital Investments ~\$190m+
  - Additional triple tracking
  - Additional station parking expansion at Brunswick, Germantown, Gaithersburg
  - Additional rail cars and locomotives
- Incremental Operating Cost –\$5m/yr.+





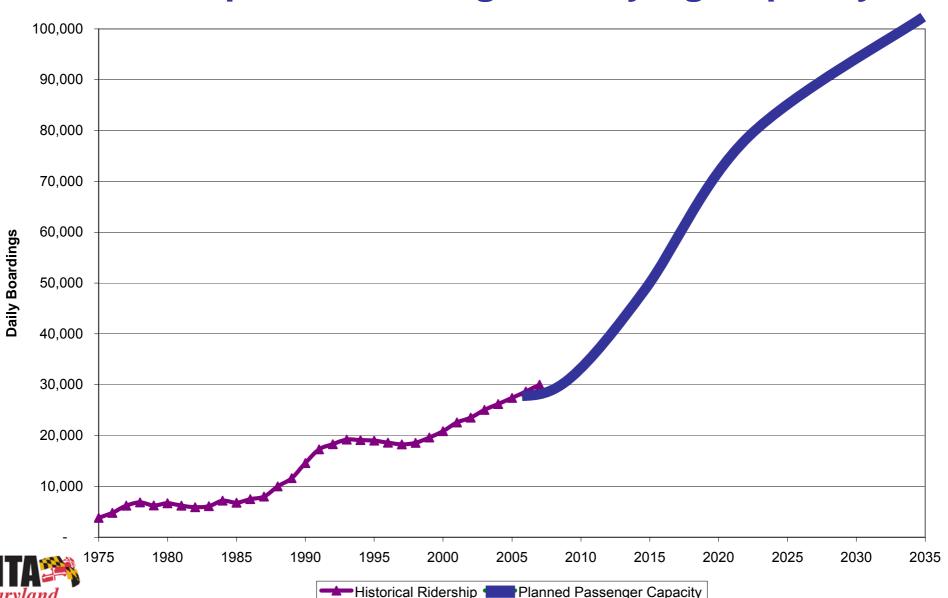
# **Brunswick Line Plan Summary**

	2010	2015	2020	2035
Additional Daily Seats	200	3,800	8,400	7,000
Rail Service Improvements	• Lengthen trains	<ul> <li>Increase     Frederick trains     from 3 to 6</li> <li>Increase limited     stop and express     trains</li> </ul>	<ul> <li>Reduce peak headways to 15- 20 minutes</li> <li>Introduce limited reverse-peak</li> <li>Expansion of off- peak</li> <li>Northern VA extension</li> </ul>	<ul> <li>Increased peak and off-peak</li> <li>Expanded reverse-peak</li> <li>Weekend service</li> </ul>
Incremental Capital Investments	\$63 million	\$140 million	\$140 million	\$190 million
Incremental Operating Cost	<\$1 million/yr	\$8 million/yr	\$5 million/yr	\$5 million/yr





## Ridership and Passenger-Carrying Capacity





# **Projected Daily Seating Capacity**

	Current	2010	2015	2020	2035
Penn	16,000	19,400	31,000	47,000	60,000
Camden	4,000	4,400	6,600	13,200	17,000
Brunswick	7,000	7,200	11,000	19,400	26,000
Total	27,000	31,000	48,600	79,600	103,000





# Capital Cost Summary

#### **Capital Cost by Phase**

(costs in millions of 2007 dollars)

Cost Categories 2008- 2011- 2016- 2021- 2010 2015 2020 2035 TOTAL

	2	010	2015	2020	2	2035	ı	OTAL
PENN LINE								
Stations and Parking	\$	14	\$ 368	\$ 197	\$	-	\$	579
New Stations	\$	-	\$ 110	\$ -	\$	280	\$	390
Rail Infrastructure	\$	18	\$ 225	\$ 925	\$	250	\$	1,418
Train Storage & Maintenance Facilities	\$	12	\$ 145	\$ 125	\$	-	\$	282
Rolling Stock	\$	39	\$ 64	\$ 77	\$	38	\$	218
Line Extensions	\$	-	\$ 75	\$ -	\$	-	\$	75
TOTAL	\$	83	\$ 987	\$ 1,324	\$	568	\$	2,962
CAMDEN LINE								
Stations and Parking	\$	10	\$ 58	\$ 45	\$	10	\$	124
New Stations	\$	-	\$ -	\$ -	\$	-	\$	-
Rail Infrastructure	\$	16	\$ 16	\$ 53	\$	100	\$	185
Train Storage & Maintenance Facilities	\$	-	\$ 25	\$ -	\$	-	\$	25
Rolling Stock	\$	27	\$ 26	\$ 21	\$	-	\$	74
Line Extensions	\$	-	\$ -	\$ -	\$	-	\$	-
TOTAL	\$	53	\$ 125	\$ 120	\$	110	\$	409
BRUNSWICK LINE								
Stations and Parking	\$	10	\$ 59	\$ 74	\$	74	\$	217
New Stations	\$	-	\$ -	\$ -	\$	-	\$	-
Rail Infrastructure	\$	-	\$ 26	\$ 16	\$	100	\$	142
Train Storage & Maintenance Facilities	\$	-	\$ 26	\$ 6	\$	-	\$	32
Rolling Stock	\$	53	\$ 26	\$ 48	\$	13	\$	140
Line Extensions	\$	-	\$ -	\$ -	\$	-	\$	-
TOTAL	\$	63	\$ 137	\$ 144	\$	187	\$	531
TOTALS								
Stations and Parking	\$	34	\$ 485	\$ 316	\$	84	\$	920
New Stations	\$	-	\$ 110	\$ -	\$	280	\$	390
Rail Infrastructure	\$	34	\$ 267	\$ 994	\$	450	\$	1,745
Train Storage & Maintenance Facilities	\$	12	\$ 196	\$ 131	\$	-	\$	339
Rolling Stock	\$	119	\$ 116	\$ 146	\$	51	\$	432
Line Extensions	\$	-	\$ 75	\$ -	\$	-	\$	75
TOTAL	\$	199	\$ 1,249	\$ 1,588	\$	865	\$	3,901





# Operations & Maintenance Cost Summary

# Annual Operations and Maintenance Costs Cumulative Increment Above Existing (millions of 2007 dollars/year)

	Existing	2010	2015	2020	2035
Penn Line		\$7	\$27	\$41	\$61
Camden Line			\$5	\$8	\$13
Brunswick Line			\$8	\$13	\$18
TOTAL	\$78	\$7	\$40	\$61	\$91





# Implementation Action Plan

#### Immediate

- Present MARC Growth and Investment Plan to Amtrak and CSX and solicit their support and cooperation
- Present to Delegation and key staff, key State and local officials
- Negotiate near term service improvements with Amtrak (additional peak trains, weekend service)
- Negotiate additional mid-day Camden Line train with CSX
- Identify funding for additional operating costs associated with near term improvements
- Seek temporary source for immediate expansion of rail car fleet
- Expedite delivery of projects and initiatives in progress (e.g., passenger info systems, parking expansion)

#### Within 9 months

- Initiate seat replacement on MARC bi-level coaches
- Develop spec for new rail car procurement
- Acquire rail cars from temporary source
- Identify low-cost aesthetic improvements at existing stations
- Identify near-term improvements at Washington Union Station
- Review parking expansion plans with Counties
- Design near-term Baltimore train storage improvements
- Develop plan to improve car cleaning capability
- Establish magnitude and source of required funding (2008 legislative session)

#### Within 15 months

- Place order for new rail car procurement
- Initiate design of 2010 rail infrastructure improvements
- Initiate planning & design of 2015 improvements with long lead times (e.g., track capacity improvements, station parking expansion entailing property acquisition)
- Implement low-cost aesthetic improvements at existing stations, car cleaning improvements
- Augment MTA resource capacity as necessary to implement program

