



**Finance and Capital Committee**

**Information Item IV-A**

**January 11, 2024**

**FY2023 Environmental Sustainability Annual Report**

**Washington Metropolitan Area Transit Authority  
Board Action/Information Summary**

<input type="radio"/> Action <input checked="" type="radio"/> Information	Document Number: 205676	Resolution: <input type="radio"/> Yes <input checked="" type="radio"/> No
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**Presentation Name:**

FY2023 Environmental Sustainability Annual Report

**Project Manager:**

Tom Webster

**Project Department:**

Planning & Performance

**Purpose/Key Highlights:**

Update the Board on FY2023 performance on environmental sustainability metrics, included in Goal 4: Sustainability of Board-adopted Strategic Transformation Plan, *Your Metro, the Way Forward*.

- Metro is inherently sustainable – every transit trip fosters a healthy region and prevents greenhouse gas emissions by reducing travel-related carbon emissions. Metro is essential to a sustainable region.
- Metro’s Board-adopted strategic transformation plan and goals provide an ongoing framework that promotes sustainability and guides long-term policy and investment decisions.
- Metro’s environmental sustainability performance is trending in the desired direction. Drastic cuts to service and reduced capital investment to close funding gap jeopardize this progress.

**Interested Parties:**

No interested parties have been identified for conflict-of-interest purposes.

**Background:**

In 2023, the Board of Directors adopted the Strategic Transformation Plan: *Your Metro, The Way Forward*, which sets a vision to become the region’s trusted way to move more people safely and sustainably with four primary goals of Service Excellence, Talented Teams, Regional Opportunity and Partnership, and Sustainability.

The strategic plan builds on and includes the concepts found in the previously adopted Sustainability Vision and Sustainability Principles, recognizing sustainability as a core value of Metro as well as a cost-effective way to improve performance, achieve climate and environmental goals, and contribute to livable and equitable communities.

Metro is committed to providing annual updates on the Strategic Transformation Plan progress; this presentation serves as the FY2023 Environmental Sustainability Annual Report.

### **Discussion:**

Metro's goal is to provide the region with a world-class integrated transit system offering all-day, safe, customer-focused service through modernized vehicles and infrastructure. Metro's core strategic goals of service excellence, talented teams, regional partnership, and sustainability guide our mission to continue to improve service for the region. While recent service improvements, simpler fares, and renewed emphasis on customer experience are growing ridership, customer satisfaction, and climate benefits, additional targeted investments in transit are needed for the region to grow and meet its economic, mobility, and environmental goals.

Regional and federal partners have adopted ambitious sustainability, climate, and energy goals. These plans have highlighted the need to improve mobility and reduce greenhouse gas emissions, including targets to reduce vehicle miles traveled. Frequent, reliable transit service is essential to meeting the region's sustainability goals.

Metro helps the DMV reduce travel-related carbon emissions and promotes clean air, health, and liability. In addition, Metro is a major energy consumer and can support regional decarbonization efforts by reducing energy and resource consumption, increasing energy efficiency, investing in carbon-free clean energy sources (like solar), and transitioning to zero-emission vehicles in line with regional sustainability efforts and innovations.

Metro continues to work towards targets established within the Environmental Sustainability goal of the Strategic Transformation Plan. Environmental Sustainability performance is trending in the desired direction as summarized below. Drastic cuts to service and reduced capital investment to close funding gap jeopardize this progress.

### **Environmental Sustainability Goal-level Metric**

The Strategic Transformation Plan (STP) goal-level metric for Environmental Sustainability is to reduce travel-related carbon emissions in the DMV.

### **Regional Greenhouse Gas Emissions Avoidance**

STP target: Increase greenhouse gas emissions avoidance by 10% by 2028

Key takeaway: Metro delivers emissions reductions to the DMV and its residents

Metro's biggest regional impact is the service we provide. Metro reduces regional greenhouse gas emissions by providing a lower-carbon transportation option for the region's residents and visitors. We use the regional greenhouse gas emissions avoidance metric to measure our positive environmental impact on the region.

As Metro's ridership grows, our positive environmental impact increases – helping the region meet clean air and emissions reduction goals.

In FY2023, Metro prevented more than 78,000 metric tons of carbon dioxide equivalent from entering the atmosphere – equivalent to emissions from about 200 million miles driven in an average gasoline-powered passenger vehicle.

Increased ridership along with Metro's decarbonization – including energy and cost efficiency investments, transition to zero-emission fleets, and clean power – will boost sustainability benefits.

Investing in high-quality transit is essential to meeting the region's climate goals. Drastic cuts to close the funding gap would prevent the region from reaching its sustainability and transportation emissions reduction targets.

### **Environmental Sustainability Objective-level Metrics**

To deliver its goal-level environmental sustainability metric, Metro has objective-level metrics to improve the environmental sustainability of Metro operations.

#### **Greenhouse Gas Emissions Per Revenue Mile**

STP target: Zero greenhouse gas emissions per revenue mile by 2050

Key takeaway: Metro's carbon emissions per service mile are decreasing – clean energy sources and efficiency investments reduce emissions

Metro uses greenhouse gas emissions per revenue mile to track our efforts to decarbonize each mile of service. Combined with ridership, this metric supports increased regional greenhouse gas emissions avoidance.

Metro's greenhouse gas emissions per revenue mile are decreasing. In FY2023, Metro reduced greenhouse gas emissions per revenue mile – from 2.9 kilograms in FY2022 to 2.4 kilograms in FY2023 (an 18% improvement). Factors influencing performance include facilities, equipment, and infrastructure; vehicle propulsion systems; and energy supply sources. Metro has several actions underway to continue lowering emissions, including investing in energy-efficient vehicles, equipment, and practices; procuring clean energy; and developing a decarbonization strategy for future initiatives.

#### **Renewable (Carbon-free) Electricity**

STP target: 100% renewable (carbon-free) electricity by 2033

Key takeaway: Metro is transitioning to clean electricity

As one of the largest energy users in the region, Metro supports the region's clean energy transition and keeps our energy costs low by strategically engaging with the market.

Metro has initiated our transition to clean electricity in line with Metro's Strategic Transformation Plan target, and in FY2023, 35 percent of Metro's electricity was renewable. By purchasing electricity from the grid combined with renewable energy certificates, Metro powers facilities, buses, and rail with renewable electricity and supports the growth of the clean energy industry. The path forward to 100% renewable electricity will include investments in on-site renewables, requiring renewable energy certificates, and identifying and pursuing opportunities in the evolving renewable energy market.

Opportunities to purchase renewable electricity through supply contracts differ by jurisdiction.

- In the State of Maryland and the District of Columbia, energy markets are deregulated, where we can seek third-party contracts for electricity supply. Through this approach, Metro secures fixed-priced contracts for electricity supply that last 3-5 years, locking in rates that are lower than the local utility. Our current contracts in D.C. and MD were secured in partnership with the General Services Administration (GSA) resulting in favorable pricing, lower administrative costs, and renewable energy requirements.
- In the Commonwealth of Virginia, the energy market is regulated by its State Corporation Commission, where the state utility provides both supply and distribution of electricity. Metro is part of a cooperative purchasing agreement, managed by the Virginia Department of Energy, where rates and renewable requirements are approved through a regulatory process. Metro is exploring opportunities for renewable energy opportunities within that cooperative agreement.

### **Green-certified Facilities**

STP target: 18 green-certified facilities by 2028

Key takeaway: Metro prioritizes resource and cost efficiency through green certifications

Metro uses third-party green certifications, including the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®), as a framework for modernizing facilities. Green-certified facilities reflect our dedication to a healthy work environment, cost-efficient and responsible resource management, and being a good neighbor in the community.

In FY2023, Metro's portfolio included 11 green-certified facilities, certified to LEED® Silver or better. In FY2024 Q1, L'Enfant Headquarters received LEED® Platinum certification, increasing the cumulative total green-certified facilities to 12. Through

energy-efficient design and construction, the Headquarters building achieved a perfect score of 100 on the Energy Star scale – reducing its annual energy use costs by 35 percent. Metro has three facilities built to LEED® standards and awaiting certification – Potomac Yard Station, Eisenhower Office Building, and New Carrollton Office Building. In addition, three projects underway are being designed to LEED® standards – Northern Bus Garage, Bladensburg Bus Garage, and Metro Transit Police Department Substation III.

### **Zero-Emission Fleets**

STP targets:

- 100% zero-emission bus fleet by 2042
- 100% zero-emission non-revenue fleet by 2050
- 100% zero-emission paratransit fleet by 2050

Key takeaway: Zero-emission fleet transition is underway

Zero-emission fleets promote clean air, health, and livability. Zero-emission fleet planning is underway.

- Bus: The Zero-Emission Bus Transition Plan accelerated by three years – providing a path to a 100 percent zero-emission bus fleet by 2042. In FY2024, Metro entered two new 60-foot electric buses into service on the W4 route from Anacostia to Deanwood and expects to begin receiving an additional ten 40-foot electric buses in 2024. Metro plans to award a contract as part of its next five-year bus procurement that will include battery-electric buses and continue construction at Northern and Bladensburg garages and planning for Cinder Bed Road division to support zero-emission buses.
- Non-revenue and paratransit: Metro is planning 100 percent zero-emission non-revenue and paratransit service by 2050. In FY2024, we launched an update to the non-revenue fleet plan that includes the evaluation of zero-emission technology for vehicle replacements. We are also planning a market and technology assessment and a zero-emission vehicle transition plan for MetroAccess.

### **Water Use Per Revenue Mile**

STP target: <1 gallon per revenue mile

Key takeaway: Metro’s water intensity is better than target

Metro is committed to resource efficiency, including managing our water intensity, which is how many gallons of water are required to provide a unit of service. Water is used in chillers to cool rail stations, at bus garages and rail yards for vehicle washing, and in administrative/support facilities.

In FY2023, our water intensity is 0.81 gallons per vehicle revenue mile— better than the target. Metro is investing in modern equipment to decrease water consumption, including chiller replacements and remote monitoring systems at rail stations; LEED®

facilities with high-efficiency equipment at support facilities, rail yards, and bus garages; and bus wash water reuse at bus garages.

### **Opportunities to drive regional sustainability forward**

Metro is committing staff and investing resources towards achieving environmental sustainability goals; however, collaboration from regional and federal partners through sufficient funding and supportive policies is necessary to expand opportunities and ensure success in delivering key regional benefits and achieving policy goals. This includes continued funding for capital and operations and support of future redesigned bus network and other service and fare improvements. More people riding transit is the key to decarbonization. Our additional efforts – from energy efficiency and transitioning to zero-emission vehicle fleets to investing in clean energy – will provide cost efficiencies and environmental benefits. Metro continues to maximize and accelerate the benefits of sustainable and climate-resilient investments and looks forward to continued partnership with the region.

### **Funding Impact:**

There is no direct funding impact.

### **Previous Actions:**

Sustainability Vision and Principles (June 2021): [Sustainability and Metro Bus Fleet \(wmata.com\)](#)

Strategic Transformation Plan (February 2023): [MEAD 203431 – Adoption of Your Metro, T...EAD Metro Electronic Action Document \(wmata.com\)](#)

### **Next Steps:**

FY2024 Environmental Sustainability Annual Report

### **Recommendation:**

Information Only

# FY2023 Environmental Sustainability Annual Report

Finance & Capital Committee  
January 11, 2024







# Environmental Sustainability, a strategic goal in *Your Metro, the Way Forward*



### Service excellence

*Deliver safe, reliable, convenient, equitable, accessible, and enjoyable service for customers.*



### Talented teams

*Attract, develop, and retain top talent where individuals feel valued, supported, and proud of their contribution.*



### Regional opportunity & partnership

*Design transit service to move more people and equitably connect a growing region.*



### Sustainability

*Manage resources responsibly to achieve a sustainable operating, capital, and environmental model.*

Focus today

*Objectives of Sustainability Goal*

**Financial Sustainability** | Establish dedicated, ongoing, regional funding to support multi-year operating and capital plans and steward public investment

**Environmental Sustainability** | Take action to combat climate change, adapt to its impacts, and steward natural resources





# Scorecard: Environmental Sustainability metrics trending in the right direction

Strategic Transformation Plan Goal/Objective	Metric	Target	Trending in the right direction?	Status?
<b>Goal: reduce travel-related carbon emissions in DMV</b>	<b>+ Regional greenhouse gas emissions avoidance</b>	<b>Increase emissions avoidance by 10% by 2028</b>	✓	●
Objective: improve environmental sustainability of Metro operations	+ Greenhouse gas (GHG) per revenue mile	Zero greenhouse gas emissions per revenue mile by 2050	✓	●
	+ Percent of renewable (carbon-free) electricity	100% renewable (carbon-free) electricity by 2033	✓	●
	Number of facilities with green certifications	18 green-certified facilities by 2028	✓	●
	Percent of fleet that is zero-emission	100% zero-emission bus fleet by 2042	✓	●
		100% zero-emission non-revenue fleet by 2050	✓	●
		100% zero-emission paratransit fleet by 2050	✓	●
	Water use per revenue mile	<1 gallon per revenue mile	✓	●





# Metro is essential to a sustainable region

More people riding transit is key to meeting the region's sustainability goals

- Every transit trip **fosters a healthy region** and **prevents greenhouse gas emissions** by reducing travel-related carbon emissions
- Transit also promotes **equity, environmental stewardship, economic prosperity, and social wellbeing**





# Regional and Federal Policy Sustainability Goals

Sufficient funding and supportive policies ensure Metro delivers what the region and federal partners need to meet ambitious sustainability goals





# Metro delivers emissions reductions to the DMV and its residents



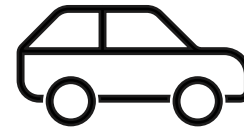
## Net Regional Emissions Avoidance

Direction of desired performance: **up** ↑

- As Metro’s ridership grows, our positive environmental impact increases – helping the region meet emissions reduction goals
- In FY2023, more than 78,000 metric tons of emissions were avoided, equivalent to** →
- Increased ridership along with Metro’s decarbonization – including energy and cost efficiency investments, transition to zero-emission fleets, and clean power – will boost sustainability benefits



...the **carbon absorbed by a forest about twice the size of Washington, D.C.**



...the **emissions from about 200 million miles** driven by an average gasoline powered passenger vehicle



...the **emissions from generating electricity used for about 15,000 homes** in a year

-Comparisons generated from EPA Greenhouse Gas Equivalencies Calculator: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

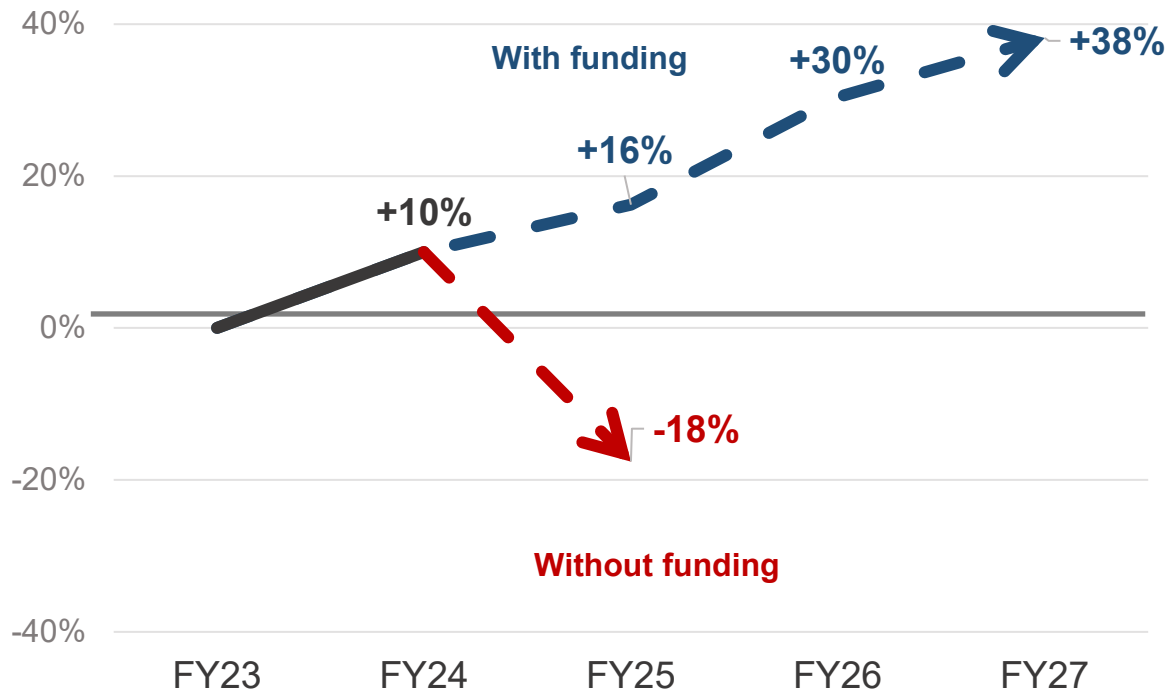
-More than 78,000 metric tons of annual avoided emissions is a net estimate derived from subtracting service delivery emissions from estimated gross annual avoided emissions due to mode shift to Metro service; methodology based on APTA’s 2009 Recommended Practice Quantifying Greenhouse Gas Emissions from Transit. Updates are underway to align this metric with APTA’s current recommendation





# Investing in high-quality transit is central to meeting the region's climate goals

Potential percent change in total regional emissions avoided due to transit ridership



## Environmental impact of service cuts

- Drastic service cuts to close the funding gap would lead to a projected increase in vehicle miles traveled and congestion:
  - 120,000 metric tons of emissions-- equivalent to emissions from about 310 million miles driven by an average gasoline powered passenger vehicle
  - Prevents the region from reaching its sustainability and transportation emissions reductions targets





# Metro’s carbon emissions per service mile are decreasing – clean energy sources and efficiency investments reduce emissions



## Path to zero emissions by 2050

Direction of desired performance: **down** ↓

- Reduced greenhouse gas emissions per revenue mile – from 2.9 kilograms in FY2022 to 2.4 kilograms in FY2023 (an 18% improvement)
- Factors influencing performance:
  - Facilities, equipment, and infrastructure
  - Vehicle propulsion systems
  - Energy supply sources
- Actions we are taking:
  - Invest in energy efficient vehicles, equipment, and practices
  - Procure clean energy
  - Develop decarbonization strategy for future initiatives

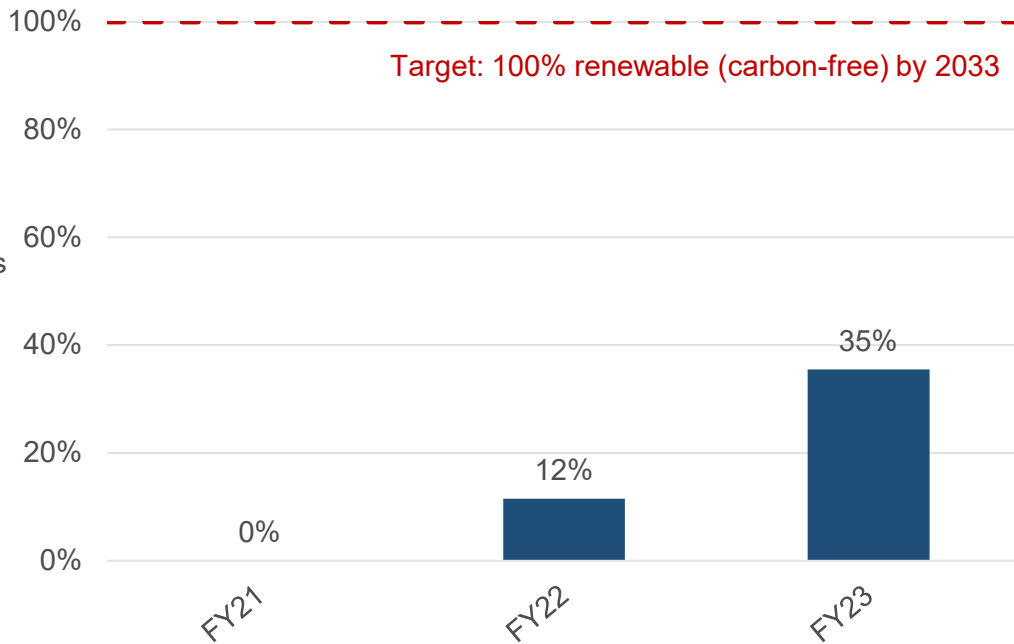




# Metro is transitioning to clean electricity

## Renewable Electricity Usage

Direction of desired performance: **up** ↑



Metro uses almost **800,000,000 kilowatt hours** of electricity every year – about equal to the **energy consumption of 31 Nationals Park stadiums**



## 35% renewable electricity in FY2023

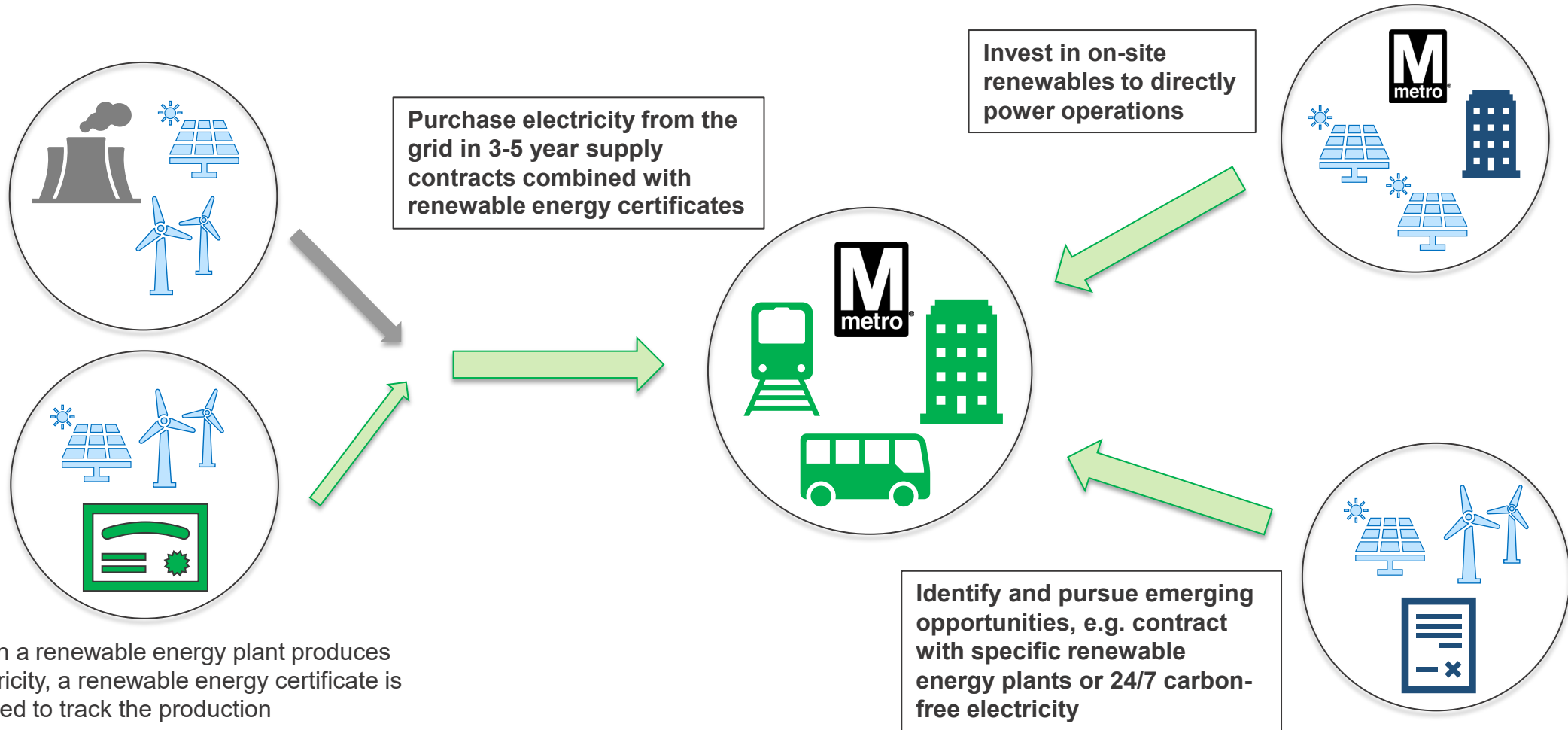
- One of the largest energy users in the region
- Supports the region’s clean energy transition and keeps costs low by strategically engaging with the market
- Partnered with the General Services Administration (GSA) to purchase energy:
  - Secure favorable pricing
  - Lower administrative costs
  - Renewable energy requirements
- Clean energy approach includes:
  - Investing in on-site renewables (e.g. solar)
  - Requiring renewable energy certificates
  - Identifying and pursuing emerging opportunities







# Path to 100% renewable, carbon-free electricity



When a renewable energy plant produces electricity, a renewable energy certificate is created to track the production

*Supports financing of renewable energy generation*

*Directly supports construction of new renewables with a potential local element*





# Opportunities to drive regional sustainability forward



## Regional Partnership

Prioritizing transit, walking, and biking reduces vehicle miles traveled and boosts regional benefits

Examples: Transit Oriented Development, Bus Priority Lanes

## Service

Frequent, reliable service optimizes existing transit investments

Examples: Better Bus Network Redesign, all-day all-week frequent service

## Modernization

Transitioning to cleaner fuels and enhancing energy and cost efficiency

Examples: 8000-series railcars, on-site solar

# Appendix





# Green certifications as a framework for facility modernization

## Green-certified Facilities

Direction of desired performance: *up* ↑

Target: 18 green-certified facilities by 2028



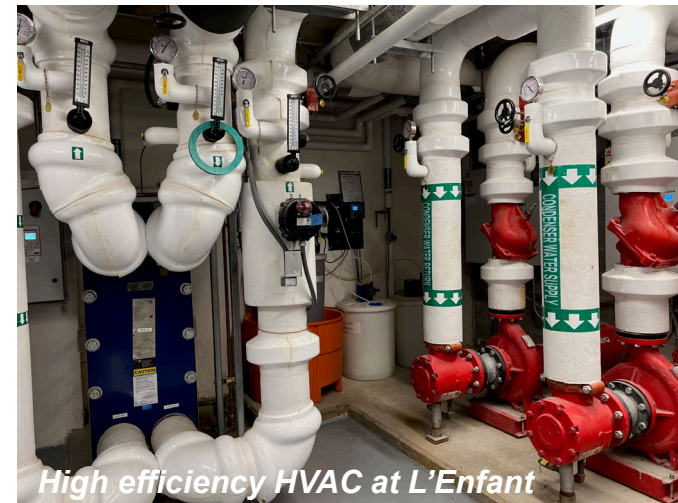
In FY2024 Q1, Metro's L'Enfant Headquarters received LEED® Platinum certification – increasing the cumulative total green-certified facilities to twelve.



## Metro prioritizes resource and cost efficiency

At L'Enfant Headquarters, we delivered:

- Perfect score of 100 on the Energy Star® scale, resulting in 35% energy use cost reduction
- Energy saving lighting, automatic lighting controls, and high-performance heating, ventilation, and air conditioning systems
- Efficiencies, including cooling tower water reuse and touchless fixtures, reduce water use by 41%



High efficiency HVAC at L'Enfant



# Zero-emission fleets promote clean air, health, and livability



## Fleet transitions underway

- Zero-Emission Bus Transition Plan accelerated by three years – providing path to 100% zero-emission bus service by 2042
- Two battery-electric buses entered service in 2023; deliveries of additional 10 begin in 2024
- Electrification of Northern, Bladensburg, and Cinder Bed bus garages underway
- Transition planning for 100% zero-emission non-revenue and paratransit service vehicles by 2050 underway



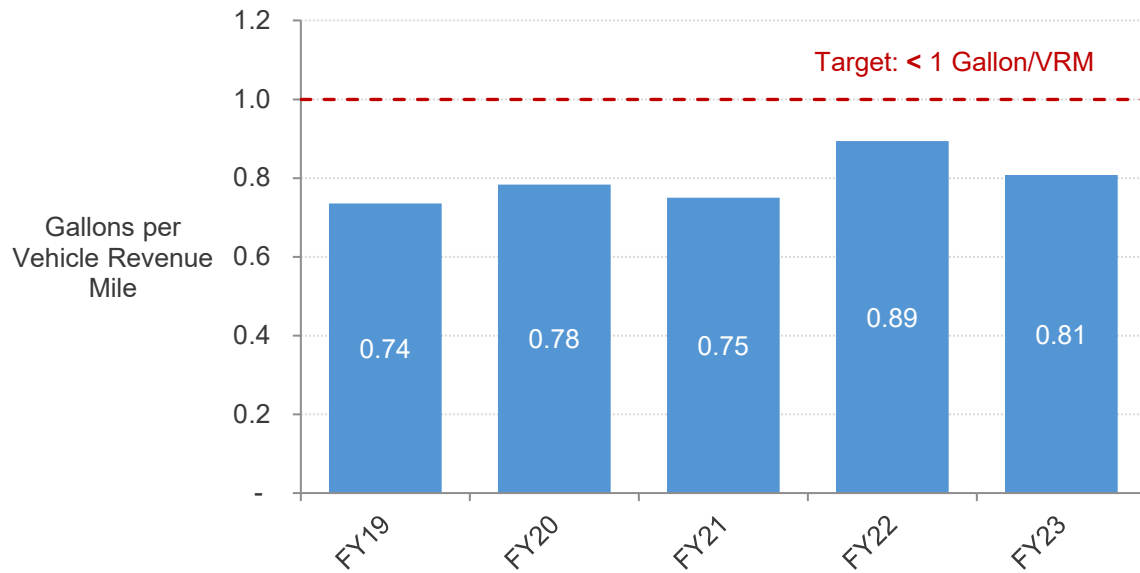
Two new 60-foot electric buses in service on the W4 route from Anacostia to Deanwood in November 2023



# Metro's water use intensity is better than target

## Water Use Per Revenue Mile

Direction of desired performance: **down** ↓



FY2023 water use intensity better than target: 0.81 gallons per revenue mile



## Modernization for efficient water use

- High-efficiency equipment at LEED®-certified facilities (e.g., bus garages, rail yards, support facilities)
- Bus wash water reuse at bus garages
- Chiller upgrades
- Remote chiller water monitoring and treatment systems

