



# GROWTH & INVESTMENT PLAN

# 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

# 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)

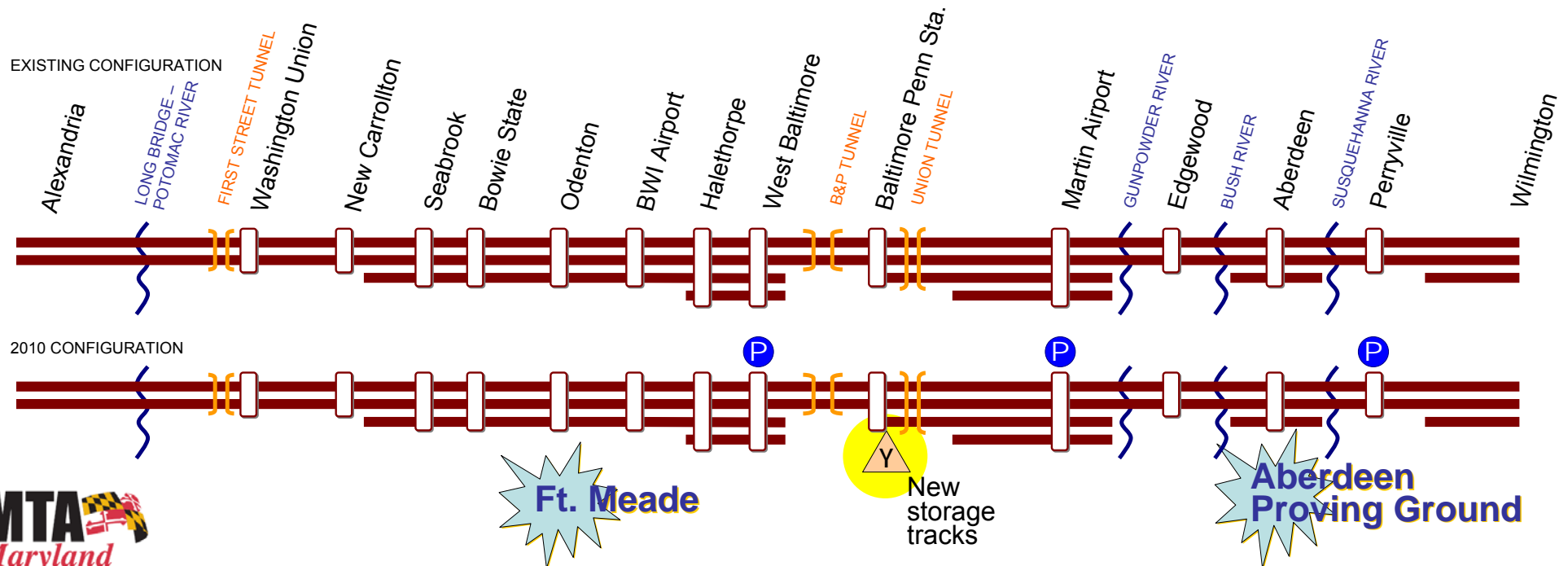
# Immediate Improvements

*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

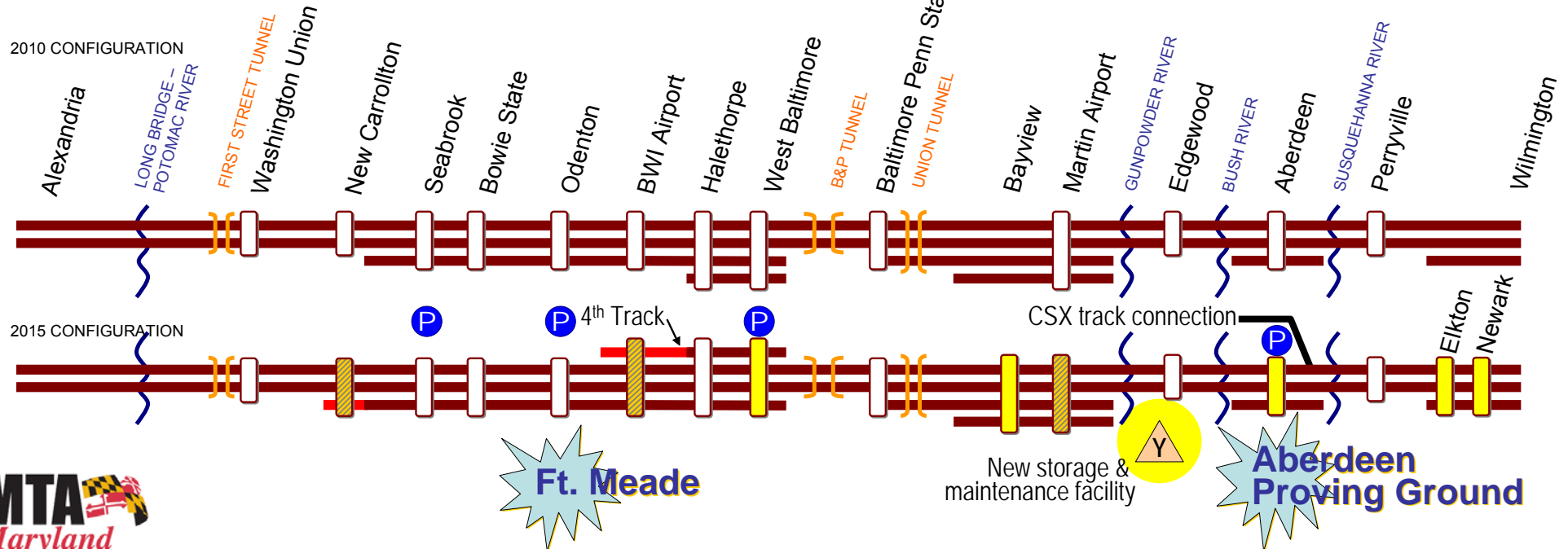
- Incremental Seating Capacity
  - +3,400 daily seats
- Rail Service Improvements
  - Lengthen existing trains to accommodate growing ridership demand
  - Additional peak and reverse-peak service
  - Late evening & weekend service
- Incremental Capital Investments – ~\$83m
  - Procure new coaches
  - 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

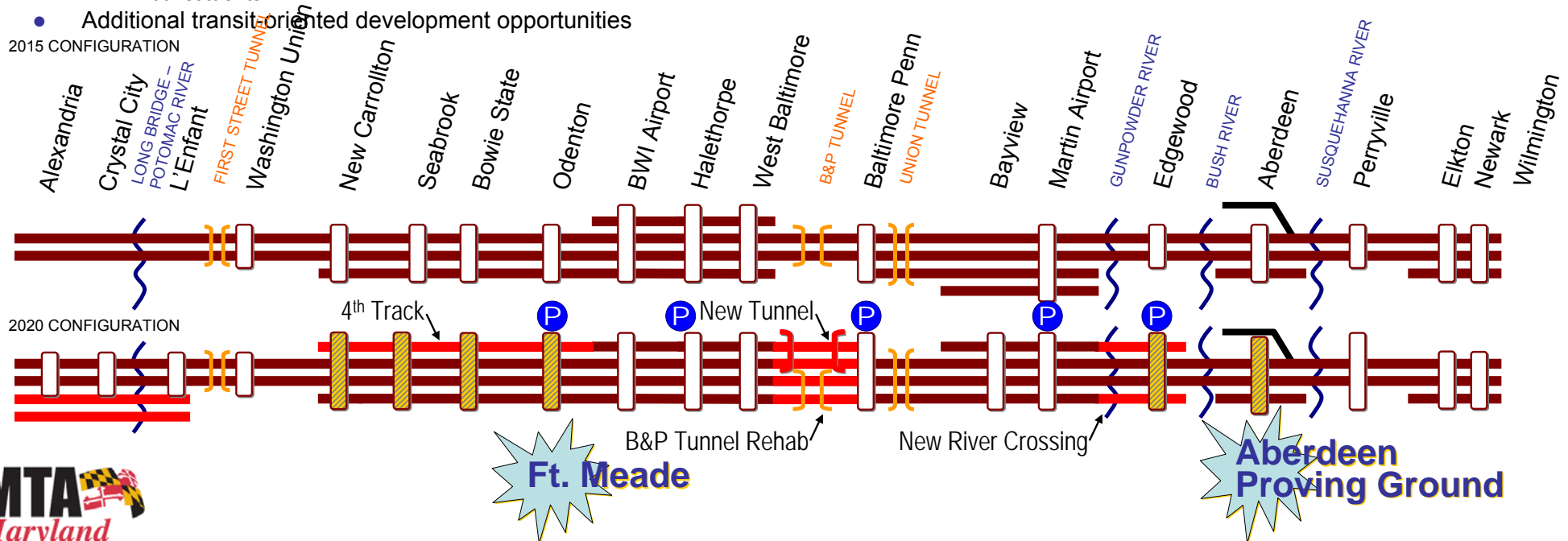
- Incremental Capital Investments – ~\$990m
  - 4 main tracks, West Baltimore-to-BWI Airport
  - Reconstruct BWI Airport Station
  - Relocate West Baltimore Station
  - New crossovers, BWI Airport-to-New Carrollton
  - Additional island platform at New Carrollton Sta.
  - Relocate Aberdeen Station
  - 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
- Additional transit-oriented development opportunities

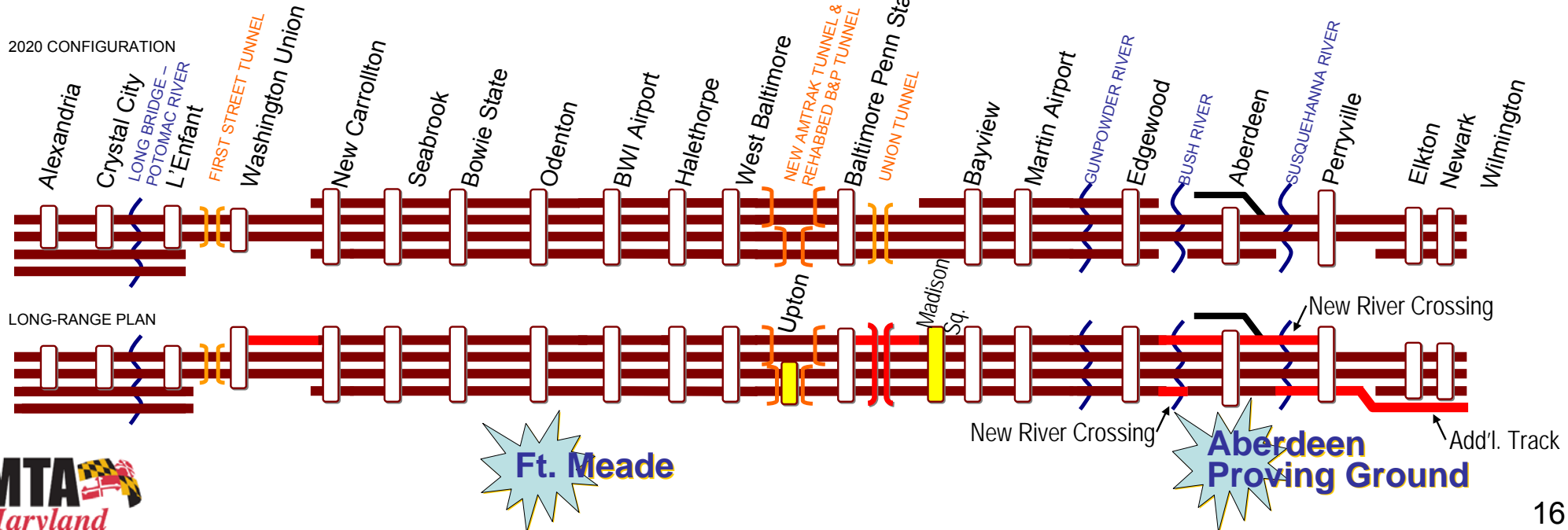
- Incremental Capital Investments – ~\$1,320m
  - New Gunpowder River crossing (total of 4 main tracks, enables increased MARC service to Aberdeen)
  - 4 main tracks through Edgewood Station
  - 4 main tracks, BWI Airport-to-New Carrollton
  - Station modifications to support 4 main tracks: Odenton, 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.

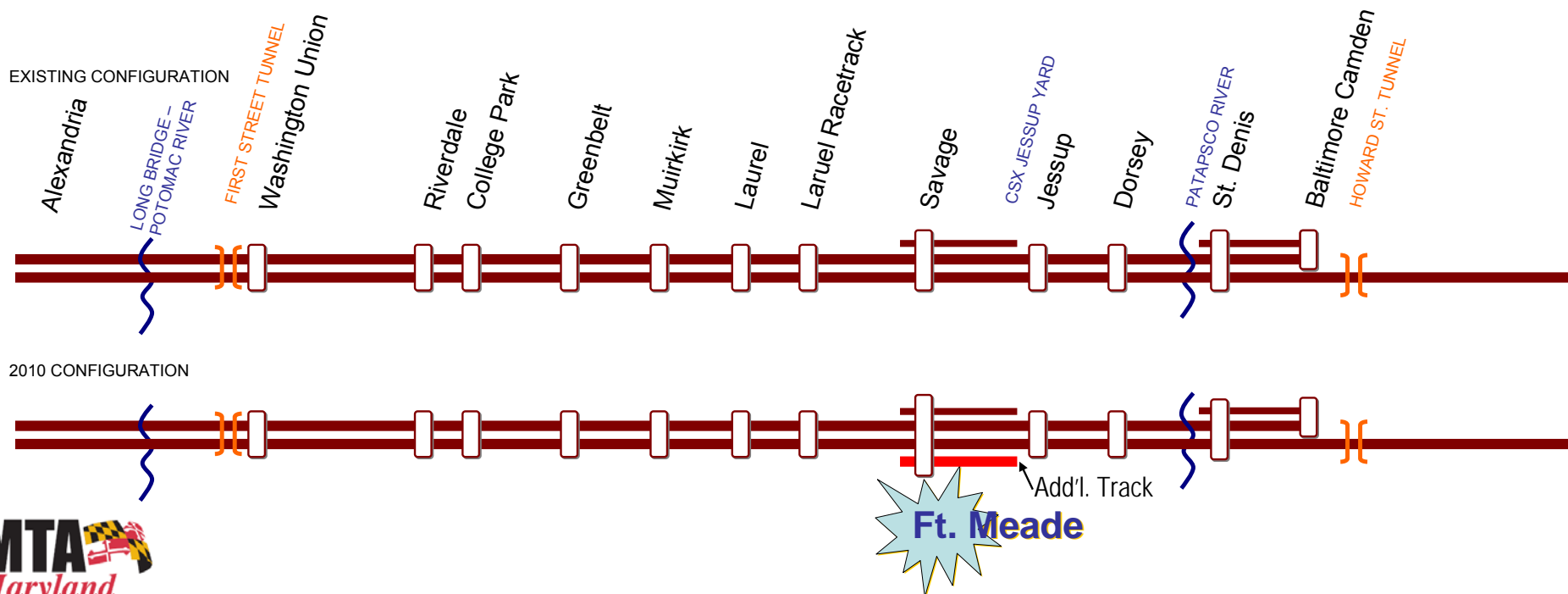


# Penn Line Plan Summary

	2010	2015	2020	2035
Additional Daily Seats	3,400	12,000	16,000	13,000
Rail Service Improvements	<ul style="list-style-type: none"> <li>• Lengthen trains</li> <li>• Additional peak and reverse peak trains</li> <li>• Late evening and weekend service</li> </ul>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>• Introduction of limited stop trains at 30-minute intervals</li> <li>• Additional peak express service</li> <li>• N. VA extension</li> </ul>	<ul style="list-style-type: none"> <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

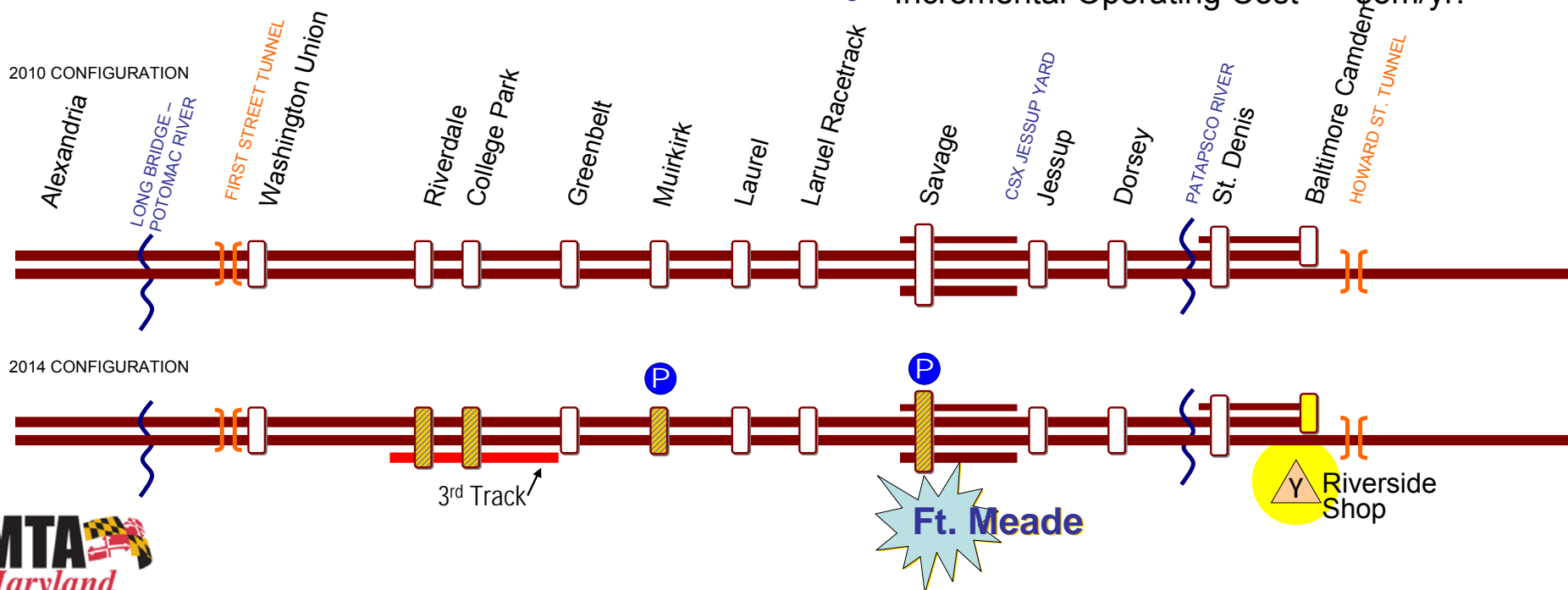
# 2010 Plan – Camden Line

- 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.



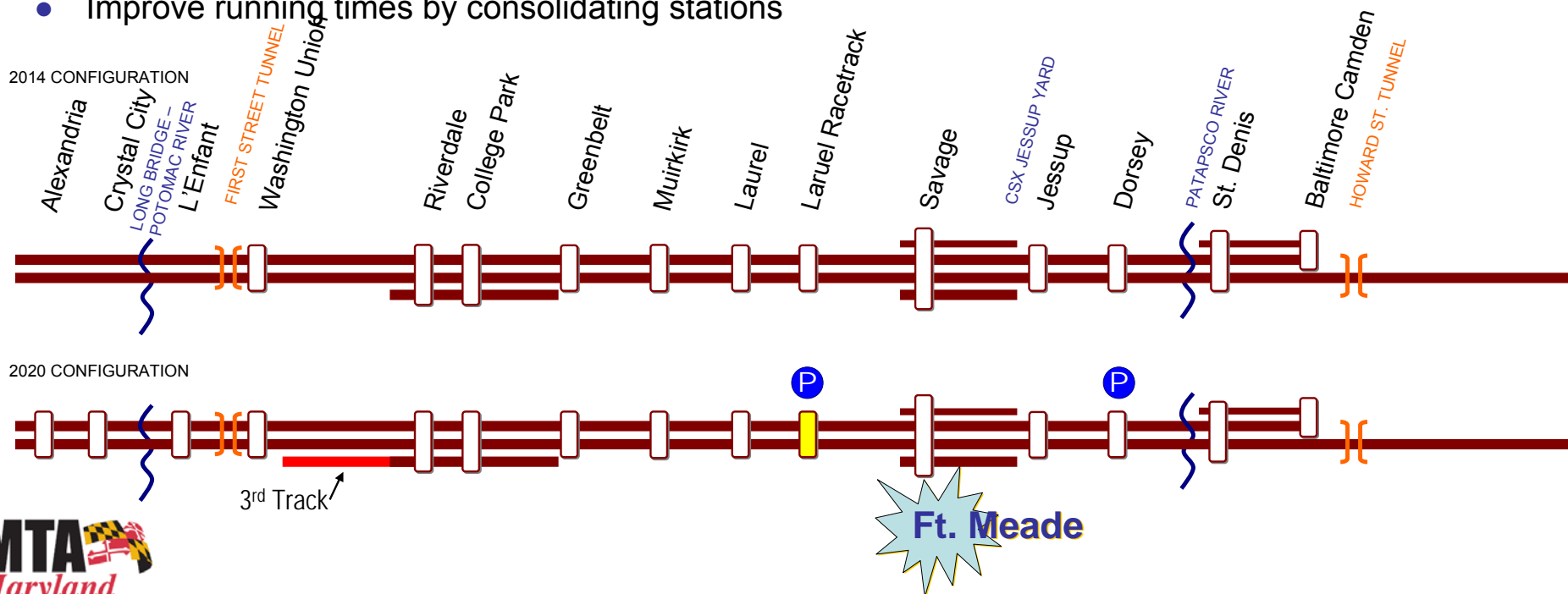
# 2015 Plan – Camden Line

- 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 Operating Cost – ~\$5m/yr.



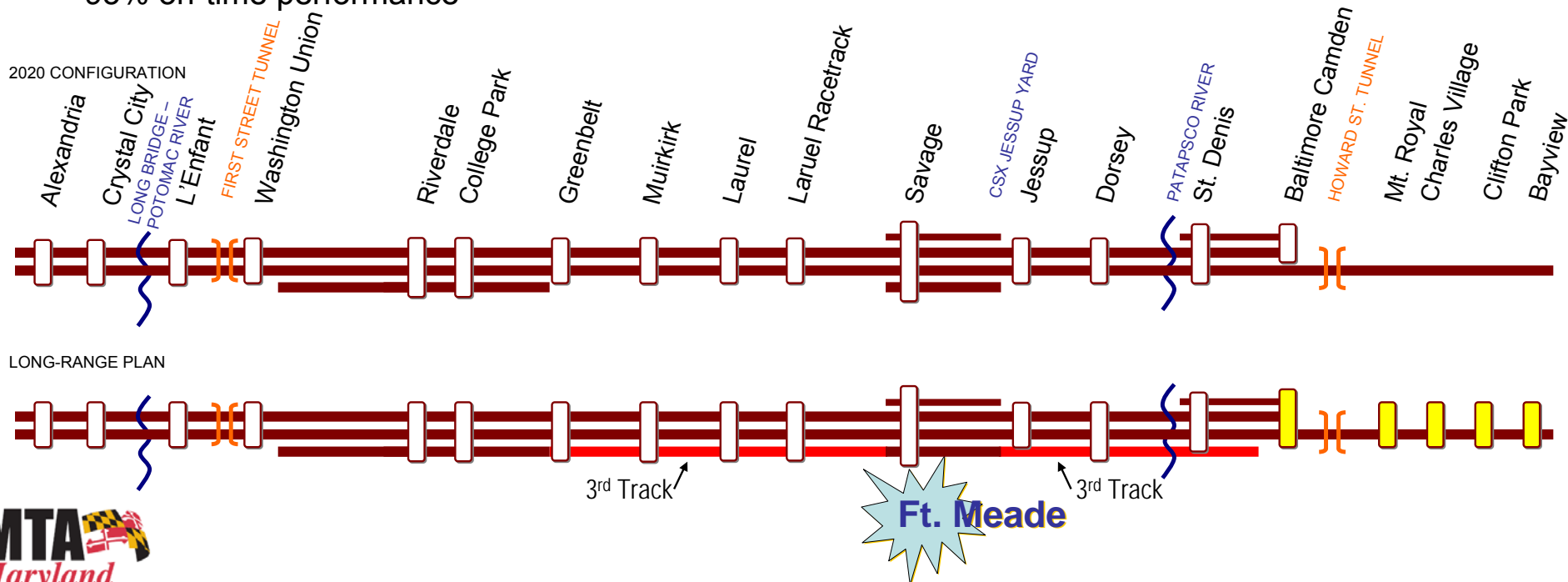
# 2020 Plan – Camden Line

- 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
  - Improve running times by consolidating stations
- 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.



# 2035 Plan – Camden Line

- 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.+



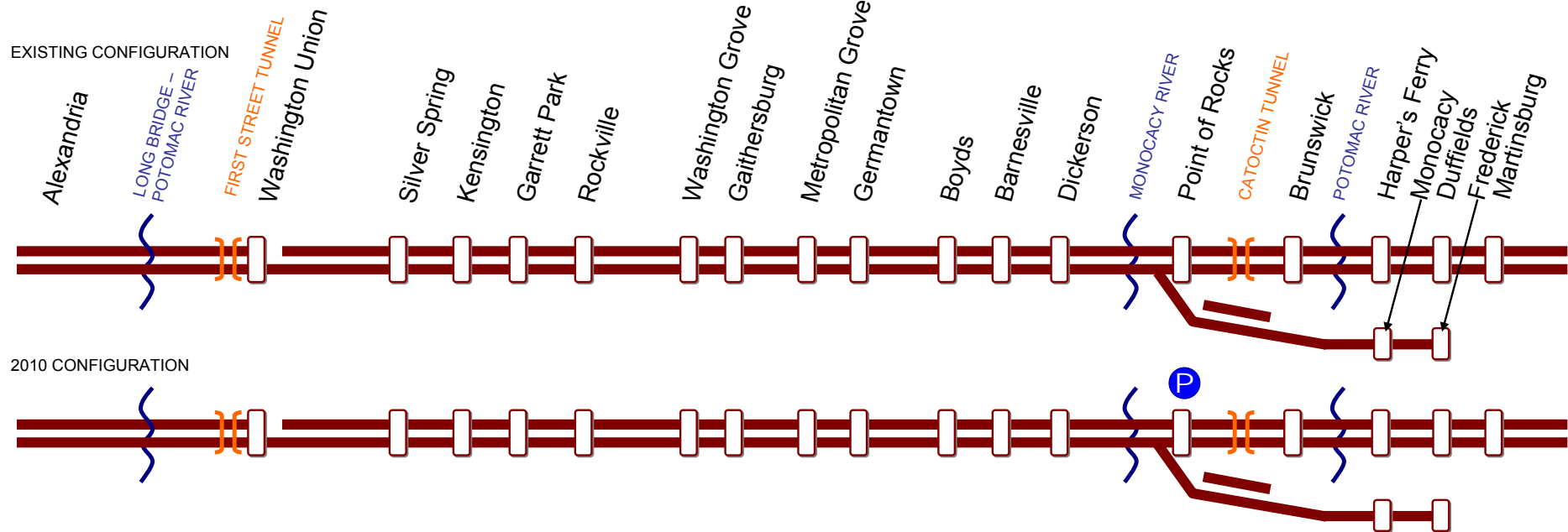
# Camden Line Plan Summary

	2010	2015	2020	2035
Additional Daily Seats	400	2,200	6,600	4,000
Rail Service Improvements	<ul style="list-style-type: none"> <li>• Lengthen trains</li> <li>• Additional mid-day train</li> </ul>	<ul style="list-style-type: none"> <li>• Additional peak, reverse peak trains</li> <li>• Connecting BRAC buses</li> </ul>	<ul style="list-style-type: none"> <li>• Peak headways reduced to 20 min.</li> <li>• Limited mid-day service</li> <li>• Northern VA extension</li> </ul>	<ul style="list-style-type: none"> <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



# 2010 Plan – Brunswick Line

- 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



# 2015 Plan – Brunswick Line

- 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

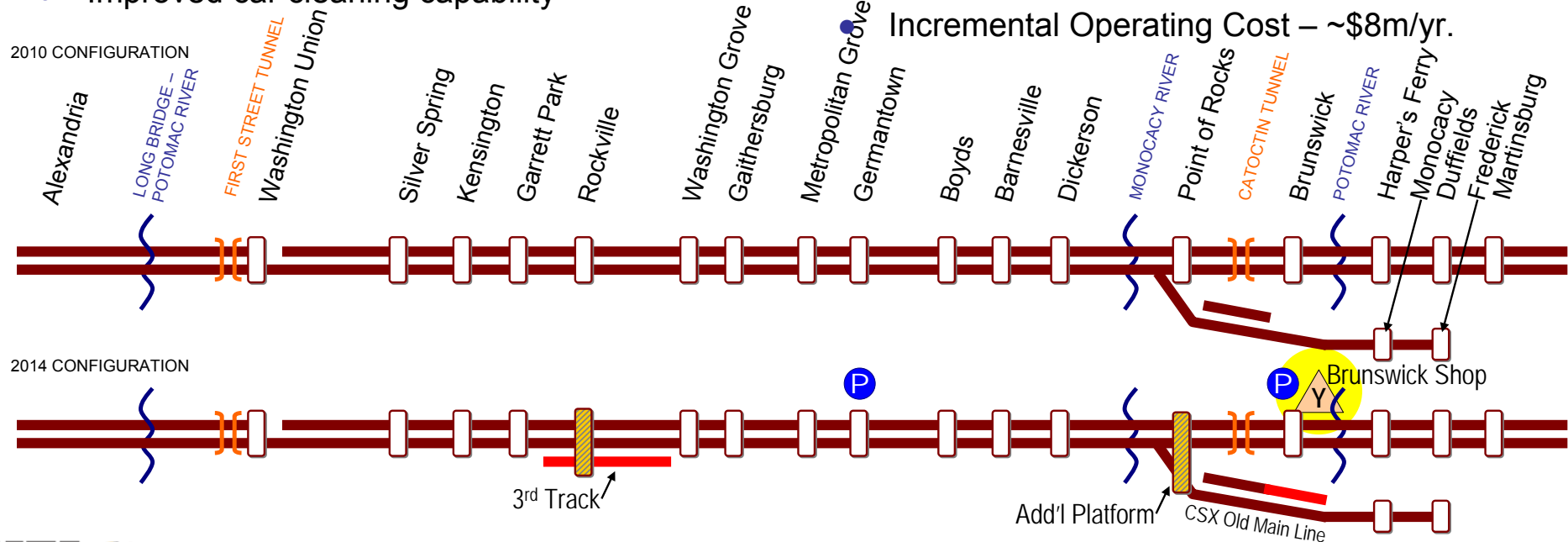
- Major failure avoidance, improved incident response

- Improved car cleaning capability

- Incremental Capital Investments – ~\$140m

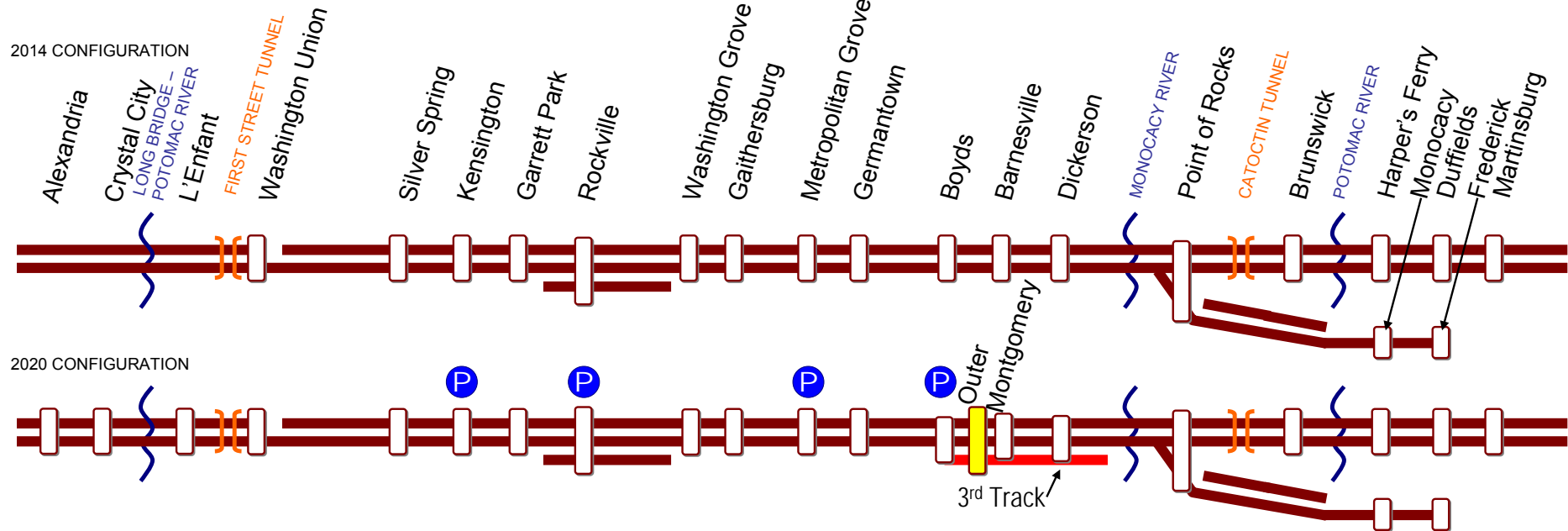
- 3 main tracks, Rockville area
- 2 main tracks, Old Main Line / Frederick Branch
- Point of Rocks: new platform on Frederick Branch
- Germantown Station parking garage
- Brunswick Station parking expansion
- Brunswick maintenance facility expansion
- Additional rail cars

Incremental Operating Cost – ~\$8m/yr.



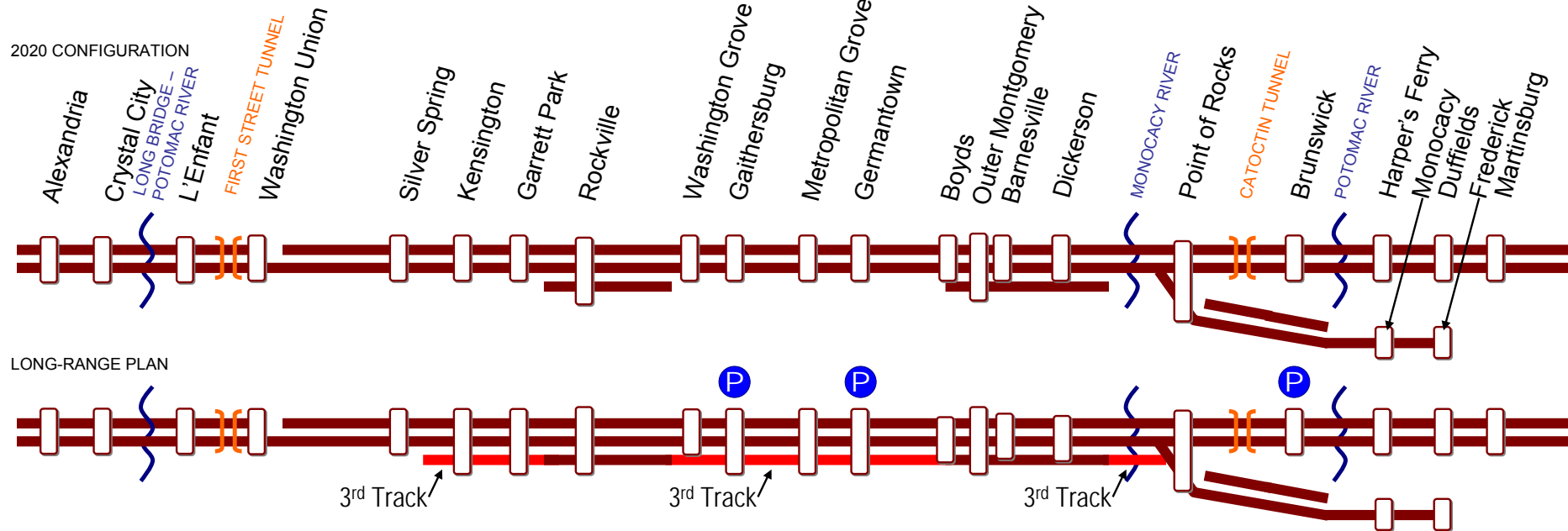
# 2020 Plan – Brunswick Line

- 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.



# 2035 Plan – Brunswick Line

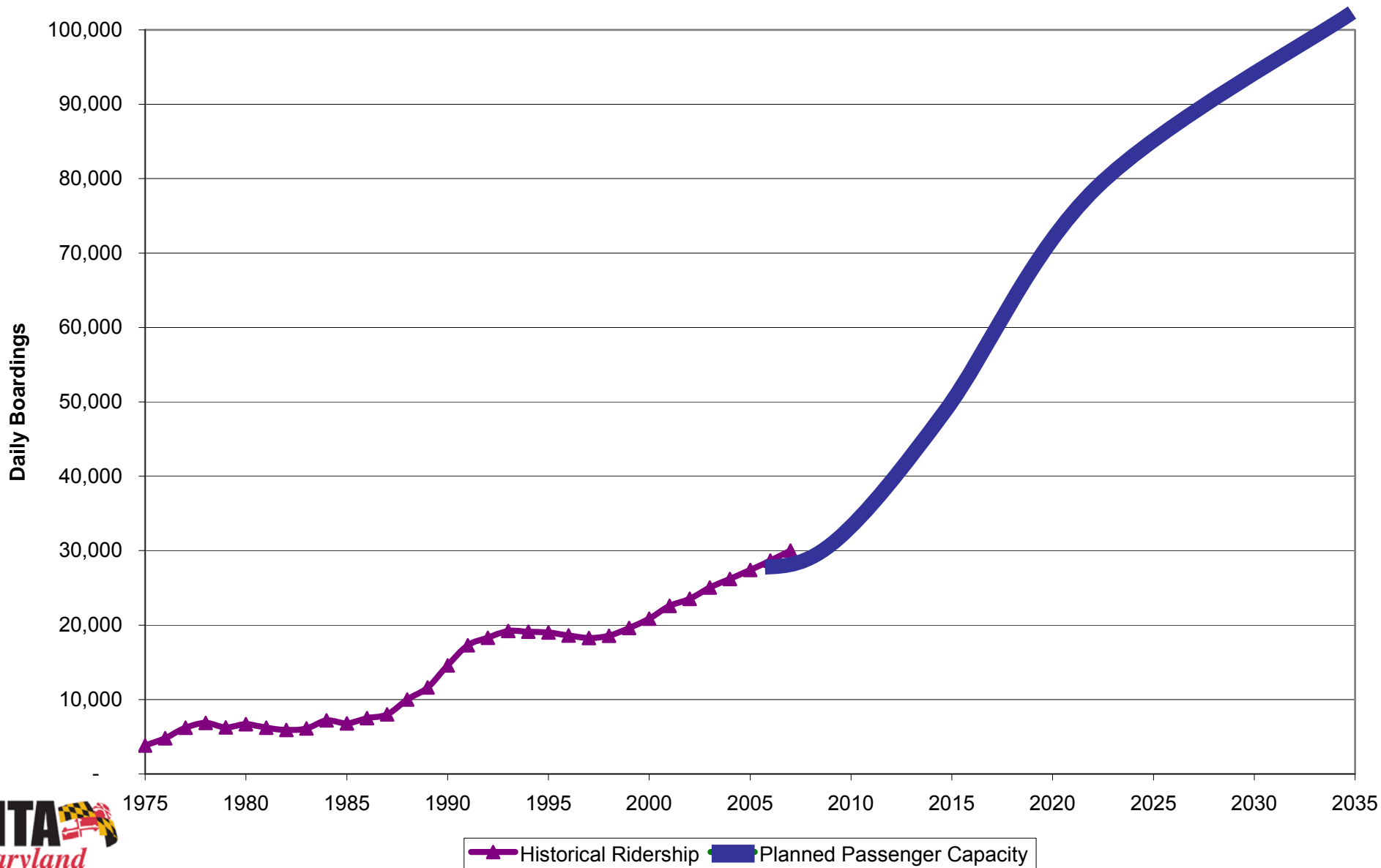
- Incremental Seating Capacity
  - +7,000 daily seats
- Rail Service Improvements
  - Increased peak and off-peak service
  - Reverse-commute service
  - Weekend service
- Continued reliability improvement – 95% on-time performance
- Incremental Capital Investments – ~\$190m+
  - Additional triple tracking
  - 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	<ul style="list-style-type: none"> <li>Lengthen trains</li> </ul>	<ul style="list-style-type: none"> <li>Increase Frederick trains from 3 to 6</li> <li>Increase limited stop and express trains</li> </ul>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <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- 2010	2011- 2015	2016- 2020	2021- 2035	TOTAL
<b>PENN LINE</b>					
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
<b>TOTAL</b>	<b>\$ 83</b>	<b>\$ 987</b>	<b>\$ 1,324</b>	<b>\$ 568</b>	<b>\$ 2,962</b>
<b>CAMDEN LINE</b>					
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	\$ -	\$ -	\$ -	\$ -	\$ -
<b>TOTAL</b>	<b>\$ 53</b>	<b>\$ 125</b>	<b>\$ 120</b>	<b>\$ 110</b>	<b>\$ 409</b>
<b>BRUNSWICK LINE</b>					
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	\$ -	\$ -	\$ -	\$ -	\$ -
<b>TOTAL</b>	<b>\$ 63</b>	<b>\$ 137</b>	<b>\$ 144</b>	<b>\$ 187</b>	<b>\$ 531</b>
<b>TOTALS</b>					
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
<b>TOTAL</b>	<b>\$ 199</b>	<b>\$ 1,249</b>	<b>\$ 1,588</b>	<b>\$ 865</b>	<b>\$ 3,901</b>

# 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
<b>TOTAL</b>	<b>\$78</b>	<b>\$7</b>	<b>\$40</b>	<b>\$61</b>	<b>\$91</b>

# 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