Potential Future Service and Fare Optimization Concepts

Finance and Capital Committee
October 27, 2022

Purpose of Service and Fare Optimization

- Bring fresh perspective and adapt service and fares to best serve customers and maximize Metro's value to the region

- Opportunity to consider changes that align with values and priorities: customer-centric, equitable and inclusive, efficient and effective, optimizing use of assets, fare policy principles

- Build on recent service and fare changes by developing concepts for consideration as part of FY2024 budget and beyond
  - Launch Better Bus network redesign effort
  - Metrorail service optimization and fare concept development

Transit Benefits the Entire Region

Customers and Communities

- Increases access to opportunity
- Serves vulnerable communities
- Reduces the need to own a car
- Provides access to large venues and special events

Safety

- Safer way to travel
- Reduces auto crashes and road deaths

Environment

- Reduces greenhouse gas emissions
- Improves air quality

Economic Development

- Increases employee access to jobs
- Transit-oriented development is shaping the region

Transportation System

- Reduces traffic congestion
- Reduces need for highway construction and parking infrastructure

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Potential Future Fare Optimization

Board-adopted Fare Policy Principles (October 2021)

Customer Focused

Adopt customer-focused fare policies and systems to position Metro as an attractive choice in a competitive travel market

Simple and Convenient

Make it simple, intuitive, and convenient for customers to purchase fares and take transit

Equitable

Maintain equitable fares and practices that promote broad access to regional destinations

Seamless

Create a seamless customer experience across modes and operators to promote regional mobility

Built to Drive Ridership

Maximize ridership to support service and regional mobility

Generate Revenue to Maintain Financial and Service Stability

Ensure sustainable revenue and cost efficiency to maintain financial health and sufficient service

Fare policy principles guide development and evaluation of potential fare policy changes

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Balancing Considerations in Fare Policy

Simplicity

Ease of use / understanding

Cost of fare collection

Complexity

Linking price to value delivered

Linking price to cost of service

Customer price sensitivity

Equity

Metro will provide safe, equitable, reliable, and cost-effective public transportation

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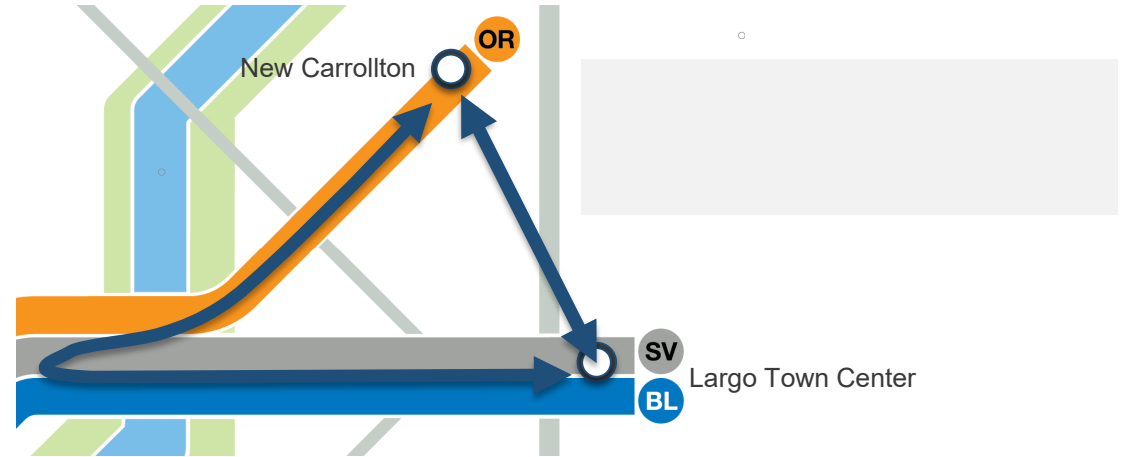# Current Fare Structure

🚈 Rail Fares

- Fares are based on the distance between origin and destination stations
- Mileage rates are applied to that composite distance
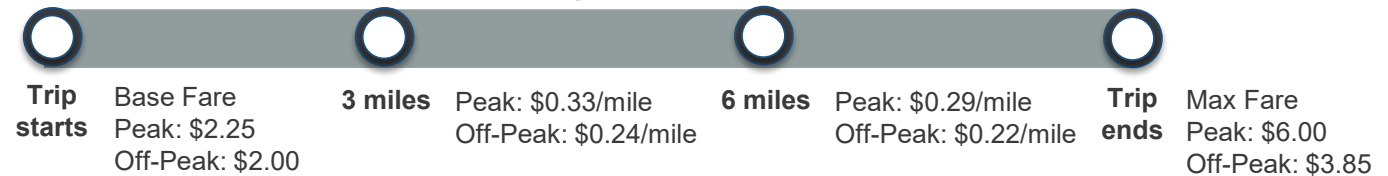- Rates higher during peak periods
- $2 weekend, late night flat fare

🚌 Bus Fares

- $2 flat fare across system
- Higher prices for express and airport services

Determining trip distance between stations

New Carrollton   OR

SV
Largo Town Center
BL

Mileage rates

| **Trip starts** | Base Fare
Peak: $2.25
Off-Peak: $2.00 | **3 miles** | Peak: $0.33/mile
Off-Peak: $0.24/mile | **6 miles** | Peak: $0.29/mile
Off-Peak: $0.22/mile | **Trip ends** | Max Fare
Peak: $6.00
Off-Peak: $3.85 |

Bus Service Type	Fare
Metrobus, MetroExtra, MetroWay, REX	$2.00
Commuter Bus Routes (17B/G/K/M, 18G/J/P)	$4.25
Airport Routes (5A)	$7.50

Recent customer-friendly fare changes
Promote ridership, equity, seamless experience

FY2022 Improvements	FY2023 Improvements

Permanent

- Free rail-bus transfers ($2 transfer discount)
- Rail weekend $2 flat fares
- Lower 7-Day Regional Bus Pass Price
  - Pass price of $12, previously $15
- Regional providers included in rail-bus combo passes

- Late-night $2 Metrorail fares
- Lower monthly unlimited pass price
  - Price of 32 trips, previously 36

Promo

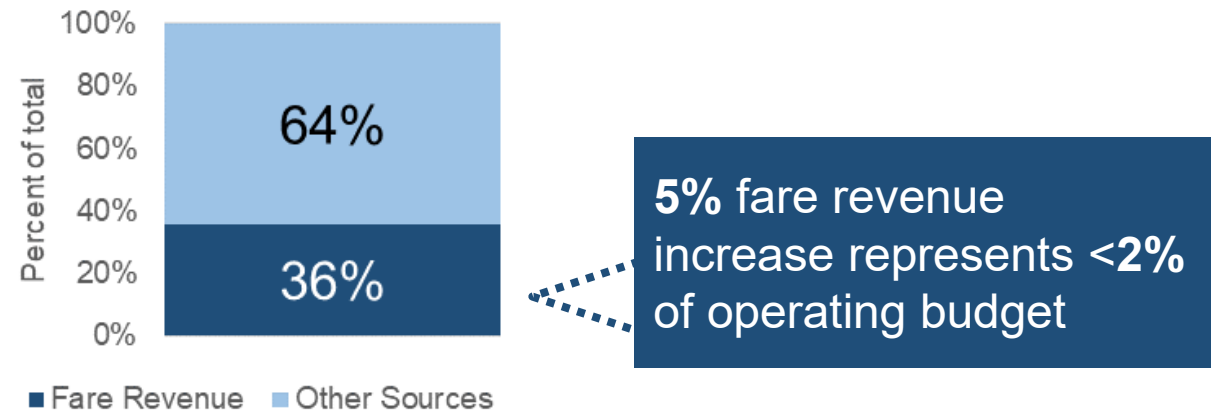- 50 percent off rail-bus combo passes (1, 3, 7 day) for a month

- 50 percent off 7-day unlimited passes for six months

Ridership impacts from fare or service changes build over time
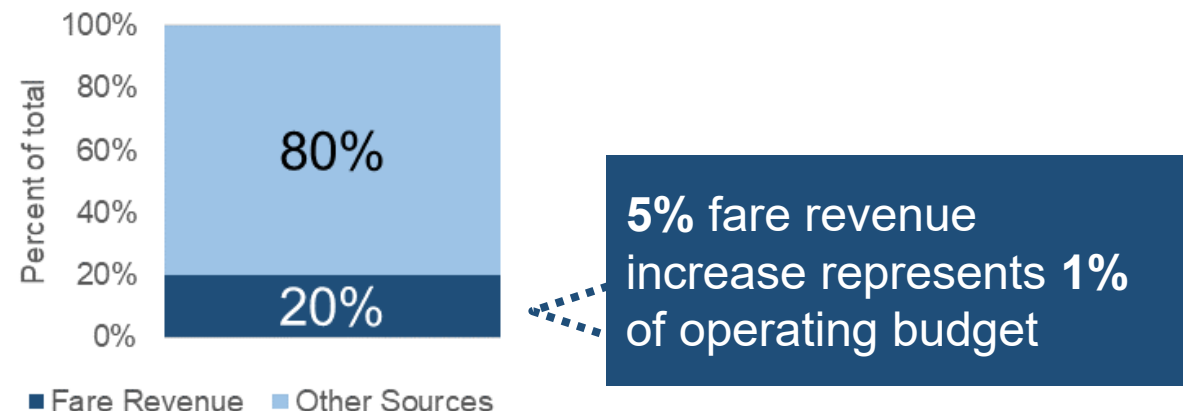
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Lower Ridership Reduces Financial Impacts of Fare Changes

- Fare revenue reduced compared to pre-pandemic, contributes less to overall operating budget

- General fare increases would be expected to result in less revenue now than compared to pre-pandemic

Pre-pandemic operating budget

Percent of total

- 100%
- 80% — **64%**
- 60%
- 40%
- 20% — **36%**
- 0%

■ Fare Revenue ■ Other Sources

5% fare revenue increase represents **<2%** of operating budget

FY2024 forecast operating budget[1]

Percent of total

- 100%
- 80% — **80%**
- 60%
- 40%
- 20% — **20%**
- 0%

■ Fare Revenue ■ Other Sources

5% fare revenue increase represents **1%** of operating budget

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1. FY2024 Operating Budget Outlook, September 2022: $377M fare revenue

There Are Many Opportunities to Improve Customer Experience

Buying fares is one part of the customer experience

1

Plan transit trip

WMATA trip planner
Access
Schedules

2

Access station

Convenience
Appearance
Wayfinding
Security

3

Buy fare

Ease
Value
Legibility

4

Pay fare

Ease

5

Wait for train

Wait time
Comfort
Security

9

Exit station

Convenience
Appearance
Wayfinding
Cleanliness
Security

8

Exit train

Appearance
Cleanliness
Wayfinding
Security

7

Sit/stand on train

Travel time
Personal space
Comfort
Security

6

Enter train

Appearance
Customer engagement
Cleanliness

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Fare Optimization Goals

Simple and Convenient	Equitable	Financial Stability

Simple and Convenient
- Customers can figure out fare in seconds
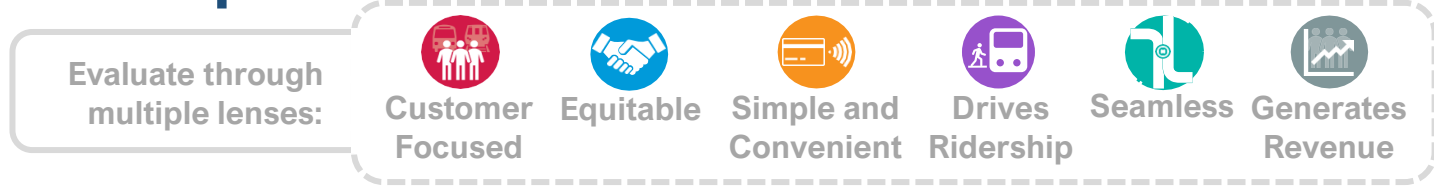- Fares are easy to understand and communicate

Equitable
- Ability to pay does not determine ability to ride
- Ensure people of color and low-income customers equal access to quality service
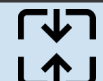- Roughly aligns price to value received

Financial Stability
- Ensure sustainable revenue and cost efficiency to maintain financial health and sufficient service

Fare Optimization Concepts

Evaluate through multiple lenses:

Customer Focused · Equitable · Simple and Convenient · Drives Ridership · Seamless · Generates Revenue

FY2024 Concepts

- **Fare increase/decrease:** Consider fare level changes
- **Peak/off-peak**: Change or eliminate time of day price difference
- **Zone fare**: Establish zone fares to replace mileage charges
- **Low-income fare**: Offer discounts for low-income customers
- **Parking fees:** Reduce fees to increase utilization and ridership
- **$1 Bus fare**: Reduce standard bus fare to $1 from $2
- **MetroAccess Fare**: Consider options to increase predictability

Post-FY2024 Concepts

- **Fare capping**
- **Fare integration**

Fare Optimization Concepts

Evaluate through these lenses:

Simplicity · **Equity** · **Financial Stability**

① Fare Structure

Fare Free
- Do not charge fares

- Set one fare for all rail trips
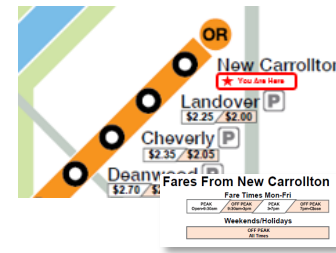- Can set price lower to grow ridership or higher to grow revenue

Zone-Based Fares
- Charge by zones traveled rather than mileage
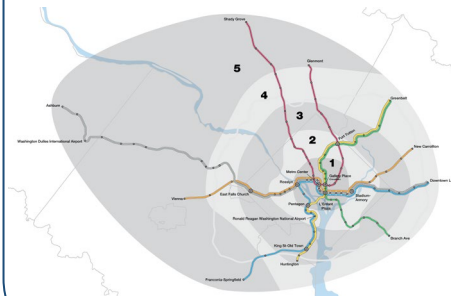
- Simplify the fare structure
- Use technology and other tactics to simplify customer experience

Fare Pricing
- Change minimum/ maximum fares
- Changing or eliminating peak/ off-peak fares
- Low-income fare products
- Parking fees
- $1 bus fare

International Benchmarking of Metro Fare Structures

Metro fare systems vary globally with so... regional cluster...

Distance-based fares are more common on lon... networks and in Asia

U.S. examples of distance-based fares:
- WMATA
- BART
- PATCO
- Sound Transit

FLAT FARE (37%)

ZONE-BASED FARE (19%)

DISTANCE-BASED FARE (44%)

Zone-based Fare

Distance-based Fare

Flat Fare

COMET Sustainable Fares and Funding Study

Source: Community of Metros/Transport Strategy Centre at Imperial College London

COMET — Community of Metros Benchmarking Group
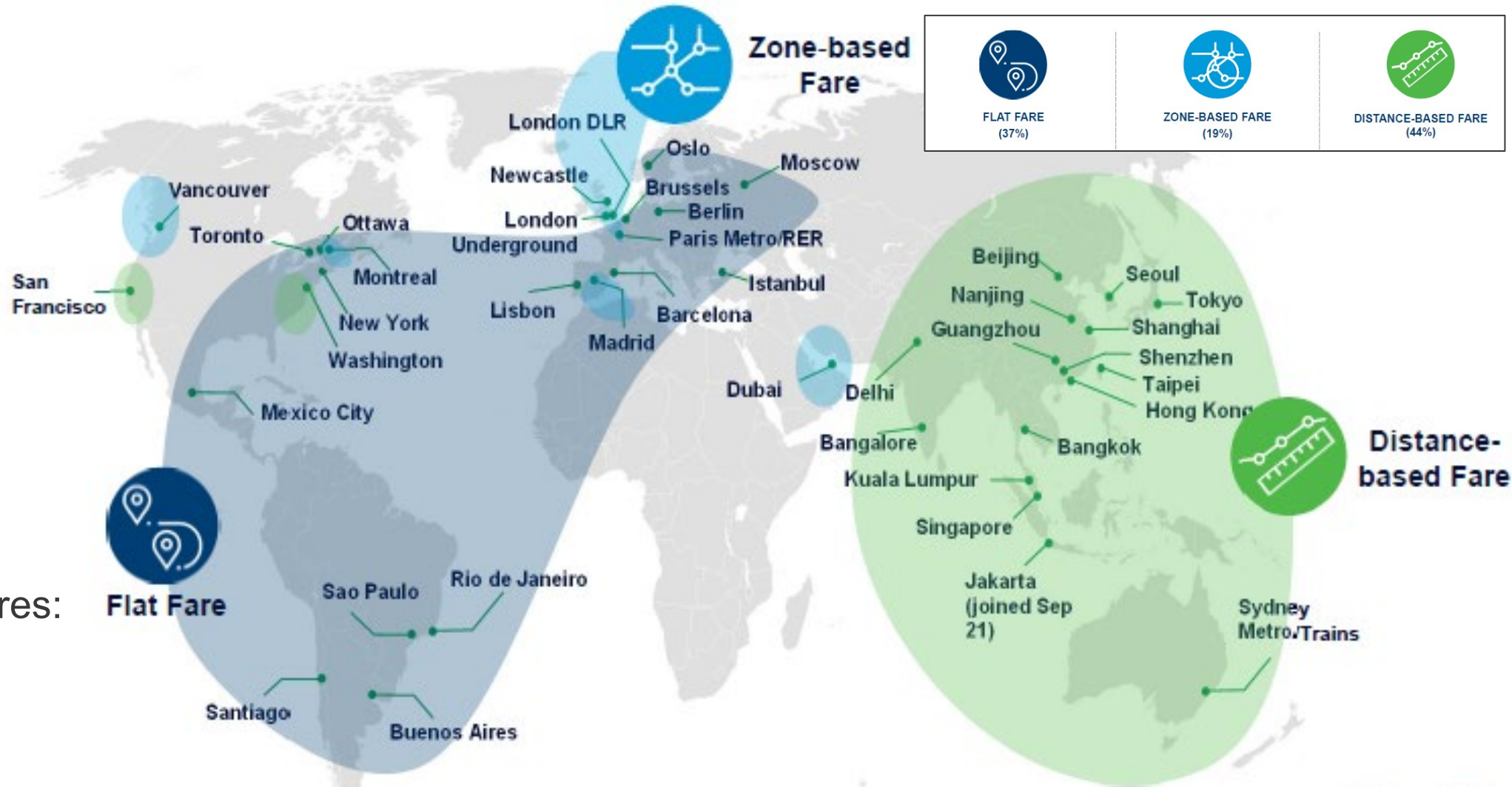
Concept A: Fare-Free System

No charge for customers

- No charge for any trip (bus or rail)

- Requires full subsidy, $465m (FY24)[1]

- Lowers income barriers to transit

- Grows ridership

- Long-term considerations:

  - Potential crowding and security issues

  - Subsidy growth over time

  - Costs of fare collection

Concept B: Flat-Fare System

All customers pay one flat rate

- Initial concepts:
  - $2 all trips, all times
  - $3 all trips, all times
  - $4 all trips, all times

- $2 flat fare would grow ridership but require more subsidy

- $3 or $4 flat fare would lose ridership and increase subsidy

- All have equity impacts and considerations

Flat Fare Concept			
Measures	$2 Flat Fare	$3 Flat Fare	$4 Flat Fare
Est. Ridership Impacts	+5M to +6M	-8M to -13M	-23M to -30M
Est. Revenue Impacts	-$61M to -64M	-$10M to -$24M	-$18M to +$12M

(Impact estimates based on preliminary conceptual analysis)

Concept C: Zone-Based Fares

Replace mileage-based rail fares with zone-based fares

Multiple Options for Creating Zones

Station Typologies
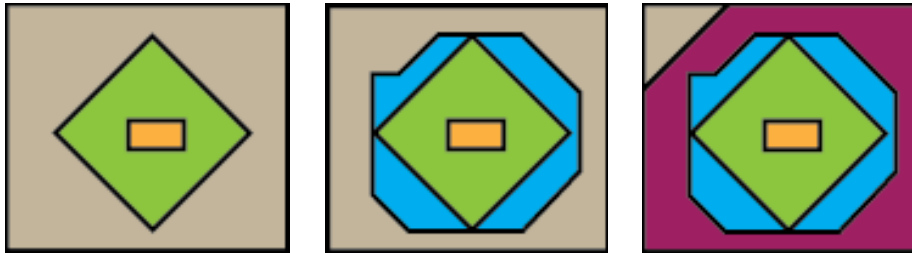
Political Boundaries

Distance from a Center Point

Other Policy Levers
- Options for charging fares:
  - Zone pairs?
  - Number of zones crossed?
- Options for setting prices:
  - Change minimum/maximum fares?
  - Keep regular and discounted fares?
  - Target revenue growth?

The zone-fare concept is flexible and can be shaped to desired policy outcomes. Its complexity and impacts on ridership, revenue, and equity would depend on those policy decisions.

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Zone Fare Concept: Zones by Distance

- Fares based on distance from Metro Center
  - Maintain current base, maximum, and discounted fares
 - Maintain $2 late night and weekend fares

- 3, 4, or 5 fare zones

- Fares based on the number of zone boundaries a trip crosses, capped at fare to the core

- Tradeoffs between simplicity and granularity
  - Fewer zones vs. linking price and value vs. avoiding large price jumps between zones

- Basing zones on distance vs. other options:
  - Better links price to service used
  - Boundaries set by geometry rather than geography
  - Lower potential equity risks than other zone options

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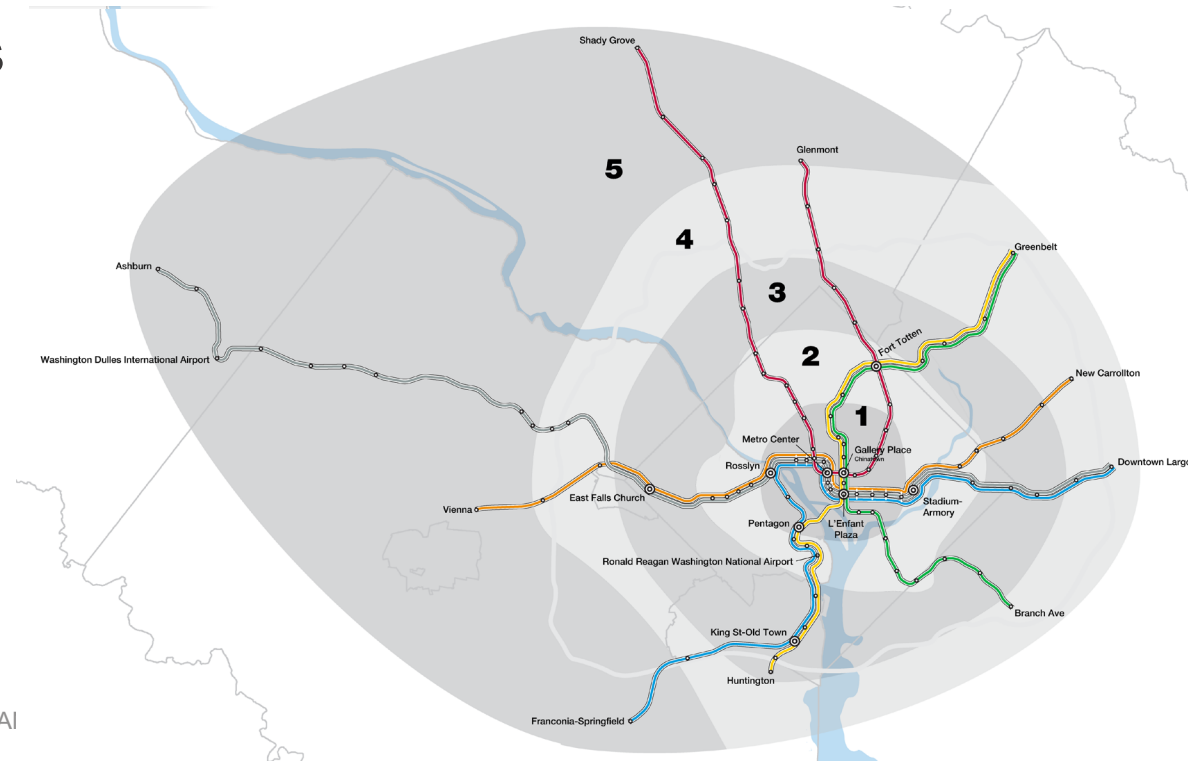
3 Zones Concept

- Boundaries: 3 & 6 miles from Metro Center
- Fare basis: boundaries crossed
- Max fare set to $4.50
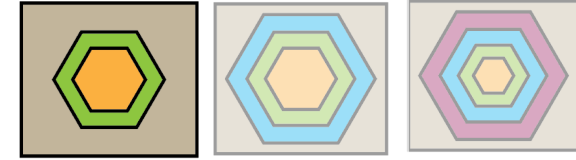
Fare Basis	Regular Fare	Discount Fare
0	$2.25	$2.00
1	$3.00	$2.65
2	$4.50	$3.85
Max	$4.50	$3.85

Riders Impacted

Large Decrease	Small Decrease	Minimal Change	Small Increase	Large Increase
11%	6%	53%	5%	25%

Title VI Equity Scan: ✔

$2.25-6.00 *Peak*	**$2.25-4.50** *Regular*	**-1M to -2M** Potential Ridership Impact (Trips)
$2.00-3.85 *Off-Peak*	**$2.00-3.85** *Discount*	**+$0.2M to +$1M** Potential Revenue Impact
Current	**Concept**	
Fare Range		

5 Zones Concept

- Boundaries: 3,6,9,12 miles from Metro Center
- Fare basis: boundaries crossed
- Retains current minimum and maximum fares
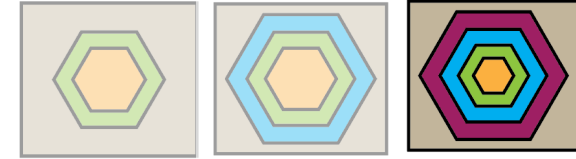
Fare Basis	Regular Fare	Discount Fare
0	$2.25	$2.00
1	$2.50	$2.20
2	$3.50	$3.10
3	$4.50	$3.85
4	$6.00	$3.85
Max	$6.00	$3.85

Riders Impacted

Title VI Equity Scan: ✓

	Current	Concept	
	$2.25-6.00 *Peak*	**$2.25-6.00** *Regular*	**+0.1M to +0.2M** Potential Ridership Impact (Trips)
	$2.00-3.85 *Off-Peak*	**$2.00-3.85** *Discount*	**-$0.5M to -$1M** Potential Revenue Impact

Fare Range

5-Zone System: Sample Trips

Tenleytown-AU to Union Station

- 2 > 1 = One Boundary

	Current	Proposed	% Change
Regular	$3.15	$2.50	-21%
Discount	$2.60	$2.20	-15%

College Park-U of Md to Columbia Heights

- 4 > 3 > 2 > 1 = Three Boundaries

	Current	Proposed	% Change
Regular	$3.55	$4.50	27%
Discount	$3.00	$3.85	28%

Franconia-Springfield to Pentagon

- 5 > 4 > 3 > 2 > 1 = Four Boundaries

	Current	Proposed	% Change
Regular	$4.70	$6.00	28%
Discount	$3.85	$3.85	0%

Fare Basis	Regular Fare	Discount Fare
0	$2.25	$2.00
1	$2.50	$2.20
2	$3.25	$2.90
3	$5.00	$3.85
4	$6.00	$3.85
Max	$6.00	$3.85
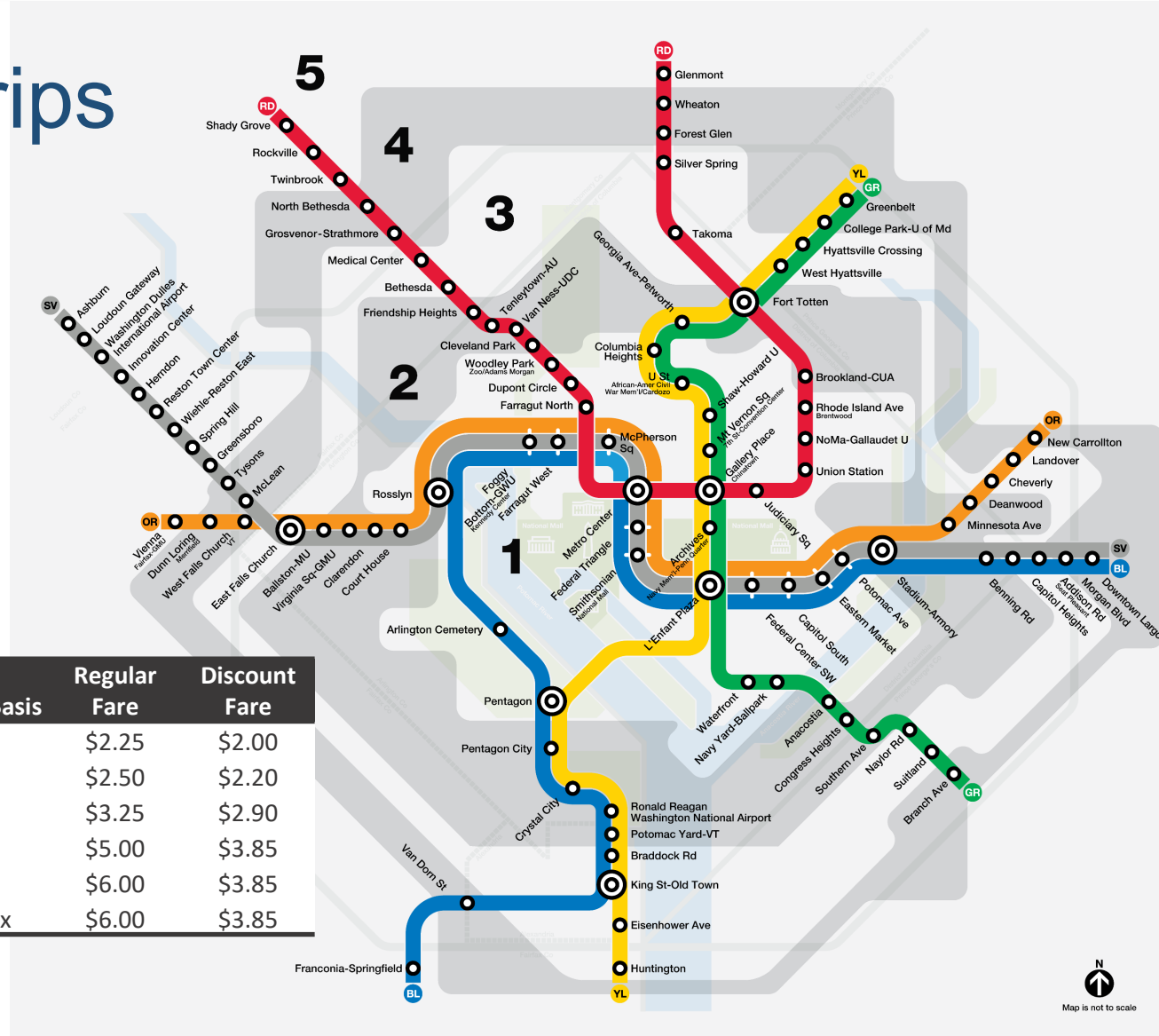
Zone-Based Fares

Opportunities	Concerns
▪ Greatly reduces the number of fare combinations	▪ Major change for customers to learn
▪ Simplifies fare tables	▪ Would require intensive customer engagement and training
▪ Should be easy to communicate and understand	▪ Some customers would face large fare increases (higher costs for short trips between zones)
▪ Retains rough link between price and value received	▪ May lose price-sensitive customers

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Concept D: Improving Distance-Based Fares

- Change or eliminate peak/off-peak difference

- Round fares to $0.25 increments

- Consolidate mileage tiers:

Time	Current Mileage Rate	Potential Mileage Rate
Peak	$0.29 - $0.33	$0.33
Off-Peak	$0.22 - $0.24	$0.22

- Simplify distance calculation (e.g., straight-line distance)

- Allow negative SmarTrip balances

- Custom fare maps for each station, mobile web fare calculators

- Tourist/visitor pass products

Fares From New Carrollton
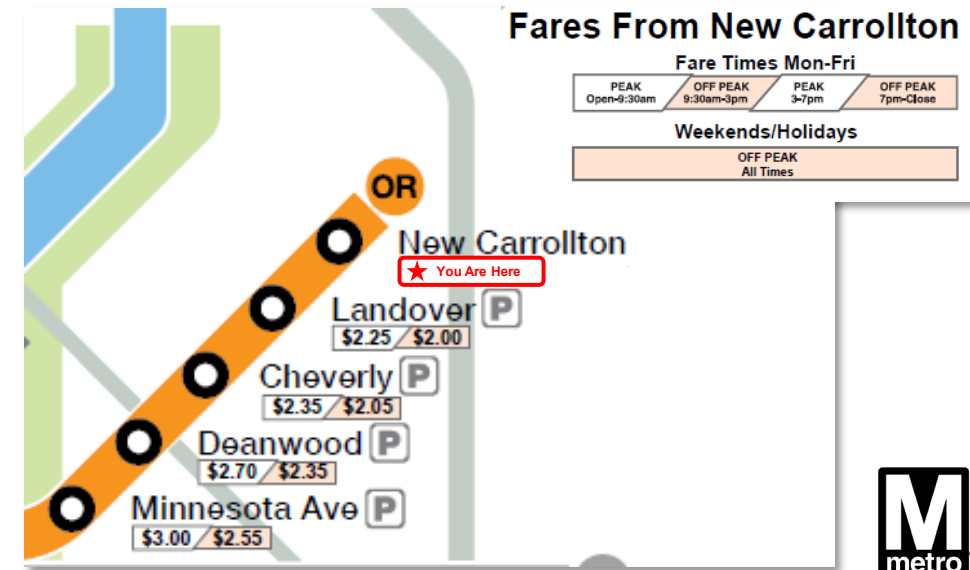
Improving Distance-Based Fares

Opportunities	Concerns
▪ Minor changes for customers to learn	▪ Still results in a complex fare table and many fare combinations
▪ Simplifies fare tables and reduces number of fare combinations	▪ Can be difficult to explain and communicate
▪ Tools could automatically show customers their fare	
▪ Price well aligned to value received	

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A Low-Income Fare Product Would Promote Equity and Access

- Low-income customers are more likely to avoid riding Metro due to cost

  - Fares represent a higher percentage of income compared to wealthier riders

  - Less likely to receive tax or employer subsidies through SmartBenefits

  - May be enrolled in assistance programs such as Medicaid, SNAP, or TANF

- A discounted fare program would make transit more affordable, lower barriers, promote ridership

- 17 of the 50 largest transit agencies currently have low-income fare programs

Equitable
Maintain equitable fares and practices that promote broad access to regional destinations

Low Income Share of Ridership, %

50%

15%

Metrorail   Metrobus
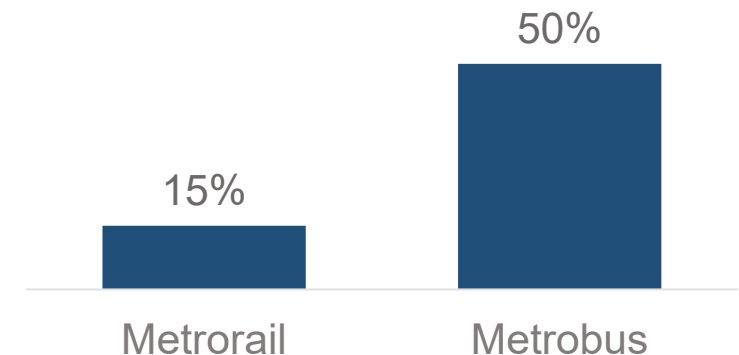
Source: Rail and Bus Passenger Surveys

Low-Income Fare Program
Example Concept

- Offer low-income customers 50% fare discount*
- Low-income customers could qualify based on enrollment in designated means-tested programs (e.g., Medicaid or SNAP/EBT)
- Potential to fund through subsidy allocation formula that allocates to jurisdictions based on percentage of customers benefitting (e.g., Maximum Fare Subsidy)
  - Alternatively, fund through either jurisdictional reimbursement (e.g., student discount programs) or general subsidy (e.g., senior discount)

> **Randomized controlled trial underway with Lab@DC – providing participants 50% discount or free fare and comparing with control group**

* Potential opportunity for integration with existing Senior and Disabled rider fare programs; currently half the peak fare

Choose how you want to qualify to save 50% off Prime
If you have both, you can choose either one.

SNAP | Other

Enter EBT information
Your EBT card will not be used to pay for your membership.

1. Enter your EBT number   Issuing State

[   ]   [Choose State ▾]

2. Upload image of EBT card
[Choose File] No file chosen

A valid EBT card is required to qualify for this offer.

☐ I confirm my EBT card is current and valid.

Example: Amazon offers discounted Prime memberships to customers participating in qualifying programs.

Low-Income Fare Program Design Considerations

Primary considerations: Create a unified regional program managed by Metro, or coordinate with local/jurisdictional programs?

Program design considerations

Eligibility
What criteria should be used to determine eligibility?

Discount
What discount should participants receive?

Verification
Where and how should applicants be verified for the program?

Pass Distribution and Upkeep
How should discounted passes be distributed?

What reloading or deactivation methods are needed, if any?

Other considerations

Cost and Funding
What is the anticipated program cost and how should it be funded?

Outreach and Partners
What outreach should be done to raise awareness?

What partners does Metro need to make the program successful?

Potential Improvements Beyond FY2024

Fare Capping	Regional Fare Integration

- Caps the maximum total fares customers pay per day
- Encourages ridership
- Promotes equity

- Create common fare media and linked payments between Metro, regional rail, commuter bus, and bikeshare operators
- Allows customers to pay for all multimodal trips with one fare medium
- Creates the possibility for future regional fare policies (i.e., transfers and passes)

Fare Cap

Free

Fare ($)

Transit Use Period
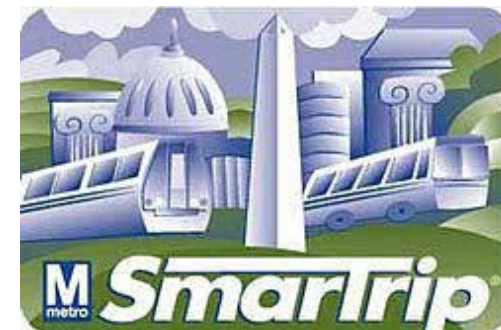
Potential Future Metrorail Service Optimization

What Service Optimization Could Accomplish

Customer Focus / Drives Ridership	Equitable	Asset Optimization

Customer Focus / Drives Ridership

- Improve customers' access to destinations and grow system ridership
  - Increase service frequency in areas with high ridership potential
  - Minimize transfer wait times

Equitable

- Increase access to opportunity
  - Focus on currently under-served areas
  - Especially benefit people of color and low-income customers

Asset Optimization

- Optimize use of assets and value delivered from system investments
  - Use available railcar fleet
  - Maximize system design capacity and train throughput

Changing Rail Ridership Profile

Peak period rail trips dropped from 37 to 28 percent

Rail trips of 5 miles or less increased from 39 percent to 47 percent

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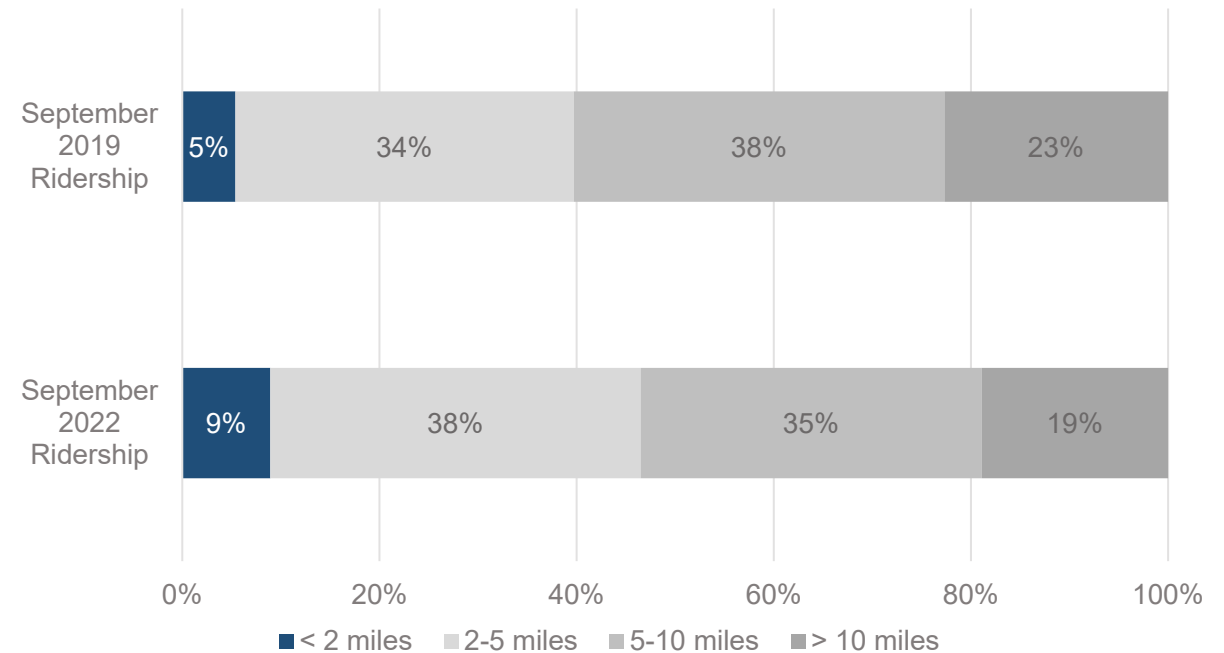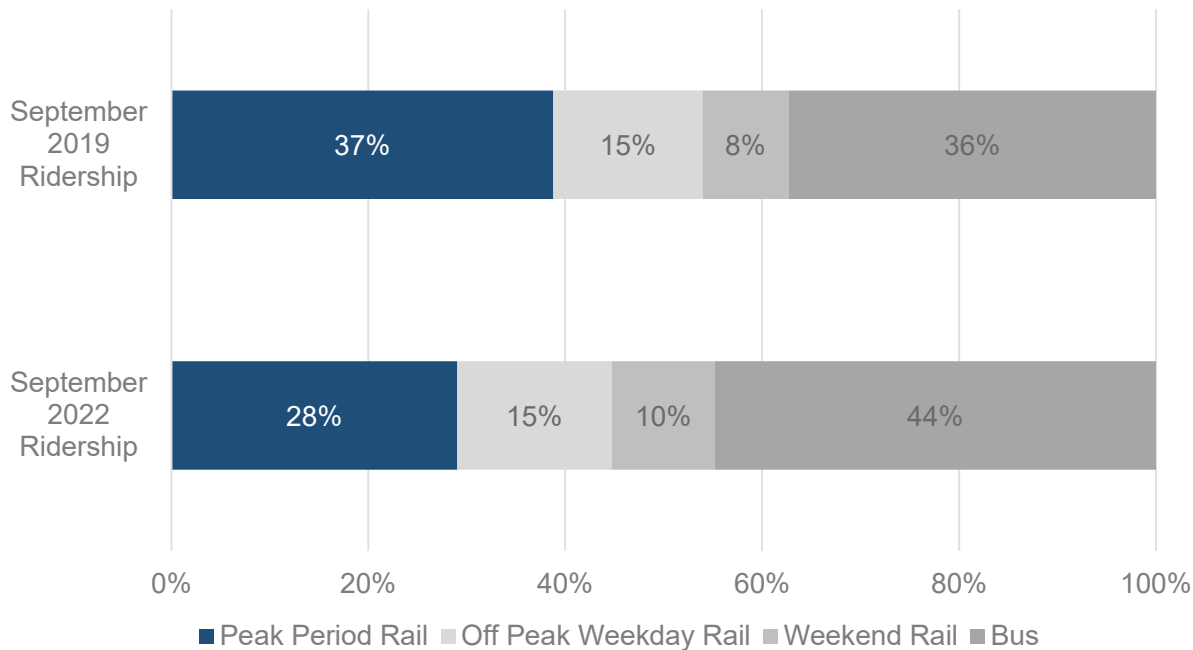
Metro was designed as a hybrid system

■ **Regional rail:**

- Customers travel farther with longer total journey times

■ **Urban rapid transit:**

- Customers travel shorter distances with less total journey time

Long distance lines serving suburban areas with parking provided at stations

Interlined services with higher frequencies

Wide spacing between suburban stations

Closely spaced core stations

Subway

Surface

Parking provided

1975 System Planning Map

Final Environmental Impact Statement, August 1975
Metropolitan Washington Regional Rapid Rail Transit System

Most customers use the central part of the system

Shady Grove

Glenmont

Ashburn

Washington Dulles International Airport

Greenbelt

Fort Totten

New Carrollton

Metro Center

Gallery Place
Chinatown

Rosslyn

Stadium-
Armory

Downtown Largo

Vienna

East Falls Church

Pentagon

L'Enfant
Plaza

Ronald Reagan Washington National Airport

Branch Ave

King St-Old Town

Huntington

Franconia-Springfield

Passengers per Segment
Monthly Total Throughput

▬	0-200,000
▬	200,000–500,000
▬	500,000–750,000
▬	750,000–1,000,000
▬	1,000,000–1,300,000

Fort Totten

Metro Center

Gallery Place
Chinatown

Rosslyn

Stadium-
Armory

Pentagon

L'Enfant
Plaza

April 15 to May 15, 2022 data; Silver Line Phase 2 included in visualization

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Metrorail Service Optimization

Service Frequency – FY2023 Baseline

Higher frequencies where services overlap, but not always where most customers are travelling
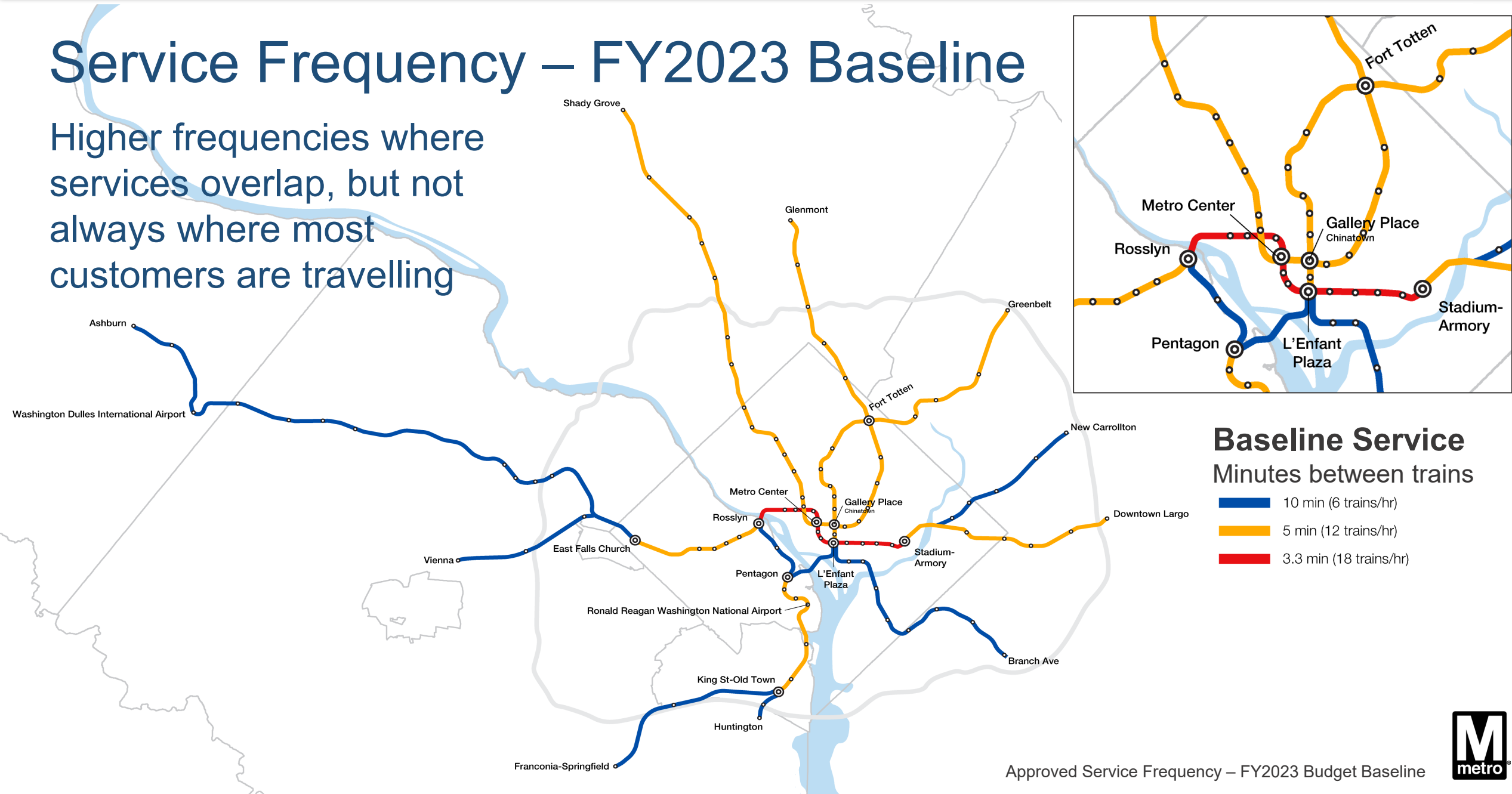
Baseline Service
Minutes between trains

— 10 min (6 trains/hr)
— 5 min (12 trains/hr)
— 3.3 min (18 trains/hr)

Approved Service Frequency – FY2023 Budget Baseline

Strengthening the Network with Frequency and Efficient Transfers

Frequent service:

- Focuses service where the network is carrying the most customers

- Offers benefits for customers across the entire network, enabling efficient and predictable transfers and providing access to more destinations

Customer use of the Network
Passengers per Segment per Month

■	0–200,000
■	200,000–500,000
■	500,000–750,000
■	750,000–1,000,000
■	1,000,000–1,300,000

Efficient & Predictable Transfers
L'Enfant Plaza Station

April 15 to May 15, 2022 data

Destination Access Example:
Anacostia Station

For a customer starting a short walk from Anacostia Metro Station…

By reducing average **wait times for Green Line trains and enabling** further time savings with quicker **transfers to Yellow or Red Line:**

Jobs accessible within 30 minutes increase approximately 25%

Baseline

Concept

Metro Center

Gallery Place
Chinatown

Rosslyn

Pentagon

L'Enfant Plaza

Stadium-Armory

Ronald Reagan Washington National Airport

Anacostia

Branch Ave
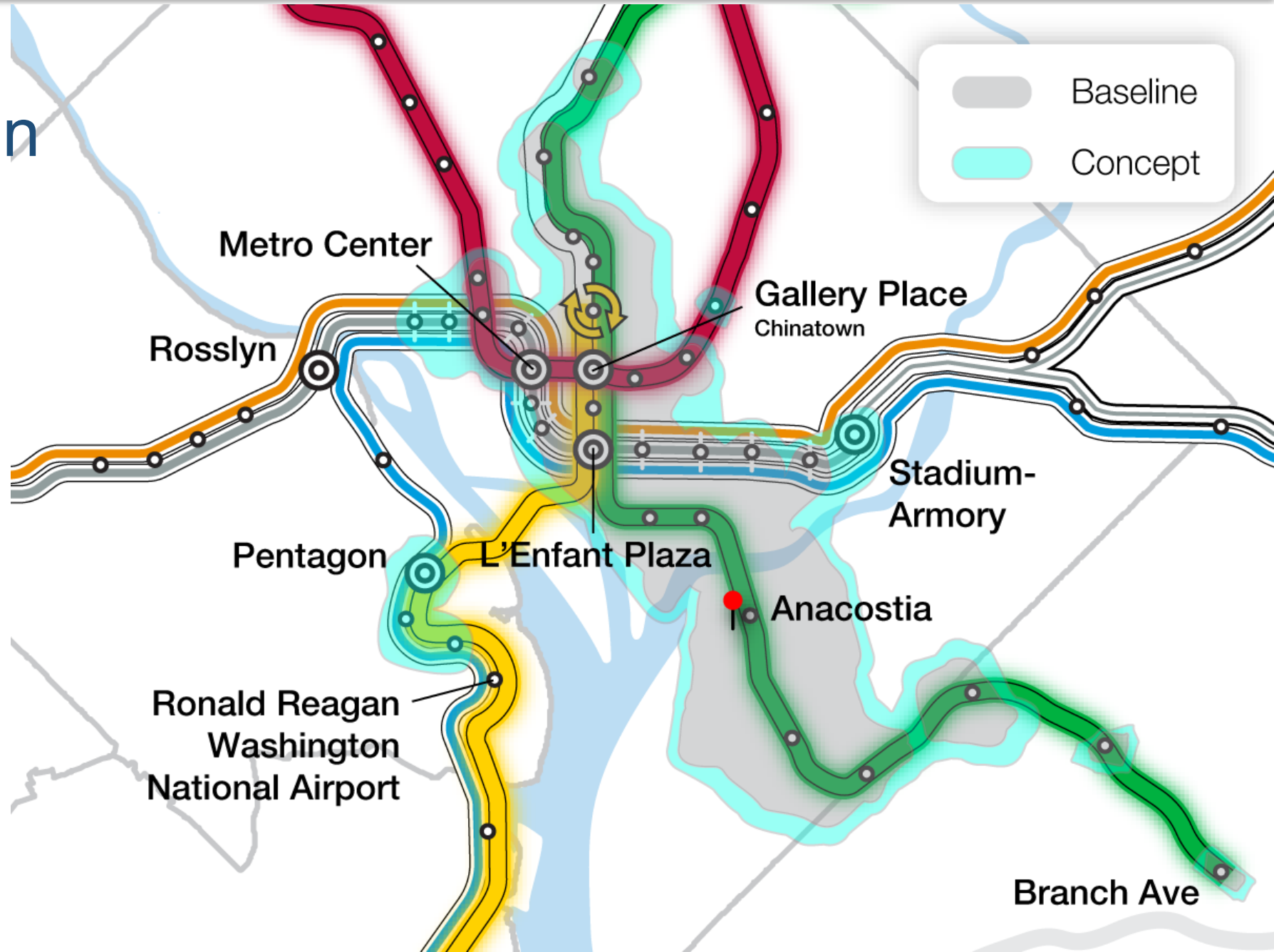
Infrastructure & Railcars

- Limited locations to reliably turn trains in service

  - New infrastructure investment could enable more service flexibility beyond FY2024

- With railcar fleet (including 7000 series) fully available, can deploy more trains in service than FY2023 budget baseline

Legend

Pocket Track	
Junction	
Yard/Facility	
Planned/In-Progress	- - - -

36
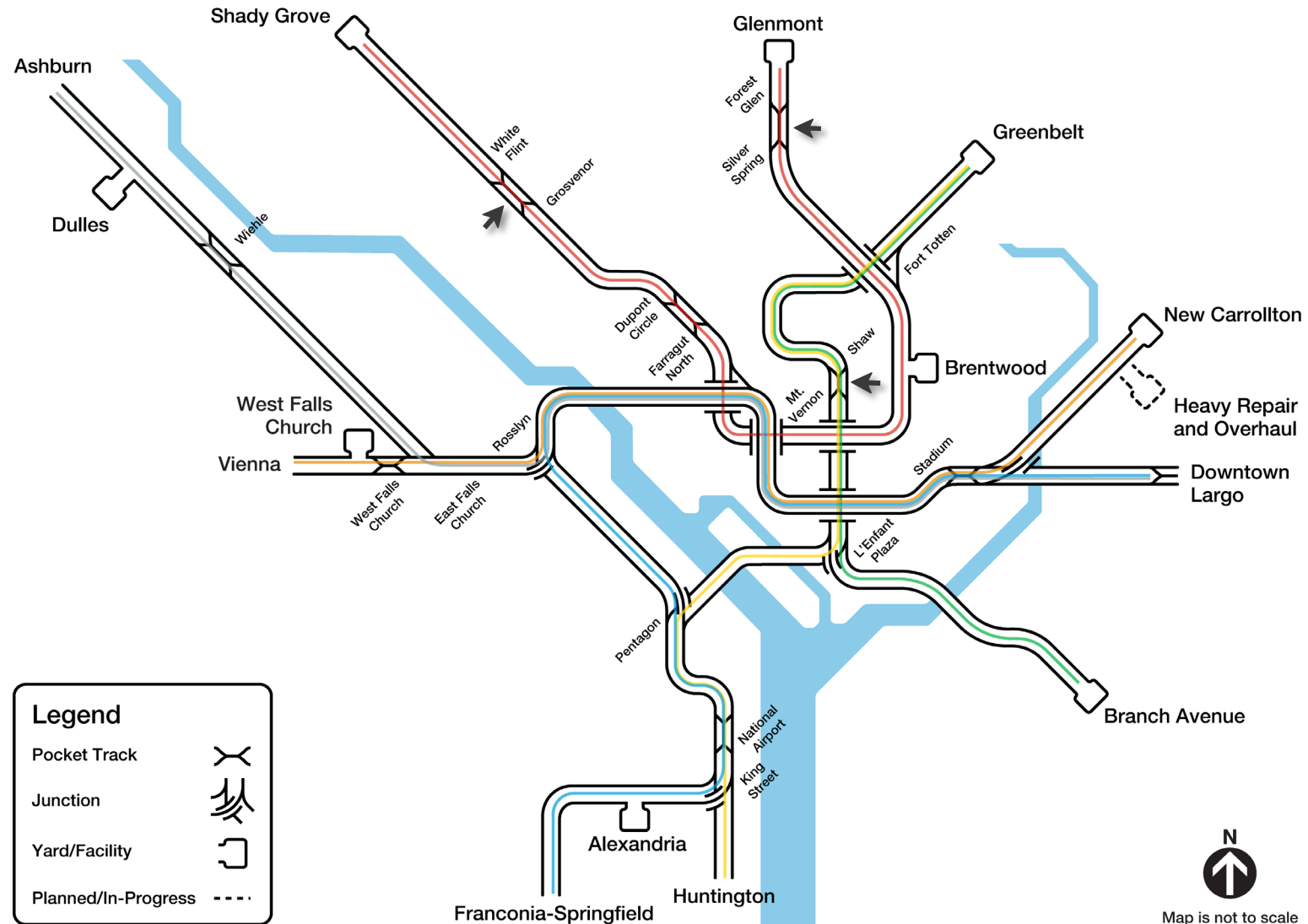
Most Metrorail costs are operations and maintenance of fixed assets or otherwise do not vary with service levels

- Metrorail is a $100 billion regional system supported by ongoing annual operating and capital expenditures maintaining and renewing assets
- The investment provides potential capacity to deliver service at relatively low marginal cost
  - Both fixed and variable costs are potentially changeable independent of service levels, but only variable costs necessarily scale with the amount of service delivered
 - Some types of service level changes affect fixed costs, including changes to operating hours (affecting the cost of operating stations) or changes above certain thresholds affecting fleet and facility footprint (long-term capacity)

FY2023 Metrorail Costs
Share of $1.3B Operating Budget

Rolling Stock Maintenance **10%**

Rail Operators **8%**

Traction Energy **4%**

Variable Costs **22%**
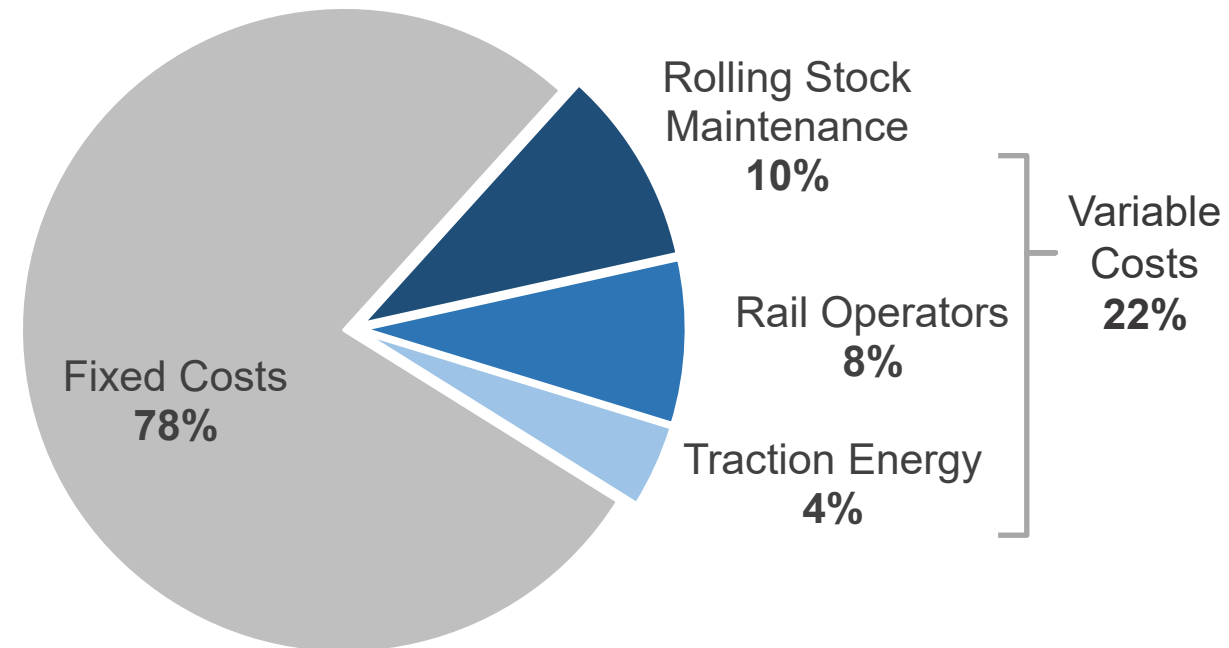
Fixed Costs **78%**

Fixed costs include operation and maintenance of railyards, track, structures, stations, signals, elevators/escalators, fare collection, maintenance equipment and vehicles, police and security, and administrative support.

Service Optimization Concepts

Evaluate through multiple lenses:

Drives Ridership   **Equitable**   **Asset Optimization**

GR YL — Green/Yellow

- Increase service on core and southern segments Green and Yellow Lines
- Serve fast-growing parts of the region, including major sports venues and airport

RD — Red Line

- Optimize Red Line service, concentrating frequency in high ridership segments (post-pandemic ridership patterns)

BL OR SV — Blue/Orange/Silver

- Improve Orange Line service
- Consider first and last train times, airport service, and balance of BL/OR/SV frequency in core and to terminals

Operating Hours

- Consider options including opening earlier on Saturday and Sunday and closing later on Friday and Saturday
- Consider pre-scheduled maintenance outages
- Night-time options
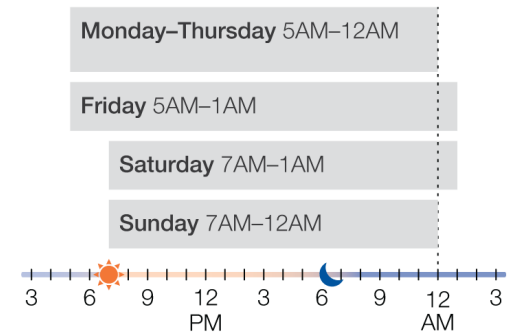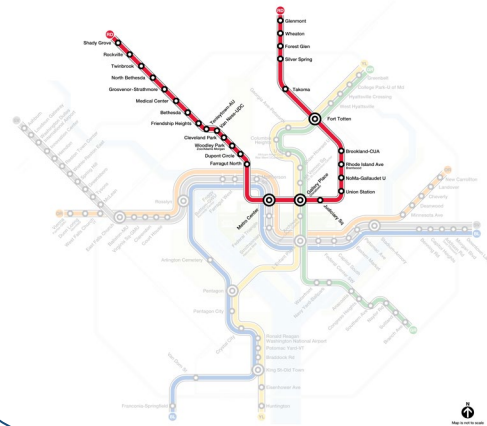
Monday–Thursday	5AM–12AM
Friday	5AM–1AM
Saturday	7AM–1AM
Sunday	7AM–12AM

3 6 9 12 3 6 9 12 3
PM   AM

Green/Yellow Line Concepts

Increased Green and Yellow Service with Yellow Line Short Turns

Increase frequency of Green and Yellow Line south of Mt. Vernon Sq. to match effective frequency of Northern Green Line

Opportunity to grow ridership with enhanced service for fast growing parts of system, games and other events at four major sports venues, airport travelers (DCA), and a new station (Potomac Yard)

Reduces transfer times at Gallery Place and L'Enfant Plaza, provides equity benefits on Southern Green Line, increases utilization of key assets (e.g., Yellow Line bridge)
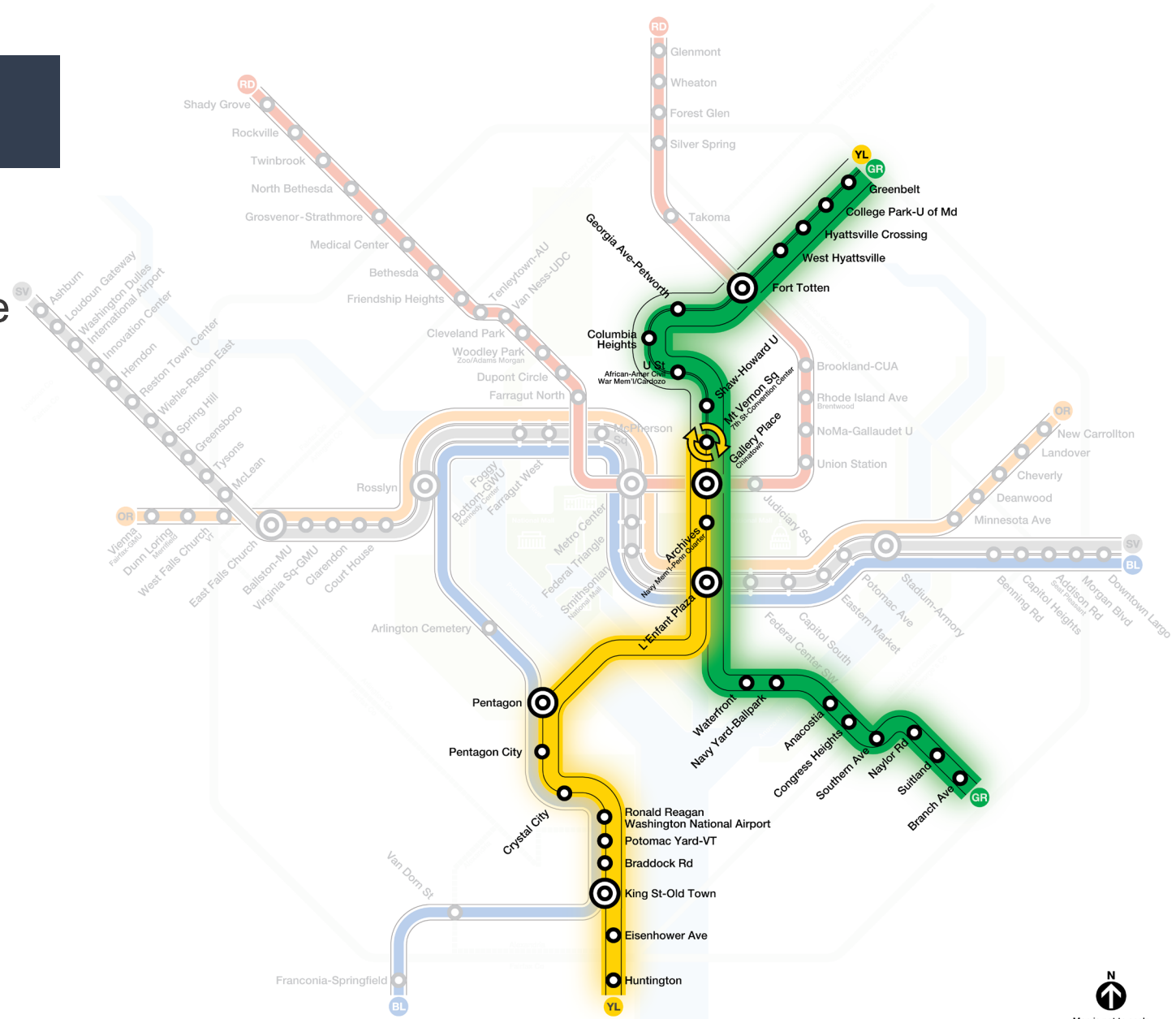
Map is not to scale

Green/Yellow Line Concepts

Increased Green and Yellow Service with Yellow Line Short Turns

Preliminary Cost and Revenue Estimates

Estimated Ridership (Millions, Annual)	Incremental Revenue ($, Millions, Annual)	Incremental Operating Cost ($, Millions, Annual)	Incremental Net Operating Budget Impact ($, Millions, Annual)
3	$ 7	$ 20	$ 13

Preliminary Service Frequency by Segment
Minutes between trains

Line	Segment	Peak Baseline	Peak Concept
GR YL	Greenbelt to Mt. Vernon Square	5	5 to 6
GR YL	**Mt. Vernon Sq to L'Enfant Plaza**	**5**	**2.5 to 3**
GR	L'Enfant Plaza to Branch Ave	10	5 to 6
YL	L'Enfant Plaza to Pentagon	10	5 to 6
BL YL	Pentagon to King St	5	3 to 4
YL	King St to Huntington	10	5 to 6

Mt. Vernon
constraints to reliable delivery of service beyond that level (e.g., every 5 minutes).

Maintain high frequency north of Mt Vernon Square with enhanced end-to-end Green Line service

Increase frequency at Gallery Place & L'Enfant Plaza to speed transfers

Underused Asset: Yellow Line Bridge

All Day Base*

Improve destination access to fast growing areas, Pentagon Transit Center (bus), airport travelers, and new station

Increase service on Southern Green Line; serve rapidly growing neighborhoods and equity emphasis areas

Map is not to scale

Red Line Concepts

Improve Red Line Transfers with Additional Service between Grosvenor and Silver Spring

Provide more service in the busiest segments of the Red Line by making use of short turns between Grosvenor and Silver Spring, reducing transfer times to other lines

Realignment to improve core frequency and serve growing areas with an approximately similar level of total service

Increased frequency benefits four customer trips for every trip with longer waits (4 to 1 ratio)

Map is not to scale

Red Line Concepts

Improve Red Line Transfers with Additional Service between Grosvenor and Silver Spring

Reduced frequency compared to baseline

Focus service in the busiest segment between Grosvenor and Silver Spring, serve growing areas
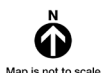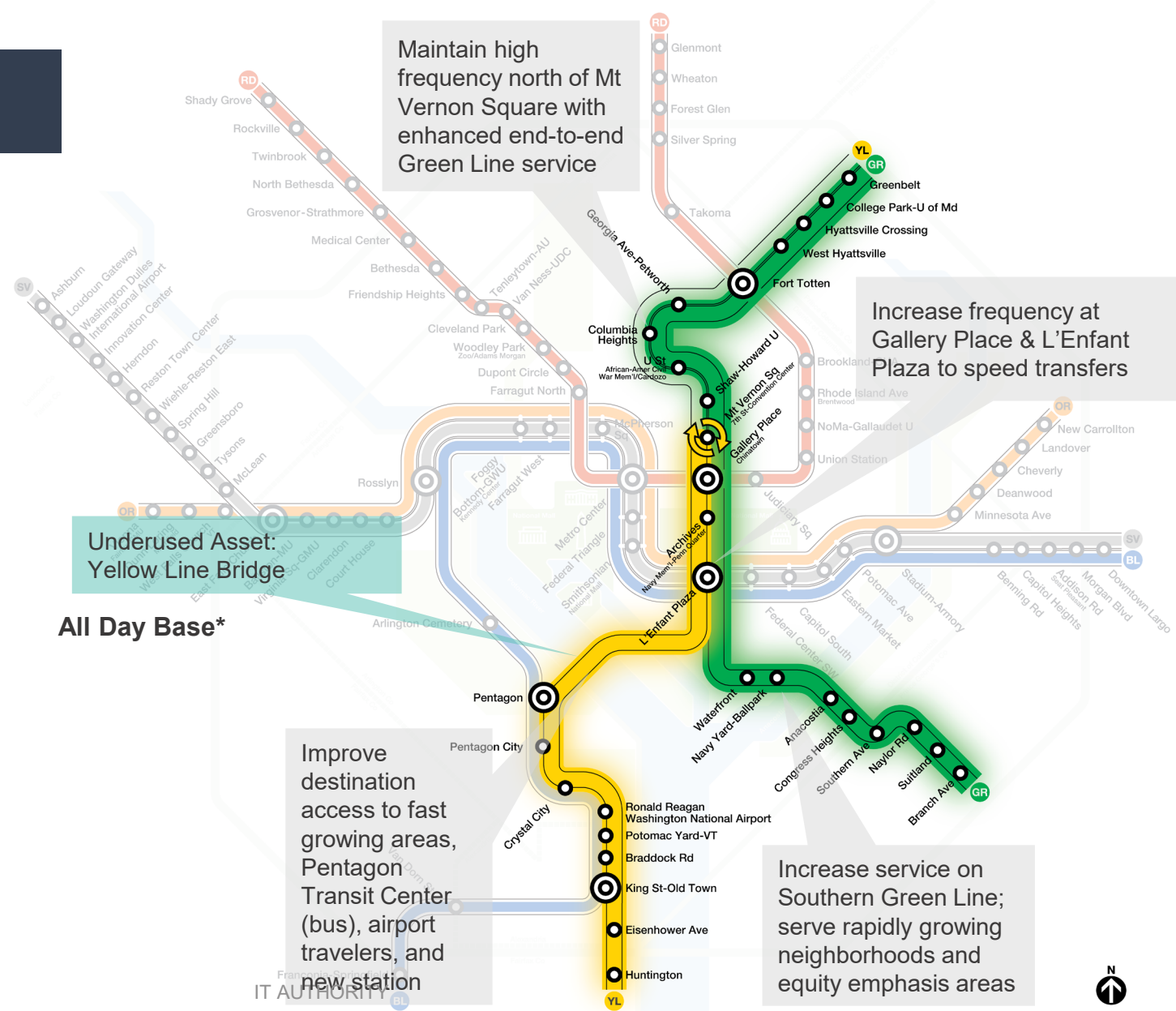
Preliminary Cost and Revenue Estimates:

Estimated Ridership (Millions, Annual)	Incremental Revenue ($, Millions, Annual)	Incremental Operating Cost ($, Millions, Annual)	Incremental Net Operating Budget Impact ($, Millions, Annual)
0.4	$ 0.2	$ 0.3	$ (0.5)

Reduced wait times to transfer to the Red Line at Metro Center, Gallery Place, and Fort Totten

Benefits up to four times as many customer trips with more service as trips negatively impacted

Preliminary Service Frequency by Segment

Minutes between trains

Line	Segment	Peak Baseline	Peak Concept	All Day Base* Baseline	All Day Base* Conc
RD	Shady Grove to Grosvenor	5	8	6	10
RD	Grosvenor to Silver Spring	5	4	6	5
RD	Silver Spring to Glenmont	5	8	6	10

What it does

Range of railcar requirements?

*Until 9:30pm, 7 days a week

Map is not to scale

Blue/Orange/Silver Line Concepts

Improve Orange Line Service

Provide more service on the Orange Line while maintaining baseline service on the Blue and Silver Lines

Current ridership on the eastern Orange and Blue/Silver branches is roughly even and the New Carrollton branch historically had 10-25% more riders

Improves potential connections at New Carrollton to Amtrak, MARC, and the future Purple Line

Map is not to scale

Blue/Orange/Silver Line Concepts

Improve Orange Line Service

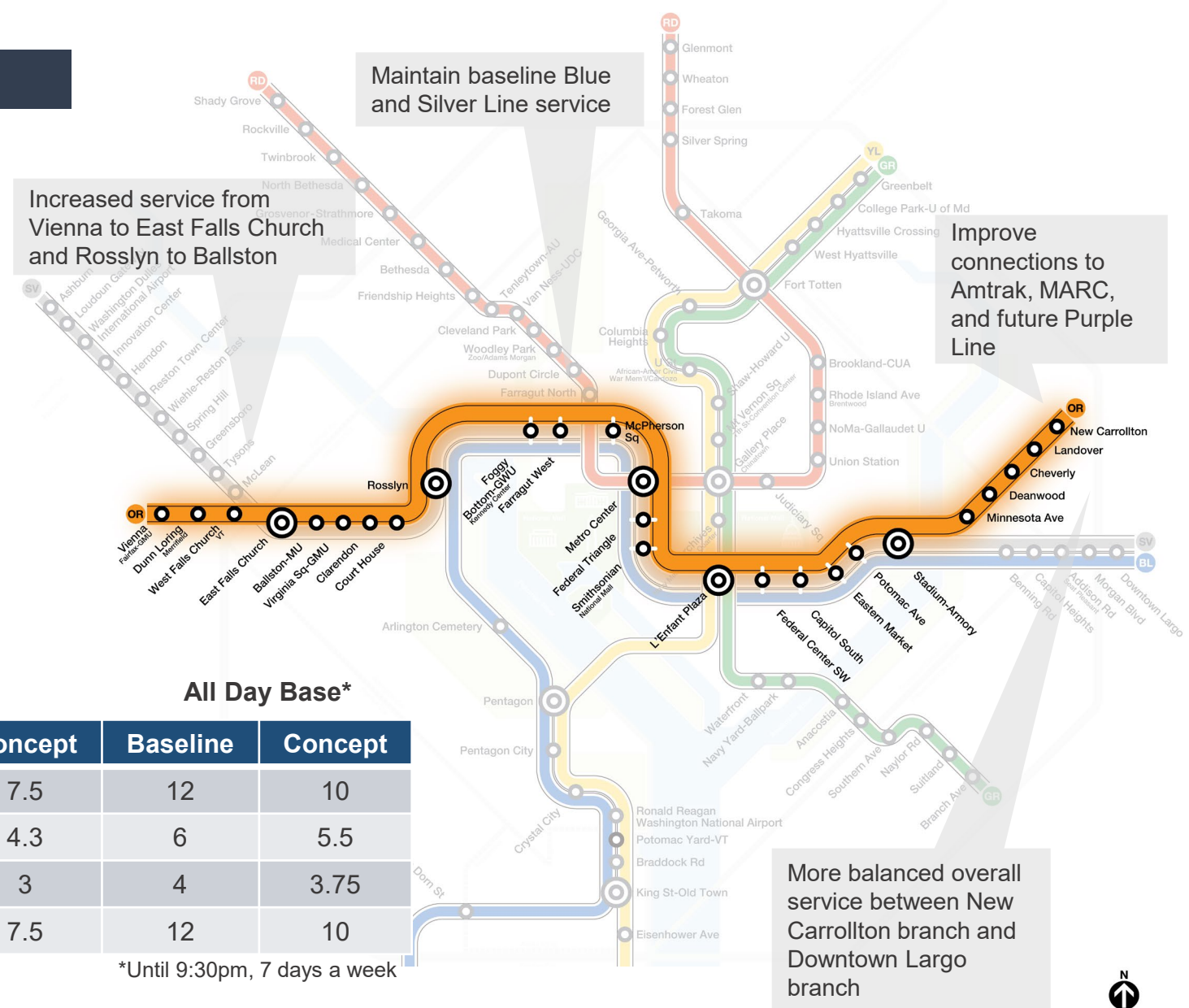### Preliminary Cost and Revenue Estimates:

Estimated Ridership (Millions, Annual)	Incremental Revenue ($, Millions, Annual)	Incremental Operating Cost ($, Millions, Annual)	Incremental Net Operating Budget Impact ($, Millions, Annual)
0.6	$ 1.7	$ 7.7	$ 6

Preliminary Service Frequency by Segment
Minutes between trains

Line	Segment	Peak Baseline	Peak Concept	All Day Base* Baseline	All Day Base* Concept
OR	Vienna to East Falls Church	10	7.5	12	10
OR SV	East Falls Church to Rosslyn	5	4.3	6	5.5
BL OR SV	Rosslyn to Stadium-Armory	3.33	3	4	3.75
OR	Stadium-Armory to New Carrollton	10	7.5	12	10

*Until 9:30pm, 7 days a week

Maintain baseline Blue and Silver Line service

Increased service from Vienna to East Falls Church and Rosslyn to Ballston

Improve connections to Amtrak, MARC, and future Purple Line

More balanced overall service between New Carrollton branch and Downtown Largo branch

Map is not to scale

Blue/Orange/Silver Line Concepts

Silver Line Express Services

Mitigate the long travel time to and from Ashburn with a new express service

Potential to reduce travel time to and from Dulles and Ashburn by 4 to 6 minutes by adding some trains that skip approximately seven stops between Rosslyn and Wiehle
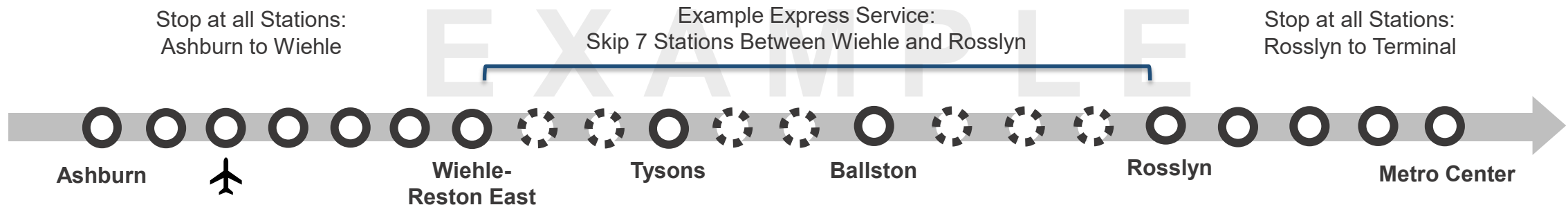
Options include:

- A **few express trains per day**
- Add a new **all-day express service** pattern

Metro is designed as a two-track system with no passing tracks. Without passing:

- An express train can only 'catch up' to the train in front of it
- Travel time savings can be no greater than the local service headway

Estimated Ridership (Millions, Annual)	Incremental Revenue ($, Millions, Annual)	Incremental Operating Cost ($, Millions, Annual)	Incremental Net Operating Budget Impact ($, Millions, Annual)
0 to 1.5	$ 0 to 4	$ 0.5 to 22	$ 0.1 to 17

Stop at all Stations: Ashburn to Wiehle

Example Express Service: Skip 7 Stations Between Wiehle and Rosslyn

Stop at all Stations: Rosslyn to Terminal

Ashburn   Wiehle-Reston East   Tysons   Ballston   Rosslyn   Metro Center

Planning and Analysis Underway to Improve Maintenance Efficiency and Effectiveness

- Maintenance optimization that ensures system safety could also allow for future changes in weekend late night and early morning service hours (close later, open earlier)

- Also exploring concepts for improved overnight and early morning bus service as part of the Better Bus Initiative
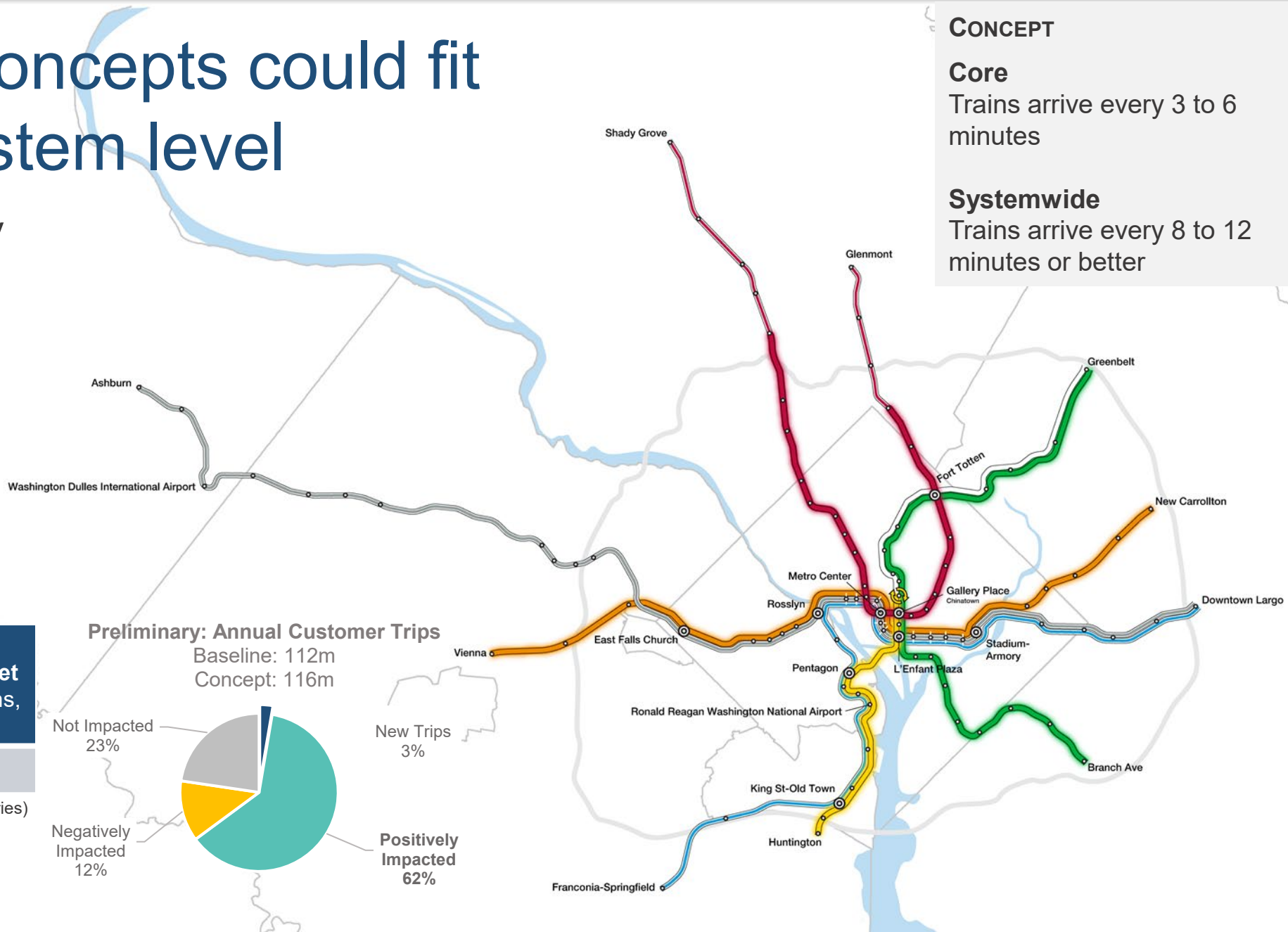
How service concepts could fit together at system level

- Increase core frequency on Green, Yellow, and Red Lines, reducing transfer times and concentrating service in fast growing areas with high ridership potential

Estimated Ridership Change (Annual)	Incremental Net Operating Budget Impact ($, Millions, Annual)
4 million (+3.5%)	$ 18.5

Assumes railcar fleet fully available (including 7000 series)

Preliminary: Annual Customer Trips
Baseline: 112m
Concept: 116m

Not Impacted 23%

New Trips 3%

Negatively Impacted 12%
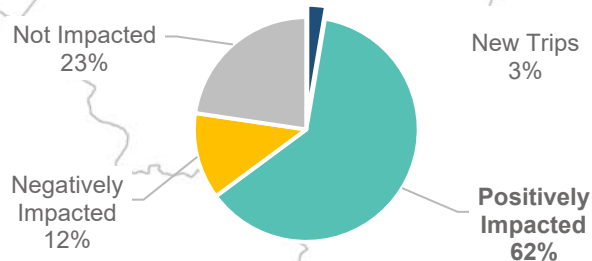
Positively Impacted 62%

Potential Future Service Optimization Concepts

Priority	Concepts	Trips Positively Impacted (Millions, Annual)	Trips Negatively Impacted (Millions, Annual)	Estimated Ridership Change (Millions, Annual)	Incremental Net Op. Budget Impact ($M, Annual)	Equity Impact (Prelim.)
1	**Green/Yellow Line investment**	**23.3**	**8.9**	**2.8**	**$ 13.0**	✓
2	**Red Line service realignment**	**35.9**	**9.8**	**0.45**	**$ (0.5)**	✓
3	**Orange Line Increase**	**34.1**	**0**	**0.5**	**$ 6.0**	✓
Total		**93.3***	**18.7***	**4**	**$ 18.5**	✓
	Future: Blue/Orange/Silver Optimization, Silver Line Express**					
	Future: Red Line Frequency Investment**					
	Optimizing maintenance could allow opening earlier or closing later on weekends**					

*Some customers could be impacted by more than one concept
**Additional analysis underway

Assumes railcar fleet fully available (including 7000 series)

Considerations and Constraints

Considerations	Constraints
▪ Ridership	▪ Trunk line capacity
▪ Equity	▪ Railcar availability & reliability
▪ Customer, community, region-wide impacts	▪ Staffing
▪ Cost	▪ Operational complexity
▪ Implementation timeline	▪ Infrastructure
	▪ Overnight maintenance

Next Steps

- Community, customer, stakeholder engagement

- Further analysis and refinement of service and fare optimization concepts

- Board consideration of updated concepts

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Appendix

Metrorail Service Optimization

Service Frequency Details

Line	Segment	Peak Headway Minutes between trains			All Day Base Headway* Minutes between trains		
		August**	FY23 Budget	Concept***	August**	FY23 Budget	Concept***
RD	**Grosvenor to Silver Spring**	**10**	**5**	**4**	**10**	**6**	**5**
RD	Shady Grove, Glenmont Terminals	10	5	8	10	6	10
GR YL	**Mt. Vernon Sq to L'Enfant Plaza**	**7.5**	**5**	**2.5 to 3**	**7.5**	**6**	**3**
GR	Greenbelt Terminal	15	5	5 to 6	15	6	6
GR	Branch Avenue Terminal	15	10	5 to 6	15	12	6
YL	Huntington Terminal	15	10	5 to 6	15	12	6
BL YL	Pentagon to Reagan National Airport	7.5	5	3 to 4	7.5	6	4
BL OR SV	**Rosslyn to Stadium-Armory**	**5**	**3.3**	**3**	**5**	**4**	**3.75**
OR SV	East Falls Church to Rosslyn	7.5	5	4.3	7.5	6	5.5
OR	New Carrollton Terminal	15	10	7.5	15	12	10
BL SV	Downtown Largo Terminal	7.5	5	5	7.5	6	6
BL	Franconia Terminal	15	10	10	15	12	12
OR	Vienna Terminal	15	10	7.5	15	12	10
SV	Wiehle (Future Ashburn) Terminal	15	10	10	15	12	12

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

**Typical Service in August 2022 (before Yellow Line construction shutdown) with reduced service due to limited availability of 7000 series

*Until 9:30pm, 7 days a week

***Assumes railcar fleet fully available (including 7000 series)

metro