Washington Metropolitan
Area Transit Authority

October 10, 2024

Restructuring Metrobus and Metrorail Operating Subsidy Allocation Formulas

Finance and Capital Committee

RD OR BL GR YL SV metrobus Metro Access

Your Metro, the Way Forward

Objectives of Sustainability Goal

Financial Sustainability | Update subsidy formula and jurisdictional funding model to increase focus on servicing the region's and customers' needs.

Focus today

Actions taken to date to support this initiative:

- Review legacy operating subsidy formulas
- Workshop potential modernization concepts with jurisdictional partners
- Developed restructure proposal

Investments in Metro Benefit the Region

$9.4b

Additional business output from transit.

1.2m

Auto trips avoided each day by 2025.

1.2m

Metric tons of greenhouse gases avoided by transit.

$330b

Property value in Metro station areas.

$27b

Avoided road construction costs.

$2b

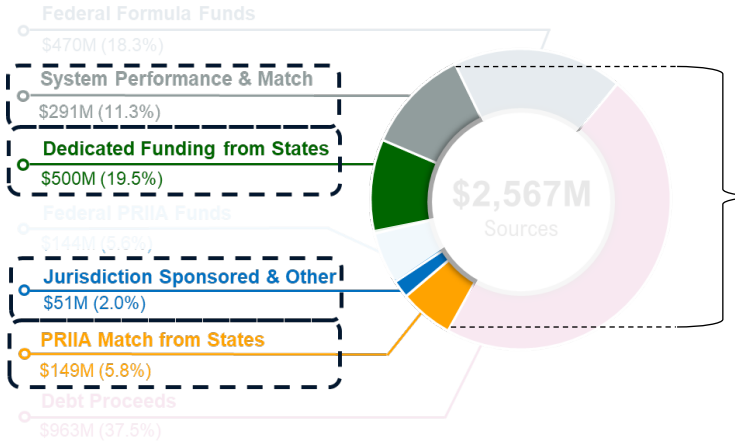
Avoided parking construction costs.

Washington Metropolitan Are

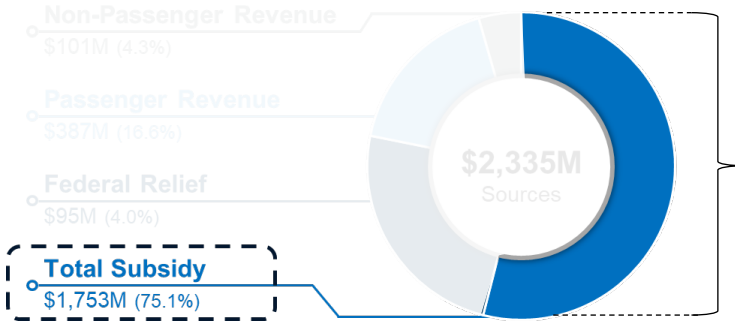
Source: Metro Benefits of Transit Update Report, March 2024

Investment in Metro: Multiple Sources and Methods

FY2025 Capital Sources



FY2025 Operating Sources



Sources of jurisdictional investments and subject to subsidy formula or other allocations

Jurisdiction Funding Sources

Formula Governed by

System Performance & Match
- Variable formula: modal operating formulas & capital program investment by mode
- Use: flexible often for federal match

Board of Directors

Dedicated Capital Funding from States
- Fixed formula: DC 36%, MD 33%, VA 31%
- Use: defined by state agreements

VA DC MD

Jurisdiction Sponsored & Other*
- Fixed formula: 100% by sponsor jurisdiction
- Use: per jurisdiction (mostly expansion)

Board of Directors

PRIIA Match from States
- Fixed formula: 1/3 from each state
- Use: capital and preventive maintenance

VA DC MD

Operating Subsidy
- Variable mode-specific formulas
- Use: operation and maintenance support

Board of Directors

Today's focus: bus and rail formulas

* Note: Total costs of these projects is higher as many system jurisdiction project costs are outside of Metro's capital program.

Bus & Rail Subsidy Formula Background

First bus formula adopted after Metro takeover of private bus companies	1973	
	1977	Board adoption of Metrorail subsidy formula
	1995	Maximum rail fare subsidy added
Regional Mobility Panel* recommends current formula to reinvigorate Metrobus service	1997	
Board adopts current Metrobus formula	1998	
Board adopts 3% Subsidy Cap formula	2019	Board adopts 3% Subsidy Cap formula

*Note: The Regional Mobility Panel was appointed by the Metro Board of Directors to develop a plan to strengthen and stabilize the Metro operated regional bus system, including how Metrobus jurisdictional investment was allocated.

Current Subsidy Formulas

Metrobus subsidy allocation formula defines two types of service:

- **Regional service:**
  - Integrated bus system that is planned, funded, and operated similarly to Metrorail (~80 percent of service)
  - Interjurisdictional, serves 1+ activity centers, travels on arterial streets, or meets cost efficiency target
  - Basis for Metrobus system cost allocation*
- **Non-regional service:**
  - Local bus system funded by a single jurisdiction (~20 percent of service)
  - Allocates direct service costs only

Metrorail subsidy allocation formula has two parts:

- **Max Fare Subsidy:**
  - Acknowledges the benefit to customers and their jurisdiction of the fare cap on distance-based fares
- **Base Subsidy:**
  - Applies benefit proxies for users, non-users, and development opportunity

*Note: System costs are sometimes called administrative costs.

Feedback from Jurisdictional Partners: Existing Formula Challenges

→ **Confusing and unclear relationship** between subsidy and service levels ←

→ **Lack of transparency and predictability** ←

→ **Confusing** for staff, elected officials, and other stakeholders ←

→ **Fare evasion revenue impacts** not reflected ←

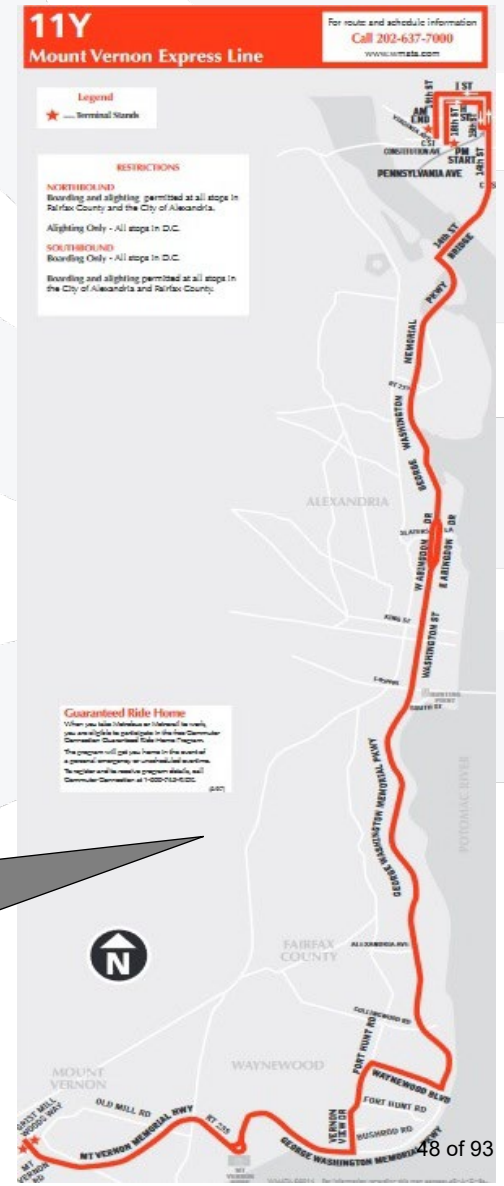
→ Concern about **time between passenger surveys** ←

- **Barrier to Metrobus investment**
- Special exceptions create **audit challenges**
- **Difficult to compare costs** to local operators
- **Large administrative effort** to maintain records

- Costs **not correlated to service** levels
- **Disincentive to** policies that drive **ridership**
- Oriented towards **system expansion**
- Does not consider **rail cost structure**

Existing Formula Challenges
Historical Example: Metrobus 11Y

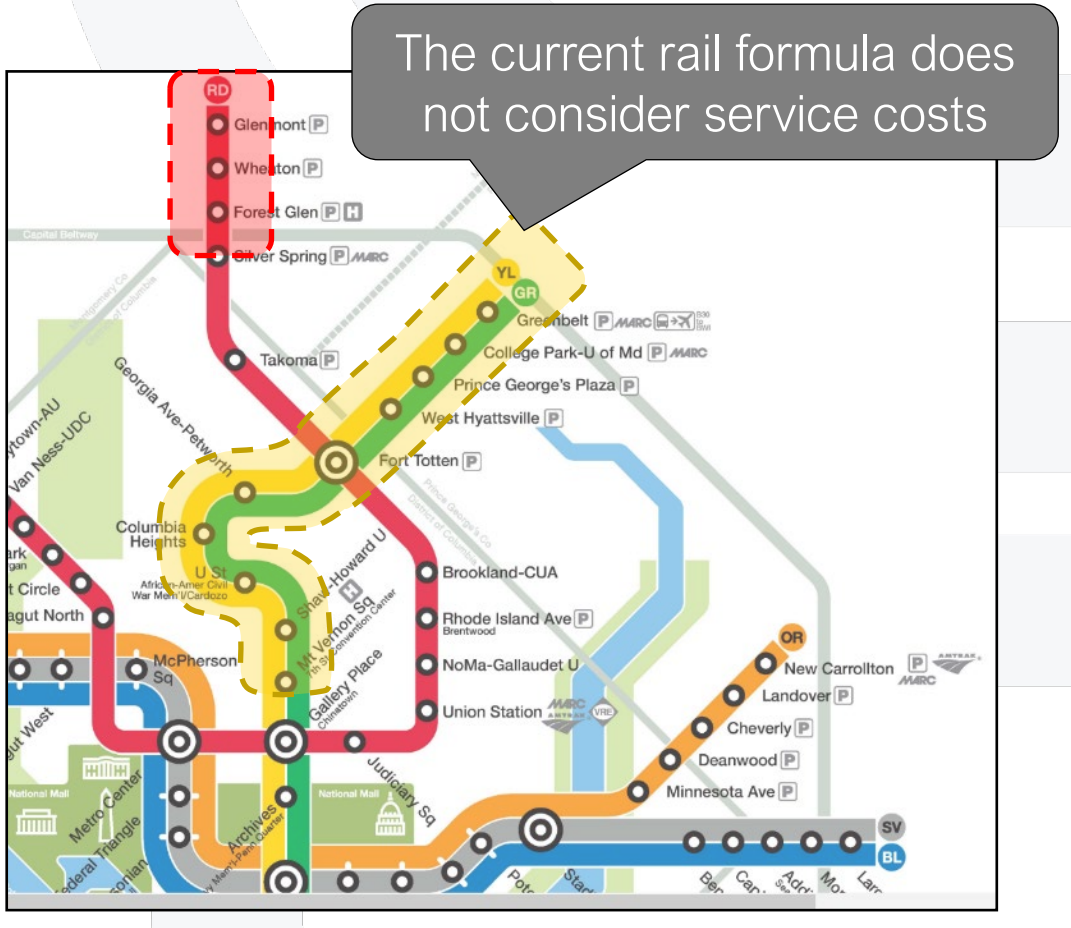
- Post pandemic service restoration on 11Y in FY2024
- Route provides peak period, peak direction express service from Alexandria/Fairfax County to the District
- In current subsidy formula, it is defined as a “regional” route
- Restoring service increased Maryland’s subsidy about **$115K**, while Alexandria’s increase was about **$16K**



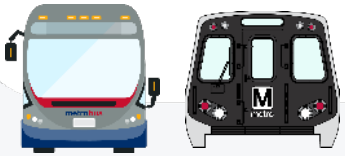
The current bus formula adds cost disproportionately to other jurisdictions, impeding Metrobus investment

Existing Formula Challenges
Example: Red and Yellow Line Service Extension

- In FY2020, Metro extended all Red Line trains to Glenmont and all Yellow Line trains to Greenbelt
  - Red Line (Silver Spring) & Yellow Line (Mt. Vernon Square) turn-backs were eliminated
- Subsidy for all jurisdictions increased disproportionately because the formula does not include a variable to allocate service costs
- About 95% of the customers who benefited from these changes live in the District of Columbia, Montgomery County, and Prince George's County

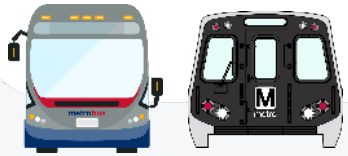


Goals of Restructuring Operating Subsidy Formula



Formula Goals	
	Consider service from a **regional perspective**
	Increase **legibility**
	Increase **transparency**
	Align service **benefits and costs**
	Improve service and **fiscal predictability**

Overview of Proposed Subsidy Allocation Changes



Metrorail *Current*

Total Expense − Total Revenue =

Share of Subsidy

Max Fare
- 50% Trips above the max fare

Base
- 33% Ridership
- 33% Density-Weighted Population
- 33% Stations

Metrobus *Current*

Total Expense − Total Revenue =

Share of Subsidy

Non-Regional Costs
- 100% Platform Hours *less* Revenue

Regional (including System costs)
- 15% Ridership
- 25% Density-Weighted Population
- 35% Revenue Hours
- 25% Revenue Miles

Metrorail *Restructured*

Share of Costs

Infrastructure
- 50% Stations
- 50% Track Miles

System
- 50% Ridership
- 50% Population

Service
- 90% Railcar Miles
- 10% Peak Vehicles

−

Share of Revenue

Passenger
- 100% Paid Ridership

Non-Passenger
- 100% Share of Costs

Metrobus *Restructured*

Share of Costs

System
- 50% Ridership
- 50% Population

Service
- Revenue Hours (per unit)
- Peak Vehicles (per unit)

−

Share of Revenue

Passenger
- 100% Paid Ridership

Non-Passenger
- 100% Share of Costs

Category	Method for dividing between jurisdictions

Examples: How Restructure Proposal Addresses Challenges


Formula Goal	Current Formula Challenge	Restructured Formula
Consider service from a regional perspective	Difficult to compare Metrobus to local bus costs	Create unit rate for **Metrobus service**
Increase legibility	**Confusing** for staff and stakeholders	**Eliminate rail maximum fare subsidy**
Increase transparency	Bus special exceptions creates **confusion and audit challenges**	Create **one service definition** for Metrobus
Align service benefits and costs	**Confusing and unclear** relationship between subsidy and service levels	Allocate **revenues and operating costs**
Improve service and fiscal predictability	**Disincentive to policies** that drive ridership	**Incentivize ridership and fare evasion reduction**

*Notes: infrastructure costs only apply to Metrorail

Next Steps

- Incorporate Board and jurisdictional feedback
- Recommend Board adoption of restructured subsidy allocation formula (November)
- Apply new formulas to adopted 2025 Better Bus Network and FY2026 operating budget

Appendix

Appendix Part I

Current Metrobus and Metrorail Operating Subsidy and Variables

Current: Bus Service Definition Overview

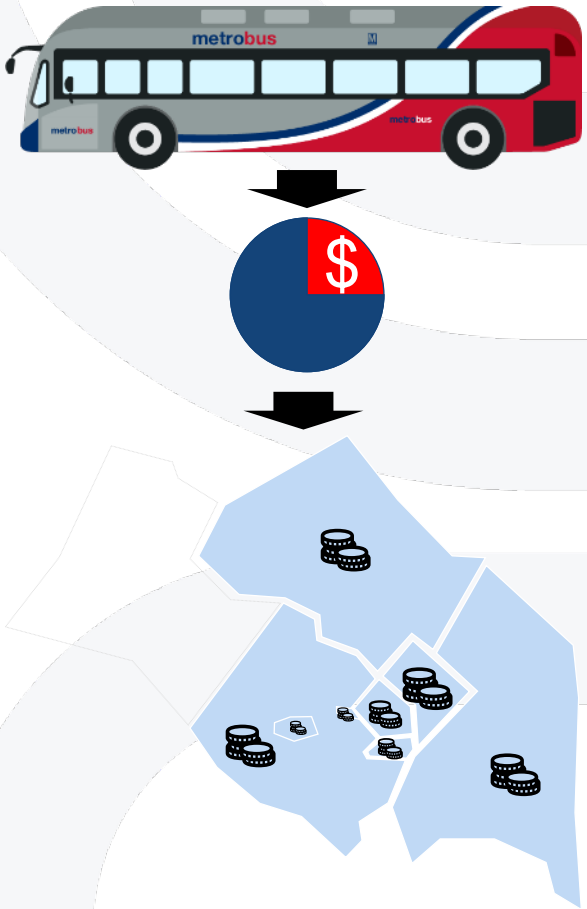
What it is: Methodology to determine routes for subsidy allocation of Metrobus system costs

Rationale: Separate and allocate Metrobus system costs to regionally significant routes

Math: Regional routes are defined as interjurisdictional or meet other criteria*

Challenges:

- Confusing
- Distorts Metrobus costs, discouraging investment
- Difficult to compare to local operators
- Definition has not been applied consistently



*Note:
Must meet 2 of 3 other criteria:
- Serves one or more MWCOG Regional Activity Centers
- Travels considerable distance on an arterial street
- Achieves cost efficiency of greater than 30 boardings/platform hour

Current Metrobus Subsidy Allocation Formula

1. Metrobus Operating Expenses

2. Split into Regional vs. Non-Regional

(Based on % of platform hours)

Regional Subsidy Allocation

3. Regional Share of Bus Budget

3.1 Add Metrobus System Costs

3.2 Subtract Regional Fare Revenue

3.3 Regional Subsidy

3.4 Allocate to Jurisdictions

- **25%** Density weighted population by jurisdiction
- **15%** Ridership by Jurisdiction of Residence
- **25%** Bus revenue hours by location
- **35%** Bus revenue miles by location

Non-Regional Subsidy Allocation

4. Non-Regional Share of Bus Budget

4.1 Divide by Platform Hours to Calculate Non-Regional Rate

4.2 Assign Line to Single Jurisdiction

4.3 Apply Rate to Platform Hours by Line to Calculate Cost

4.4. Deduct Revenue by Line from Cost to Calculate Non-Regional Subsidy

Current Metrorail Subsidy Allocation Formula

Metrorail Operating Expenses

−

Revenues (fare and non-fare)

=

Metrorail Subsidy

Maximum Fare Subsidy

50% max fare subsidy (surveyed rail trips that would exceed $6.75) allocated to jurisdiction of benefitting riders*

50% of max fare subsidy allocated to base subsidy

Base Subsidy

33% average weekly ridership*

+

33% density-weighted population

+

33% number of rail stations

Proxy measures for three types of benefits:

Users

Non-users

Development

* Notes: Determined by Metrorail passenger survey Fare levels per FY2025 Revised Draft Budget

Current: Ridership Overview


Regional


Base

What it is: count of ridership by jurisdiction of residence (via passenger surveys)

Rationale: Proxy for calculating user (customer) benefits

Math: percentage of weekly ridership by jurisdiction*

Challenges:

- Disincentive to policies that drive ridership
- Does not account for trip length
- Survey data can be stale

*Notes: Based on Metrobus and Metrorail Passenger Surveys; Non-Compact riders are excluded

Current: Density-Weighted Population Overview


Regional

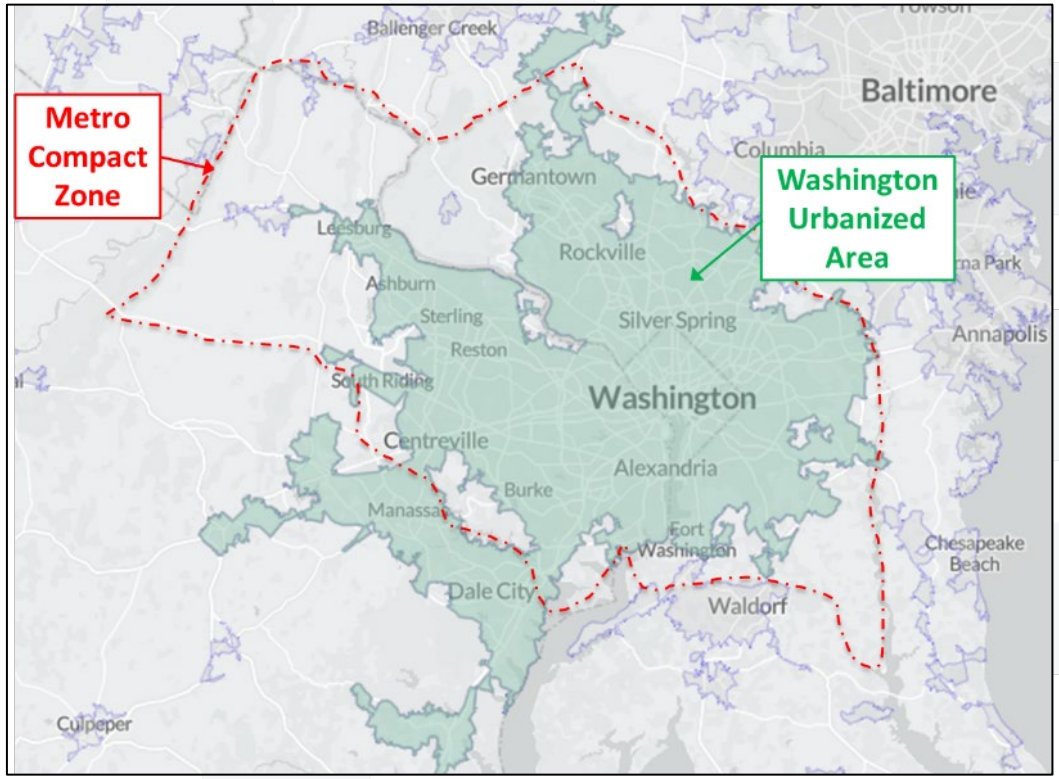

Base

What it is: A population measure that excludes rural areas and is scaled to account for density

Rationale: A proxy for non-user benefits (e.g., reducing congestion)

Math: The average of:

- *Jurisdiction's share of the Census Urbanized Area (UZA) population and*
- *Jurisdiction's share of density weighted population distribution**



Challenges:

- Complicated and confusing
- Does not capture rural area transit benefits

*Notes: urbanized area population times population density

Current: Bus Revenue Hours Overview

Regional

What it is: Time (in hours) the vehicle travels while carrying customers.

Rationale: Industry standard measure of direct bus service costs by time.

Math: Bus hours with customers onboard*

Challenge: Industry standard cost measure, but excludes non-revenue hours (e.g., deadhead, layover, etc.) which can drive costs.

*Notes: also includes operator break time.

Current: Bus Revenue Miles Overview

Regional

What it is: Distance (in miles) the vehicle travels while carrying customers.

Rationale: Measures direct bus service by distance.

Math: Bus miles traveled with customers onboard.

Challenge: Excludes non-revenue miles (e.g., deadhead, etc,), which can drive costs.

Current: Bus Platform Hours Overview

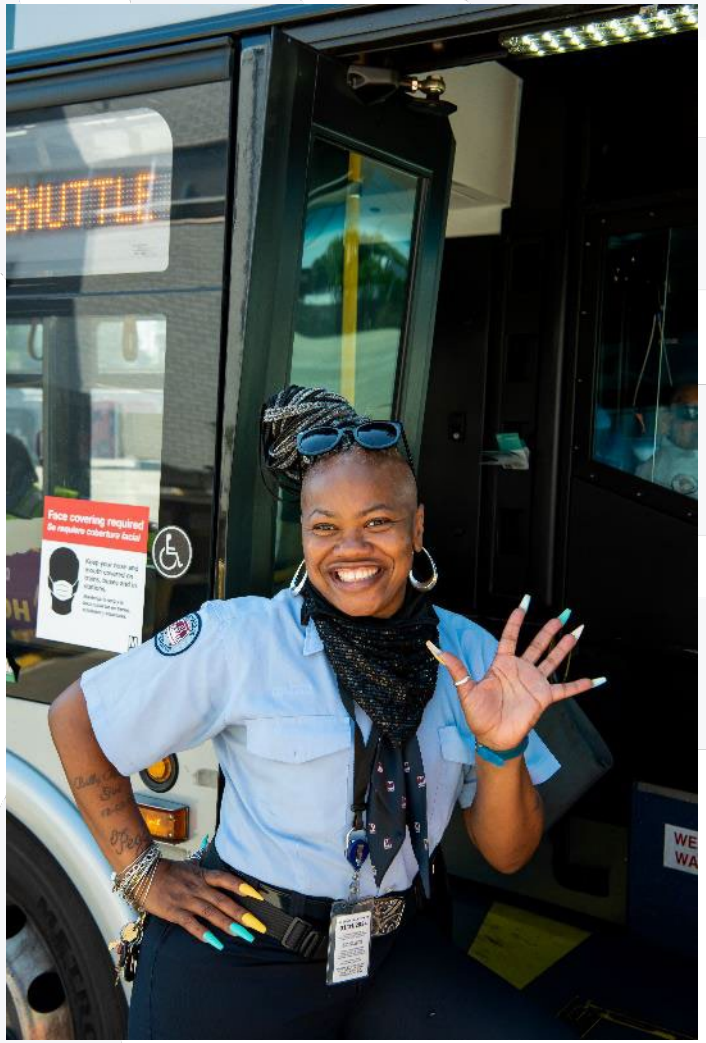
Non-Regional

What it is: Time (in hours) the vehicle travels from and to the garage, regardless of if customers onboard.

Rationale: Measures total directly operated service functions for cost allocation (operators, etc.)

Math: Total bus operating hours, including time to and from the garage.

Challenge: Not aligned with industry standards for operations costing.



Current: Rail Stations Overview

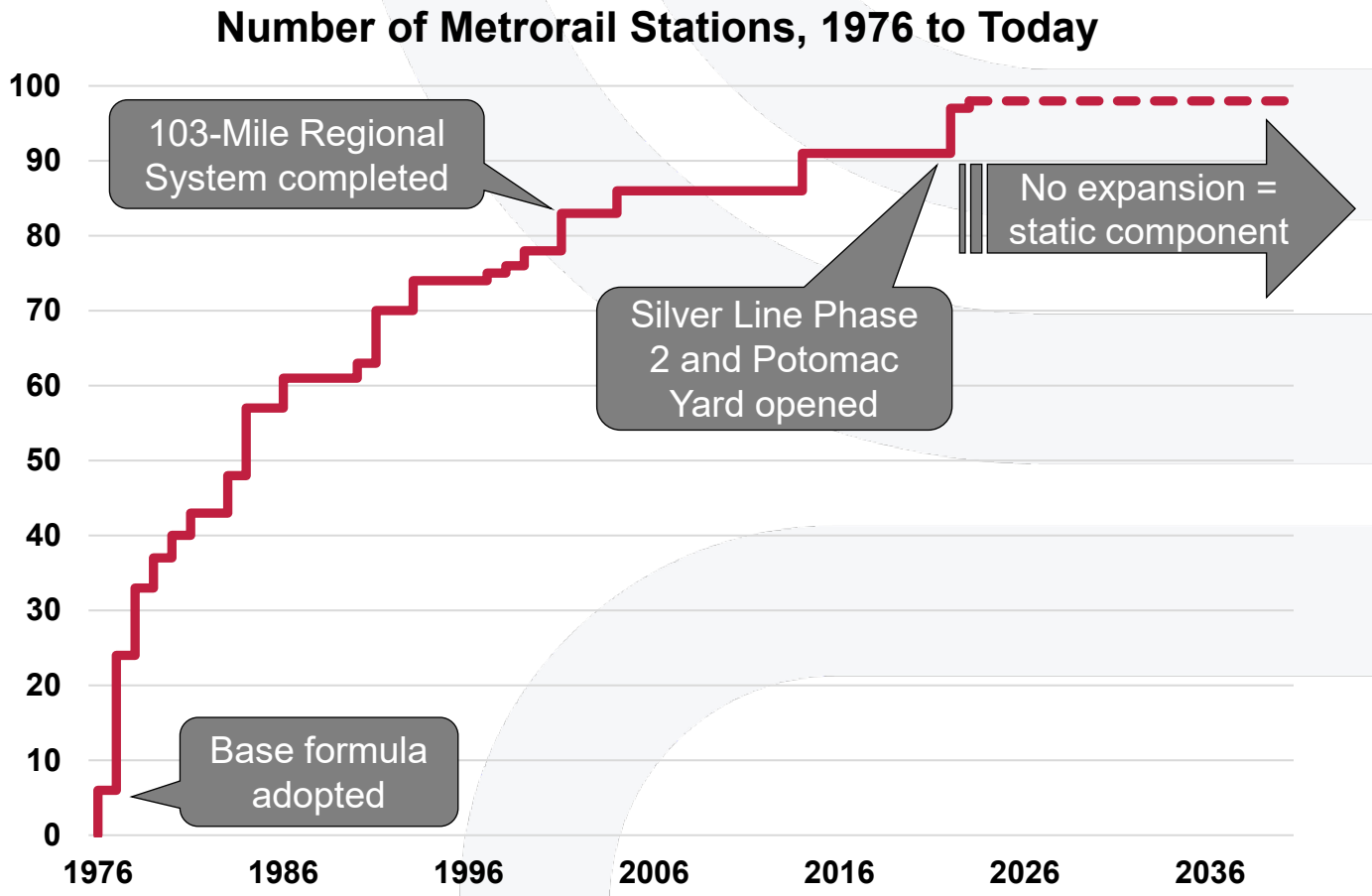
What it is: count of stations in each jurisdiction

Rationale: proxy for jurisdiction station area development benefits

Math: percentage of total number of Metrorail stations assigned to each jurisdiction*

Challenges:

- Only varies with system expansion
- Not all jurisdictions have stations



*Note: Arlington Cemetery is excluded. Border station allocations are based on the 1968 Adopted Regional System Capital Formula: Capitol Heights: 50% DC, 50% Prince George's Co., Friendship Heights: 50% DC, 50% Montgomery Co., Southern Ave: 27% DC, 73% Prince George's Co., Van Dorn St: 50% Alexandria, 50% Fairfax Co.

Current: Rail Maximum Fare Subsidy Overview

What it is: Jurisdictions pay half the difference between the max rail fare and the potential fare without the fare cap

Rationale: Targeted funding to keep long-distance rail trip fares low

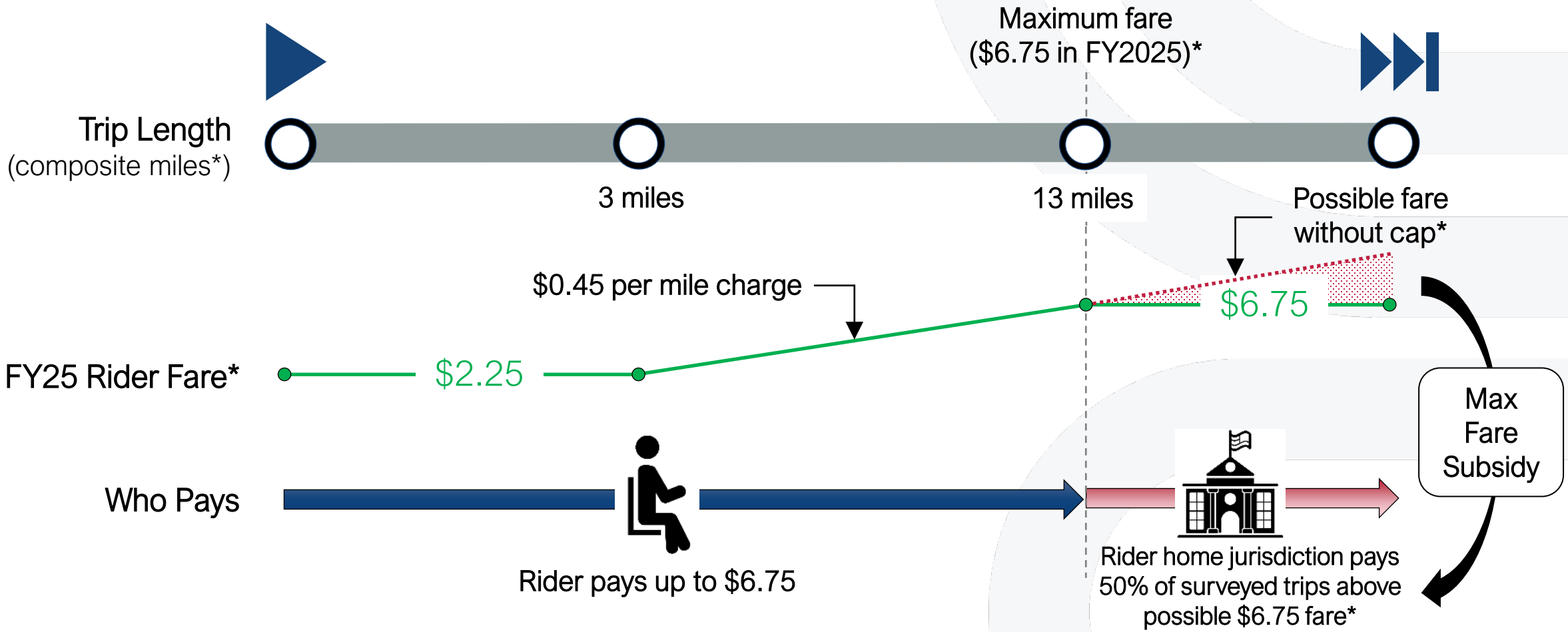
Math: 50% times the sum of surveyed rail trips* that would exceed the max fare multiplied by potential uncapped fares

Challenges:

- Complicated, confusing
- Narrowly focused
- Only 1% of total FY25 rail subsidy

*Note: Rail fare mileage is composite miles, the average of track and straight-line distance. Benefitting trips and home jurisdiction from rail survey.

How the Maximum Fare Subsidy Works



*Notes: Fare levels per FY2025 Revised Draft Budget
Applies to weekday non-late-night fares only.
Maximum fare subsidy allocated by surveyed rail trips.
Maximum fares would be up to $18.65 without the fare cap.

The Three Percent Cap

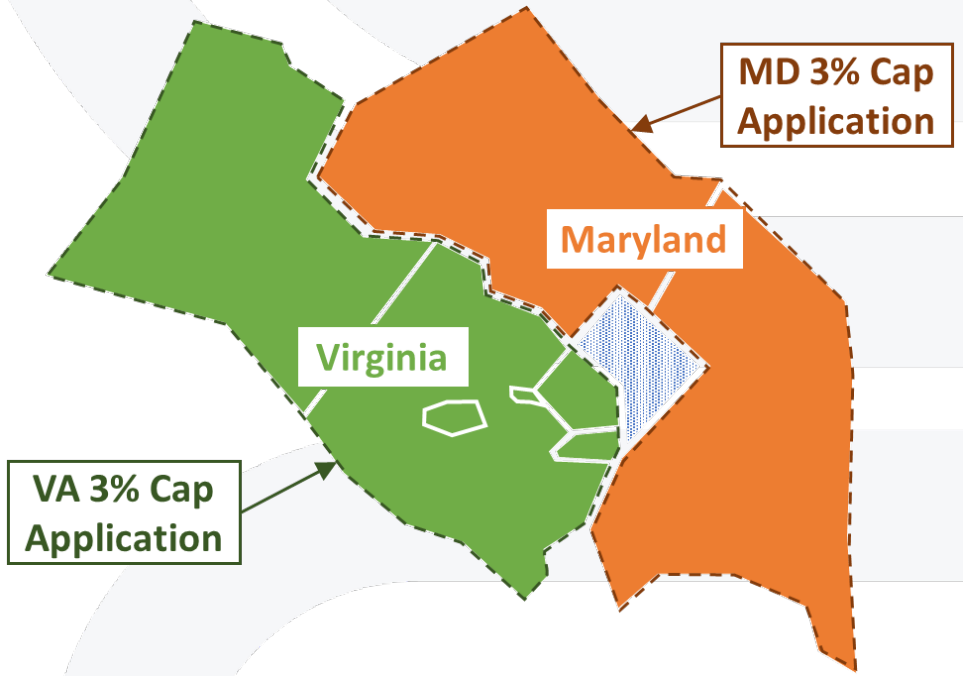
What it is: Maryland and Virginia legislative requirement that limits increases in annual Metro operating subsidy payments to 3 percent*

Rationale: Provide a financial incentive to Metro to contain operating cost growth and increase budget predictability

Math: Annual increases in budgeted state-level Metro operating subsidy payments must total 3 percent or less, subject to penalties for non-compliance*

Challenges:

- Application of cap overrides and is disconnected from Metro's subsidy formulas
- Temporary suspension of cap and formula application created confusion among staff and elected officials*



*Notes: Established in 2018 Metro Dedicated Capital Funding Legislation. Legislative exclusions include costs for any service, equipment, or facility required by state or federal law such as paratransit cost increases, occupational safety and health cost increases, legal disputes (including litigation) and any capital project approved by the WMATA Board. Certain Virginia local jurisdictions may see subsidy payments of more or less than 3 percent in a given year, so long as the applicable statewide total does not exceed 3 percent. In 2024, Virginia and Maryland temporarily suspended the three percent cap to provide additional investments to Metro to help close the FY2025 operating budget gap.

Appendix Part II

Current Metrobus and Metrorail Operating Subsidy Allocation Formula Challenge Examples

Example: Metroway

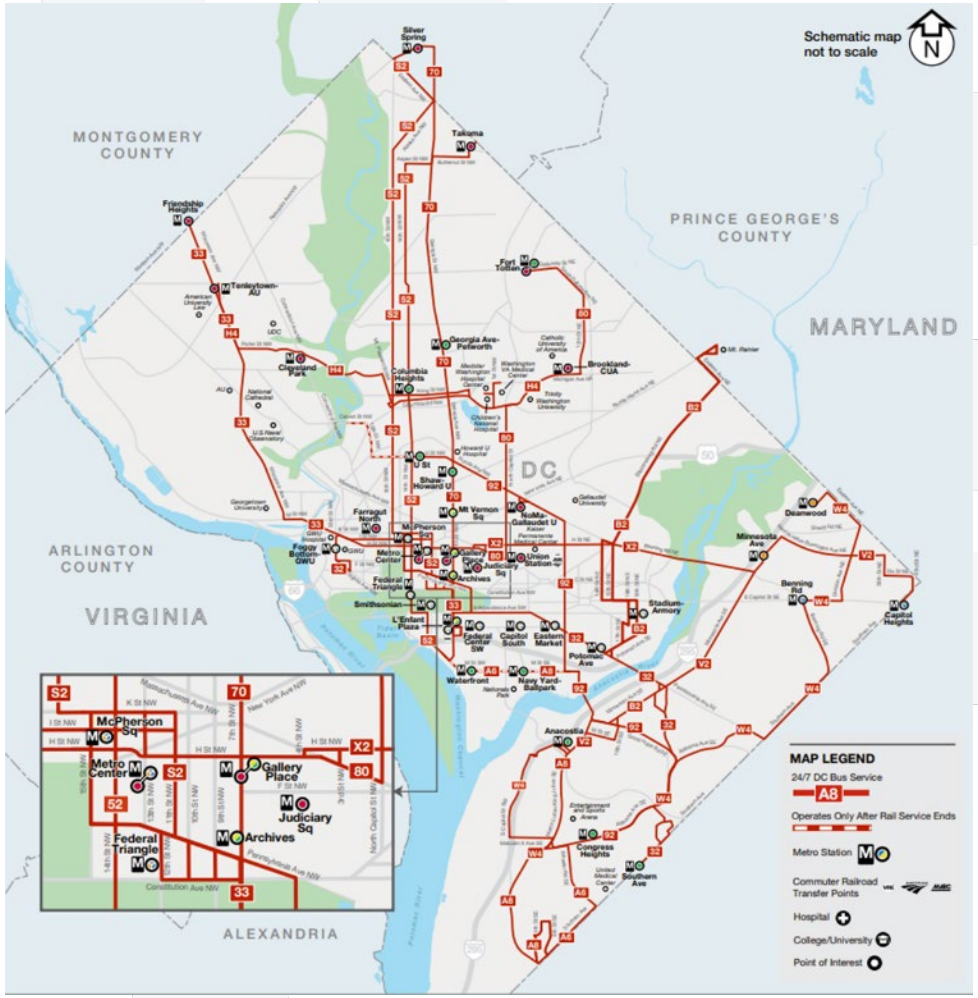
- Metroway is Metro's only Bus Rapid Transit (BRT) line, opened in 2014
- The line meets the definition of Regional service → connects two jurisdictions, service 1+ activity centers, and travels along many arterial streets
- When Metroway was included in the network, the Board resolution defined it as Non-regional
- Metroway continues to be a Non-Regional service, even though it meets the Regional route definition; there is no defined process to reclassify a route

Modernize the Metrobus Formula and Network Together

- Fresh start in how we pay for bus service
- Reduce complexity
- Increase predictability/transparency
- Encourage investment
- Eliminate distortions in service design because of the subsidy
- Remove historical special exceptions
- Fully realize network benefits

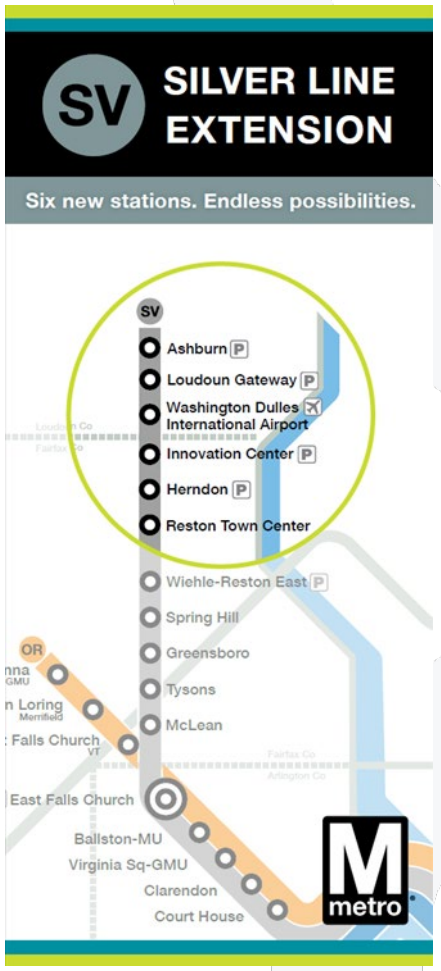
Example: DC Overnight Bus Service

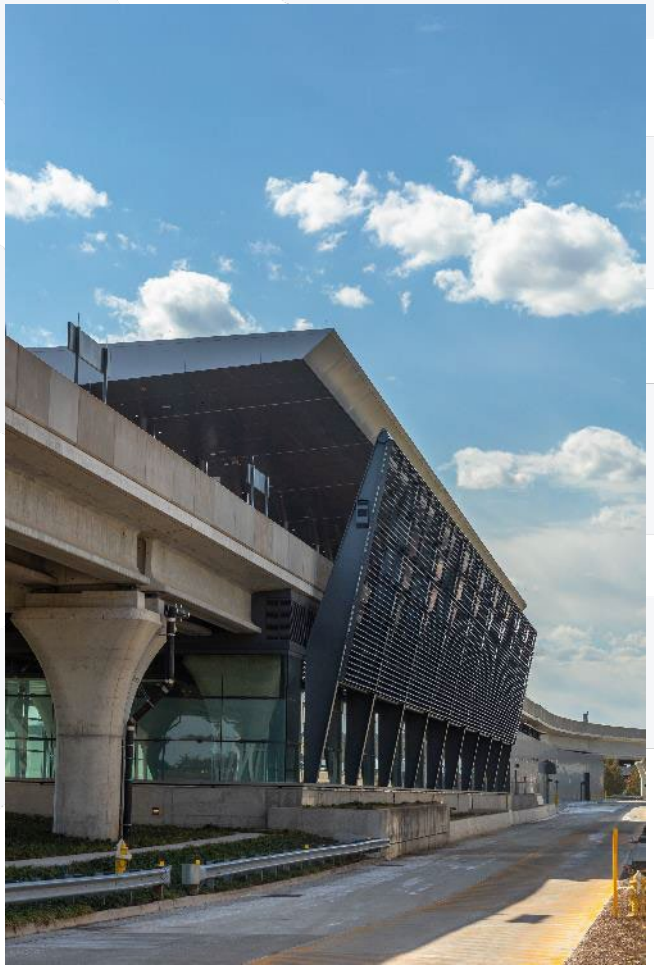
- DC authorized funding to improve frequency and span for overnight service on 13 routes starting in FY2024
- In current subsidy allocation formula, all routes are defined as “regional”
- If current formula used, VA and MD subsidy would increase
- To implement this **special exception**:
  - Required negotiation of separate MOA and use of non-regional rate;
  - Subject to additional tracking and auditing



Example: Silver Line Extension

- Metro opened the Silver Line Phase 2 Extension in 2022, including 6 new stations and 11.4 miles of track.
- When new rail lines or stations open, the current Metrorail formula does not measure service or mileage of new infrastructure to operate and maintain.
- As a result, Fairfax and Loudoun Counties paid 19% of the incremental Silver Line Extension operating subsidy.
- 70% of customers at Silver Line Phase 2 stations are Fairfax and Loudoun residents*

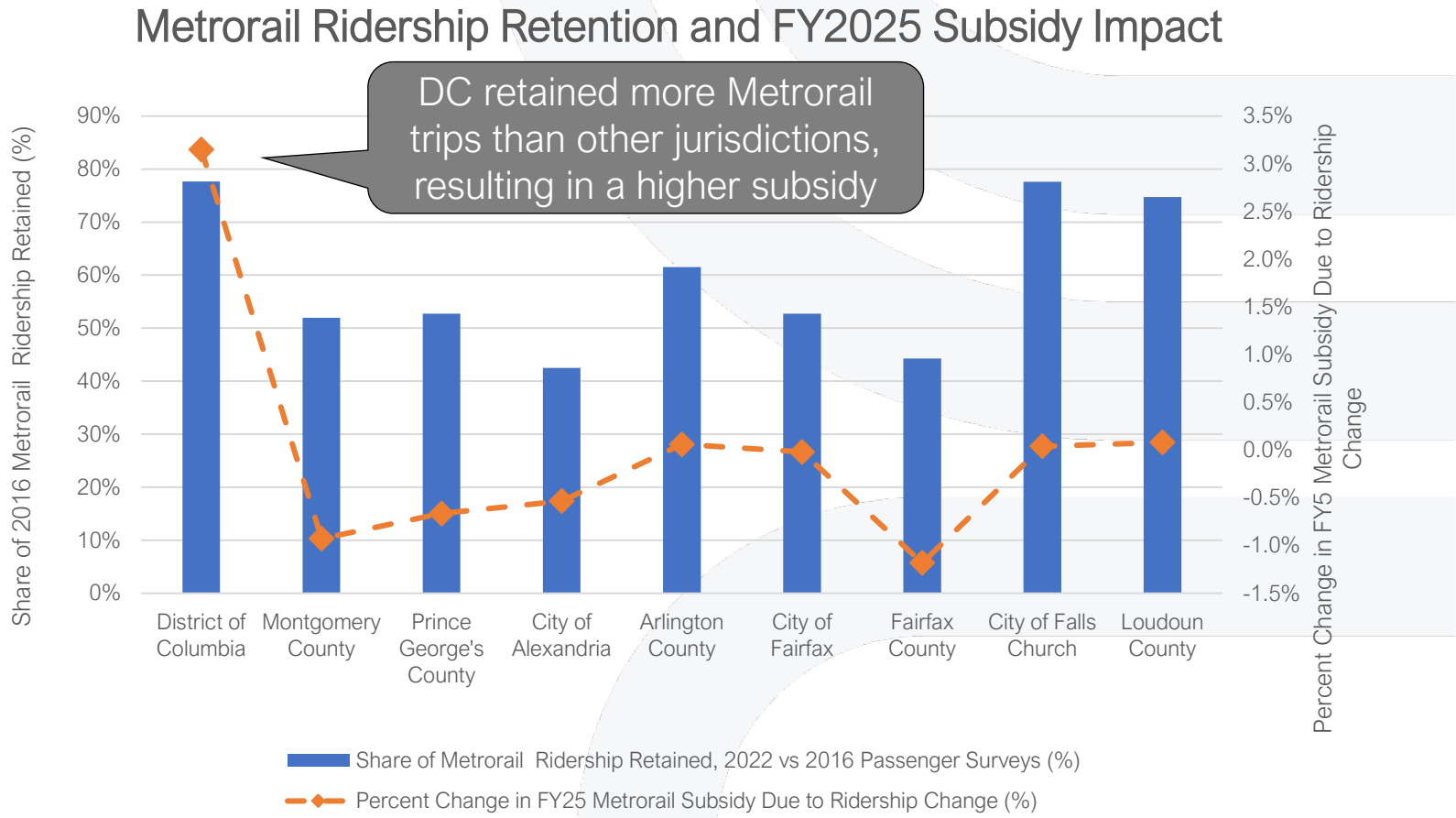




*Note: Based on the FY2021 Budget, 2022 Metrorail Passenger Survey and May 2024 station entries.

Example: Changing Ridership Patterns

- The District of Columbia retained more Metrorail trips than other jurisdictions between the 2016 and 2022 Metrorail Passenger Surveys*
- As a result, DC's subsidy is higher in FY2025 due to an increased share of total Metrorail ridership
- This creates an awkward disincentive to policies that increase ridership



*Note: The 2022 Metrorail Passenger Survey was first applied in the FY2025 Budget.

Appendix Part III

Subsidy Formula Restructure Concept Allocation Changes

Overview of Proposed Subsidy Allocation Changes

Metrorail *Current*

Total Expense

\-

Total Revenue

=

Share of Subsidy

Max Fare

- Trips above the max fare

Base

- Ridership
- Density-Weighted Population
- Stations

Metrobus *Current*

Total Expense

\-

Total Revenue

=

Share of Subsidy

Non-Regional Costs

- Platform Hours *less* Revenue

Regional (including System costs)

- Ridership
- Density-Weighted Population
- Revenue Hours
- Revenue Miles

Metrorail *Restructured*

Share of Costs

Infrastructure

- Stations
- Track Miles

System

- Ridership
- Population

Service

- Car Miles (per unit)
- Peak Vehicles (per unit)

\-

Share of Revenue

Passenger

- Paid Ridership

Non-Passenger

- Share of Costs

Metrobus *Restructured*

Share of Costs

System

- Ridership
- Population

Service

- Revenue Hours
- Peak Vehicles

\-

Share of Revenue

Passenger

- Paid Ridership

Non-Passenger

- Share of Costs

Category	Method for dividing between jurisdictions

Restructure Concept: Fare Revenue Overview

What it is: Metrobus and Metrorail revenues from passenger fares, passes and fare programs*

Rationale: Create financial incentive to:

- Increase ridership
- Address fare evasion

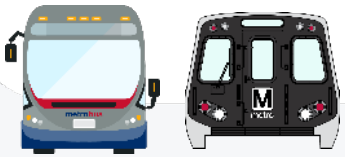
Math:

Proposed FY fare revenues by mode

×

Prior FY paid ridership by mode

*Notes: includes subsidized fare program such as DC Kids Ride Free.



Restructure Concept: Non-Fare Revenue Overview

What it is: Metrobus and Metrorail revenues from non-passenger fare sources

Rationale:

- Recognizes unique revenue sources and drivers, distinct from service
- Create distinct non-passenger fare revenue allocation, using distinct methodology

Math:

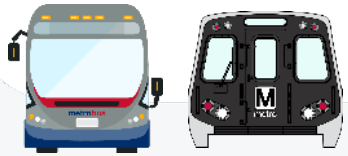
Proposed FY non-fare revenues by mode

×

Total operating cost share by mode

Bus	Rail
Advertising	
Other Revenue	
	Parking
	Joint Development
	Fiber Optics

Restructure Concept: System Costs Overview



What it is: Administrative costs supporting transit operations

Rationale:

- Recognizes key transit support functions which benefits the region, whose costs vary differently from service

Math:

Bus & Rail Administration Cost Share*

×

Proposed FY Bus & Rail Costs

System Cost Examples

- Customer Experience
- Finance
- Human capital
- Information technology
- Legal
- Planning
- Real estate management
- Safety

*Notes: Based on National Transit Database General Administration costs

Restructure Concept: Population Overview

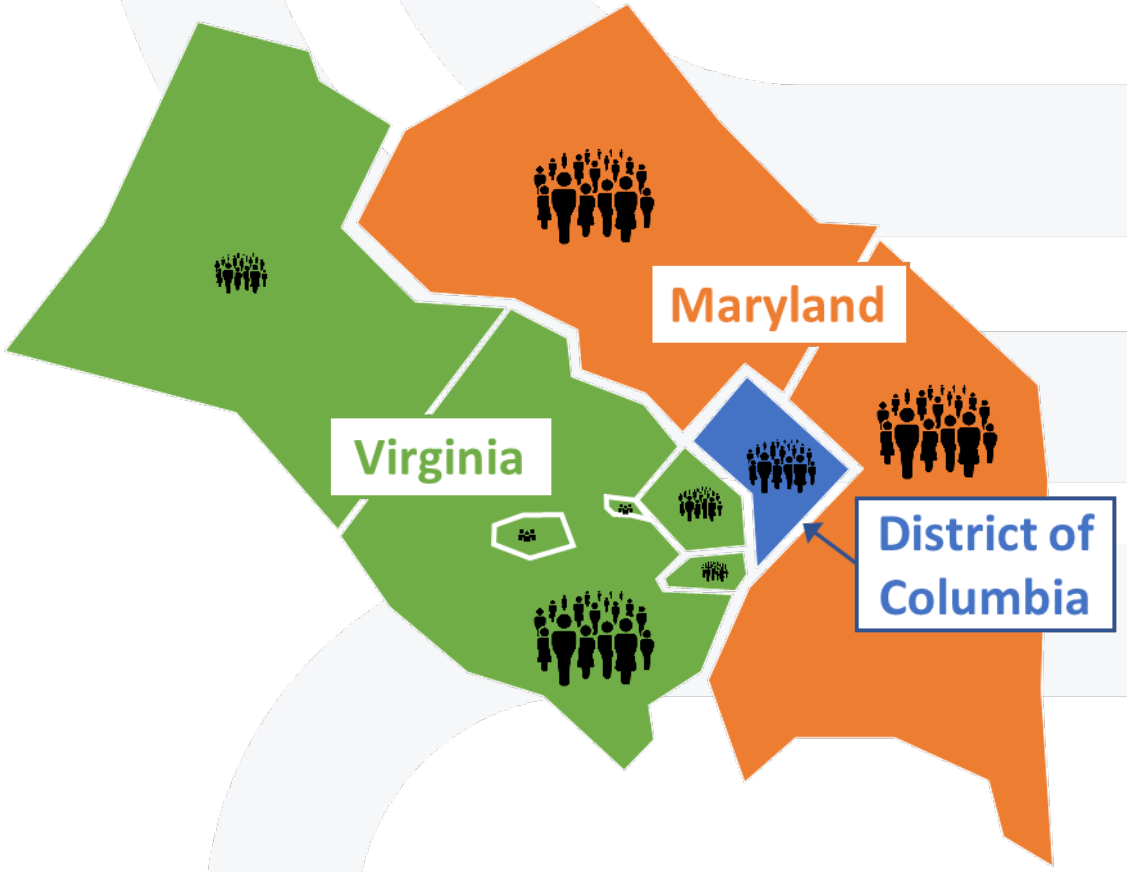
What it is: Population of each Compact jurisdiction per the most recent US Census*

Rationale:

- Recognizes that all the region's residents benefit from Metro
- Allocate based on resident users and non-users

Math:

$$\frac{\text{Jurisdiction Census population}}{\text{Compact area Census population}}$$



*Notes: Loudoun is excluded from the proposed bus formula population calculation

Restructure Concept: Ridership Overview

What it is: Count of weekly ridership by jurisdiction of residence (via passenger surveys)*

Rationale:

- Recognizes the region's transit riders benefit from Metro
- Allocate based on users

Math:

$$\frac{\text{Jurisdiction home ridership*}}{\text{Compact area ridership*}}$$

*Notes: Based on Passenger Surveys; Non-Compact riders are excluded

Restructure Concept: Rail Operating Infrastructure Costs Overview

What it is: Infrastructure and facility-related maintenance costs

Rationale:

- Recognizes cost to maintain rail infrastructure and facilities is independent of their utilization
- Recognizes key transit support functions, whose costs vary differently from service

Math:

Rail Infrastructure Cost Share*

×

Proposed FY Metrorail Costs

Infrastructure Cost Examples

- Track maintenance
- Structure maintenance
- Facility maintenance

*Notes: Based on National Transit Database Facility Costs

Restructure Concept: Rail Track Miles Overview

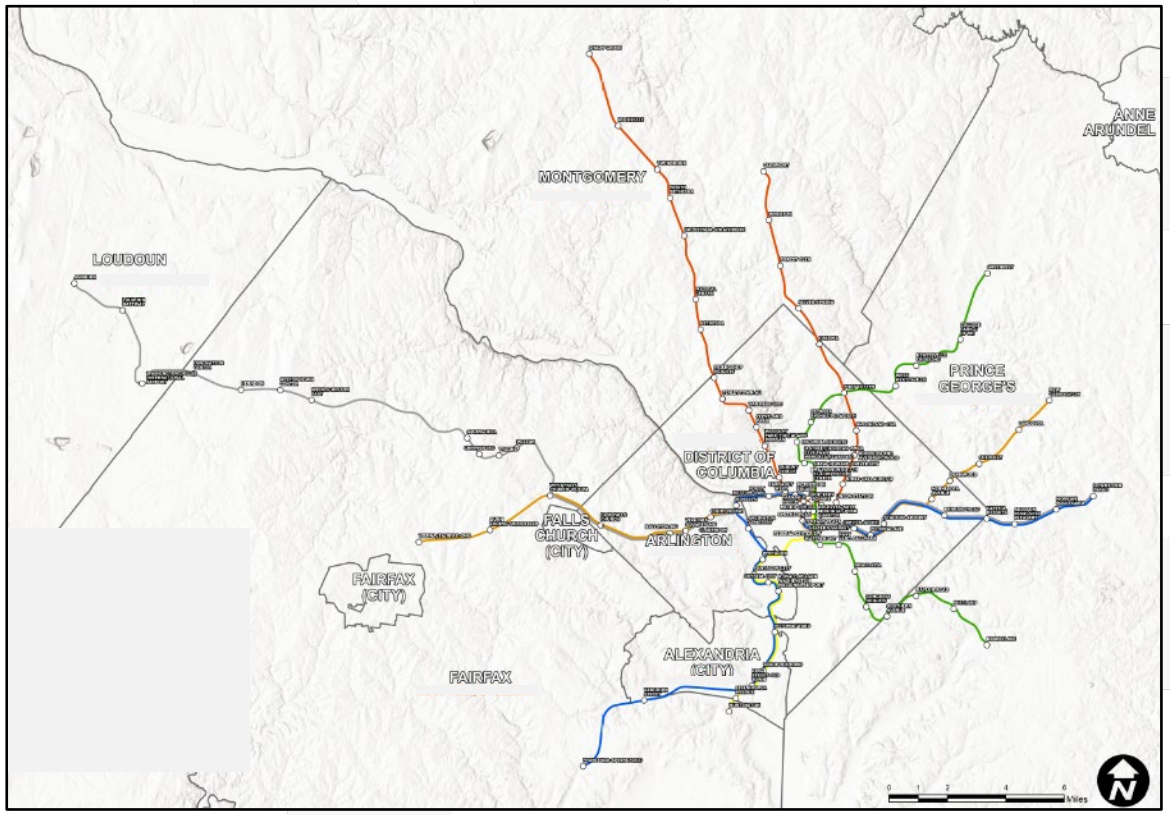
What it is: Metrorail track center line miles in each jurisdiction

Rationale:

- Recognizes cost to maintain linear infrastructure independent of its utilization
- Allocates costs by amount of track in each jurisdiction

Math:

$$\frac{\text{Jurisdiction track center line miles*}}{\text{Total track center line miles*}}$$



*Notes: Revenue track center line miles within each jurisdiction's borders, measured to each terminal station platform

Restructure Concept: Metro Stations Overview

What it is: Metro stations in each jurisdiction

Rationale:

- Recognizes cost to maintain stations and facilities independent of their utilization
- Aligns costs with number of stations in each jurisdiction (current allocation)*

Math:

$$\frac{\text{Stations in each jurisdiction*}}{\text{Total stations*}}$$

*Note: Arlington Cemetery is excluded. Border station allocations are based on the 1968 Adopted Regional System Capital Formula: Capitol Heights: 50% DC, 50% Prince George's Co., Friendship Heights: 50% DC, 50% Montgomery Co., Southern Ave: 27% DC, 73% Prince George's Co., Van Dorn St: 50% Alexandria, 50% Fairfax Co.

Restructure Concept: Bus Service Costs Overview

What it is: Bus operating costs that vary with service levels

Rationale:

- Recognizes transit operating functions that deliver service to customers and the region
- Allocate costs based on service and vehicle maintenance

Math:

Bus Service Cost Share*

×

Proposed FY Metrobus Costs

Service Cost Examples

- Cleaning of vehicles and facilities
- Fare collection
- Operators
- Revenue vehicle movement control (MICC)
- Transit police
- Vehicle inspection and maintenance
- Vehicle power

*Notes: Based on National Transit Database Vehicle Maintenance and Vehicle Operations costs.

Restructure Concept: Bus Revenue Hours Overview

What it is: Time (in hours) the vehicle travels while carrying customers.

Rationale: Industry standard measure of direct bus service costs by time.

Math:

Proposed FY Annual Revenue Hours by Line ✕
Proposed FY Annual Revenue Miles (%) by Jurisdiction

Total Proposed FY Annual Revenue Hours

Restructure Concept: Bus Peak Vehicles Overview

What it is: Budgeted weekly peak buses operated in each jurisdiction

Rationale:

- Recognizes linkage between peak service, fleet size, and vehicle maintenance costs

Math:

Proposed FY Weekly Peak Buses by Line ✕
Proposed FY Revenue Miles by Line (%) by Jurisdiction*

Total Proposed FY Weekly Peak Vehicles*

*Notes: Formula revenue peak vehicles excludes spares.

Restructure Concept: Rail Service Costs Overview

What it is: Rail operating costs that vary with service levels

Rationale:

- Recognizes transit operating functions that deliver service to customers and the region
- Allocate costs based on service and vehicle maintenance

Math:

Rail Service Cost Share*

×

Proposed FY Metrorail Costs

Service Cost Examples

- Cleaning of vehicles and facilities
- Fare collection
- Operators
- Revenue vehicle movement control (MICC)
- Station managers
- Transit police
- Vehicle inspection and maintenance
- Vehicle power

*Notes: Based on National Transit Database Vehicle Maintenance and Vehicle Operations costs.

Restructure Concept: Railcar Miles Overview

What it is: Proposed fiscal year annual railcar miles operated in each jurisdiction

Rationale:

- Recognizes key service cost driver, including unique rail costs (e.g., traction power)
- Combines service (miles) and capacity (cars) measures

Proposed FY Annual Railcar Miles by Line ✕
Proposed FY Route Miles (%) by Jurisdiction*

Total Proposed FY Annual Revenue Railcar Miles*

*Notes: Route miles are the one-way mileage for each line or route, accounting for service interlining.
-Formula revenue railcar miles excludes special event, gap trains, and spares.

Restructure Concept: Rail Peak Vehicles Overview

What it is: Budgeted weekly peak railcars operated in each jurisdiction

Rationale:

- Recognizes linkage between peak service, fleet size, and vehicle maintenance costs

Math:

Proposed FY Weekly Peak Railcar by Line ✕
Proposed FY Route Miles (%) by Jurisdiction*

Total Proposed FY Weekly Peak Vehicles*

*Notes: Route miles are the one-way mileage for each line or route, accounting for service interlining.
- Formula revenue peak vehicles excludes special event, gap trains, and spares.

Appendix Part IV

Other Concepts Considered

Other Formula Components Considered

Mode	Concept	Rationale for Exclusion
Bus	Density-weighted population	Complicated, confusing
Rail	Revenue hours	Car miles includes service & capacity
Bus	Revenue miles	Used to assign routes to jurisdictions
Bus	Platform miles	Not aligned with industry standard
Bus & Rail	Total (tap + non-tap) ridership	Doesn't incentivize action to reduce fare evasion
Rail	Station infrastructure (entrances, mezzanines, etc.)	Complicated
Rail	Incentivizing transit-oriented development	Allocating ridership provides incentive
Bus	Incentivizing bus priority	Difficult to quantify
Bus	Credit for serving equity communities	Complicated, not transparent, built into service parameters