



Executive Committee

Information Item III-A

July 13, 2023

Sustainability Update

Washington Metropolitan Area Transit Authority

Board Action/Information Summary

☐ Action ☒ Information

Document
Number:
205511

Resolution:
☐ Yes ☒ No

Presentation Name:

Sustainability Update

Project Manager:

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Project Department:

Planning and Performance

Purpose/Key Highlights:

This presentation provides an overview of sustainability at Metro and an update on initiatives that are advancing the Environmental Sustainability objectives of Metro's Strategic Transformation Plan, Your Metro, The Way Forward. The presentation highlights Metro's role as a force-multiplier and driver of progress towards federal and regional priorities and outlines the need for partnership to advance the sustainability of Metro and the region moving forward.

Key Highlights:

- Metro's Board-adopted strategic transformation plan and goals provide an ongoing framework that promotes sustainability and will help guide long-term policy and investment decisions.
- Metro is inherently sustainable and Metro's work in environmental sustainability is critical to achieving regional and federal mobility and climate goals.
- Metro's sustainability program leverages opportunities and partnerships to successfully deploy sustainability projects and continues to deliver projects that advance Metro's mission and regional and federal priorities.

Interested Parties:

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

Background:

As a vital transportation link that occupies and connects communities, a major employer and purchaser of goods and services, and one of the region's largest energy consumers, Metro's investments and operational decisions have immediate and significant impacts on health, equity, economic prosperity, and the overall social and economic wellbeing of the region.

Earlier this year, the Board of Directors adopted a new Strategic Transformation Plan: Your Metro, The Way Forward, which sets a vision for Metro 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 eight 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's sustainability framework, along with our strategic goals and objectives, commit us to planning, partnering, designing, building, operating, and maintaining transit infrastructure to meet our current needs without compromising the future needs of the region.

Discussion:

Sustainability is core to Metro's business and rooted in the belief that beyond providing mobility, public transit is also a tool to promote environmental and natural resource stewardship, economic prosperity, equity, health and social wellbeing.

Transit is essential to reaching the region's sustainability and greenhouse gas reduction goals. By providing safe, affordable, reliable, equitable, and efficient transportation, Metro helps to create connected communities where trips can be made by walking, biking, and transit. In addition, since Metro is more energy-efficient than cars, every trip taken with Metro instead of a car reduces greenhouse gas emissions and helps ensure clean air in the region. Last year, Metro customers rode 760,000,000 miles on bus and rail. That's the same distance as driving to the moon and back 1,590 times. By using simple math, if you take Metro for those many miles instead of driving, approximately 240,000 metric tons of tailpipe emissions were avoided in 2022 alone.

Metro's service and fare enhancements are critical to ensuring more people ride transit, which in turn helps meet our climate goals. Metro also relies on collaboration across the region for supportive investments and policies that drive increased ridership – including in the areas of compact land use, transit-oriented development and affordable housing, and bus priority treatments. Transitioning Metro's bus fleet to lower- and zero-emission vehicles represents an opportunity to further reduce regional greenhouse gas emissions and improve local air quality.

Significant action and progress have already been made towards Metro's Sustainability goals and Metro continues to build on our strong fundamentals to drive

sustainability forward and work towards targets that have been established within our Environmental Sustainability objective. Much progress has been achieved through incremental investments in our ongoing capital program as we replace equipment with modern efficient choices, such as energy-efficient equipment upgrades, and as we make updates to operational practices that embed sustainability into everything Metro does. We are taking actions within the three preliminary initiative areas identified in the strategic transformation plan, as follows:

(1) Decarbonize Metro infrastructure and equipment to eliminate use of fossil fuels from Metro business

• Increasing Energy Efficiency and carbon-free electricity

Metro is one of the largest energy users in the region and energy costs are Metro's largest operation expense after labor, so our strategy and actions in this area are important to the region and the Authority. Metro's path to decarbonization can be achieved both by continuing to advance energy efficiency investments and by transitioning to cleaner energy sources.

In 2019, Metro developed our first ever Energy Action Plan. We have made significant progress implementing this plan and will continue to make recommended efficiency investments within our ongoing capital infrastructure program, modernize our practices, and engage dynamically in the energy market. For example, we have substantially completed an Authority-wide energy efficient lighting program to replace lamps with energy-efficient LED (Light Emitting Diode) technology, which not only improves lighting quality, safety and security for Metro employees and customers, but reduces maintenance costs associated with longer lifespan. We are also modernizing traction power and investing in ways to repurpose excess train braking energy. These efficiency investments yield a significant return: to-date, Metro has received ~\$1.5 million in one-time energy efficiency rebates from utilities and avoids ~\$7 million in annual energy costs. Forthcoming improvements include a return to Automatic Train Operations and the introduction of new lighter weight 8000-series railcars.

We have also made progress increasing our supply of clean electricity. Just a couple of years ago (FY2021), none of the electricity supplied to Metro came from renewable/carbon-free sources. Today (FY2023), 35% of our electricity is from carbon-free sources, which not only helps achieve decarbonization goals, but also helps to reduce Metro's exposure to volatile and increasing energy prices.

• Generating renewable energy

Metro is currently leveraging its real estate portfolio to deliver renewable energy to local communities through the innovative and community-oriented solar carport project. In 2020, Metro negotiated a 25-year contract with private entities to install, own and operate solar carports at four Metro sites. Construction at Southern Ave, Naylor Rd and

Anacostia is substantially complete, with energization expected in fall 2023. At Cheverly, which is the final site, construction was recently initiated, with energization expected in 2024. When these solar carports are operational, the resulting 11 acres of solar panels (equivalent to 8 football fields) will collectively generate enough clean

electricity to power 1,100 homes, making this project one of the largest community solar projects in the Mid-Atlantic and in the nation.

Solar is currently being planned for several new facilities, including the Bladensburg and Northern bus garages and the Heavy Repair & Overhaul facility. In addition, Metro is working to update solar specifications to align with industry standards.

- **Decarbonizing vehicle fleets**

Metro is actively pursuing a transition to zero-emission vehicle fleets. In alignment with Metro's Zero-Emission Bus Transition Plan, the Board recently adopted an accelerated goal to deliver a 100% zero-emission bus fleet by 2042. Metro will continue to seek opportunities to accelerate where possible. In addition, Metro is planning for initial deployment and transition plan development for our non-revenue and paratransit vehicle fleets.

(2) Optimize Natural Resource Stewardship to protect, conserve, and enhance places where Metro operates

- **Reducing waste from construction**

Metro undertakes a lot of construction activity - through new and rehabilitation projects at our facilities. Metro's utilization of Leadership in Energy and Environmental Design (or LEED®) standards for all new construction and substantial rehabilitation projects. The use of LEED® has resulted in significant amounts of waste (~80-90%) being diverted from recent construction projects, including our D.C. and MD office buildings, the Andrews Bus Garage project, and Dulles Rail Yard buildings.

- **Increasing tree canopy**

Trees improve customer experience by offering shade and green space and also providing health and environmental benefits. Trees also reduce stormwater runoff, improve wildlife habitat, and clean the air by absorbing and storing carbon dioxide (CO₂). In addition, a growing body of research shows that regularly spending time around trees provides a wide range of human health benefits, from lowering stress to improving cognition to boosting longevity.

Over the last couple of years, Metro partnered with the Anacostia Watershed Society to plant over 385 trees at four Metrorail stations in Maryland and D.C. - Anacostia, Suitland, Hyattsville Crossing, and West Hyattsville. Over the next 20 years, these trees are expected to sequester over 100,000 pounds CO₂ and intercept rainwater to mitigate two million gallons of stormwater.

(3) Modernize Metro infrastructure and equipment to meet sustainability and climate resiliency challenges

- **Using green certifications to modernize facilities**

The Leadership in Energy and Environmental Design (LEED®) Certification, developed by the U.S. Green Building Council, provides a framework for modern, resource-efficient, cost-effective buildings that streamline systems to save energy

and reduce costs. LEED® design also supports employee wellness, health, and comfort through good air quality, ventilation, natural lighting, and access to green space. Studies suggest that an initial up-front investment of 2% extra (in building to LEED) yields over ten times that initial investment over the life cycle of the building. On average, LEED-certified buildings use 25% less energy and have 19% lower maintenance costs than non-certified facilities (compared to the national average).

Building off the Board adoption of a LEED® policy in 2008, the Energy Action Plan released in 2019 adopted the LEED® framework as best practice to achieve full life-cycle cost analysis, increased energy efficiency, and reduced operation costs. Today, all new and “significantly renovated” Metro buildings are being designed to LEED® Platinum standards. Metro has completed 11 LEED® certifications. Four facilities (L’Enfant Headquarters building, the New Carrollton and Eisenhower office buildings, and Potomac Yard-VT Metrorail station) have been designed and built to LEED® and are awaiting final certification. Four additional facilities (Heavy Repair & Overhaul facility, Northern and Bladensburg Bus garages, and MTPD (Metro Transit Police Department) District 3 substation) are currently being designed to LEED® standards.

• **Promoting innovation and best practice adoption**

Metro works to promote innovation and best practice adoption in a couple of key ways. The annual Sustainability Awards Program recognizes employees for their work to advance sustainable innovation and best practices at Metro through projects, programs and initiatives. In 2023, Metro celebrated 34 employees from nearly every department across Metro.

Further, Metro’s Sustainability Lab evaluates and supports new sustainability practices and technologies. Current projects include the testing of battery-powered track maintenance equipment and battery/electric leaf blowers.

Upcoming opportunities to drive sustainability forward:

- Decarbonization Strategy
- System-level Climate Risk Assessment
- Additional LEED facilities
- Solar at New Facilities
- Study Customer EV Charging at Metro stations
- Sustainable materials management program
- New lighter weight 8000-series railcars
- Automatic Train Operations
- Better Bus Network Redesign

Metro is committing staff and investing resources towards achieving sustainability goals; however, collaboration from regional and federal partners through sufficient funding and supportive policies is necessary to expand opportunities and ensure Metro’s 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. Getting more people riding transit is one of the most important things we can do to drive

decarbonization. Our additional efforts – from transitioning to zero-emission vehicle fleets to generating additional renewable energy – will provide further 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:

Recommendation:

Information Only

Sustainability Update

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Purpose

- Sustainability Overview
- Accomplishments to-date
- Ongoing Activities
- Partnership Required for Success



Metro Advances Regional Sustainability

Metro's Mission: Your Metro – Connecting you to possibilities

Metro's Vision: The region's trusted way to move more people safely and sustainably

Goals:

- Goal 1: Service Excellence
- Goal 2: Talented Teams
- Goal 3: Regional Opportunity and Partnership
- **Goal 4: Sustainability**
 - **Objective 4B: Environmental sustainability**

**Your Metro,
The Way Forward**
Strategic Transformation Plan



Metro is inherently sustainable

Providing Service, by the Numbers

3rd largest
heavy rail system



6th largest
bus network in the US



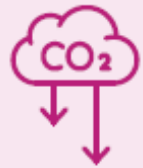
~5 million
people in
service territory



220 million+
rides a year across
bus, rail & paratransit



Impacting Communities



240,000
metric tons of CO₂e
avoided each year



32
transit-oriented
development
projects

70%

of region's jobs are within
a half-mile of a Metrorail
station or Metrobus stop



Employs approximately
12,000+
people



- Beyond moving people, transit promotes **equity, environmental stewardship, economic prosperity, and social wellbeing**
- Every transit trip taken instead of a car reduces greenhouse gas emissions and supports cleaner air

More people riding Metro is key to meeting regional carbon reduction goals



Environmental Sustainability Initiatives and Targets



Decarbonize Metro infrastructure and equipment



Optimize natural resource stewardship



Modernize design, construction, and operations

Environmental Sustainability targets:

- Increase regional GHG emission displacement by 10%
- Increase number of facilities with green certifications
- Maintain water use per revenue mile at <1
- Increase to 100% carbon-free electricity by 2033
- Achieve 100% zero-emission bus by 2042
- Achieve 100% zero-emission non-revenue and paratransit fleets by 2050
- Achieve net-zero carbon by 2050

Increasing energy efficiency and carbon-free electricity



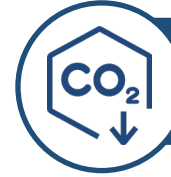
Efficiency & Carbon-free Electricity

- Energy efficiency investments have yielded significant annual energy reductions and cost avoidances to-date
 - ~\$7 million annual energy cost avoidance
 - ~\$1.5 million in one-time energy efficiency rebates from utilities
- Example efficiency investments include:
 - Automatic Train Operations (ATO)
 - 8000-series railcars
- Percent of Metro's renewable (carbon-free) electricity increased from 0% FY2021 to 35% in FY2023

Generating Renewable Energy



Solar Installation at Anacostia Garage



On-Site Solar

- 10 MW solar carport lease – generating enough clean electricity to power 1,100 homes
 - Construction substantially complete and energization anticipated fall 2023 at: Southern Ave, Naylor Road, Anacostia
 - Construction initiated and energization anticipated summer 2024 at: Cheverly
- Solar planned for several new facilities: Bladensburg and Northern bus garages, Heavy Repair & Overhaul

Decarbonizing Vehicle Fleets



Zero-Emission Vehicles



- Bus Fleet
 - Completed ZEB Transition Plan
 - Accelerated delivery goal of 100% Zero Emission Bus fleet by 2042
- Non-revenue and paratransit fleets
 - Early planning for initial deployment and transition

Reducing Waste from Construction



LEED-certified Dulles Rail Yard



Construction Waste Diversion

- Recent projects utilizing Leadership in Energy and Environmental Design (LEED®) credentials diverted significant amounts of construction waste from landfills:
 - 84% New Carrollton Office Building (~1150 tons of waste diverted)
 - 90% L'Enfant Headquarters (~9300 tons of waste diverted)
 - 92% Andrews Bus Garage (~1900 tons of waste diverted)
 - 91% Dulles Rail Yard Buildings (~4500 tons of waste diverted)

Increasing Tree Canopy



*Tree planting at
Hyattsville Crossing*



Tree Canopy

- Metro partnered with the Anacostia Watershed Society to plant 385 trees at four Metrorail stations in Maryland and D.C.
- Trees provide health and environmental benefits
 - Improve customer experience by providing shade and green space
 - Over 100,000 pounds CO₂ sequestered over 20 years
 - Nearly 2 million gallons rainfall intercepted/ stormwater mitigated over 20 years

Using Green Certifications to Modernize Facilities



L'Enfant DC Headquarters building



Building LEED® Facilities

- 11 completed LEED® certifications – reducing ongoing operating costs and improving our environment
- 4 built to LEED® and awaiting certification
 - L'Enfant HQ, New Carrollton and Eisenhower office buildings
 - Potomac Yard-VT Metrorail Station – first LEED® for Transit Pilot and second infill station
- 4 designing to LEED® standards
 - Heavy Repair & Overhaul Facility
 - Northern and Bladensburg Bus Garages
 - MTPD District 3 substation

Promoting Innovation and Best Practice Adoption



Testing battery-powered track maintenance equipment



Sustainability Awards & Lab

- Sustainability Awards recognize adoption of sustainable innovation and best practices
 - Celebrated 34 employees in 2023
- Sustainability Lab evaluates and supports new sustainability practices and technologies
 - Current projects include battery-powered track maintenance equipment and battery/electric leaf blowers

Metro Supports Federal and Regional Policy Goals

Sufficient funding and **supportive policies** ensure Metro can deliver what the region and federal partners need to meet ambitious sustainability goals by:

- Responsibly using funds to maximize return on investment
- Capitalizing on federal funding opportunities
- Fostering innovative approaches to delivery of capital and operating projects
- Supporting decarbonization and catalyzing investments in electrification
- Building the green economy and green workforce
- Advancing social equity, equitable health and access to opportunity
- Investing in climate resilient communities and infrastructure





Appendix

Resources

- Sustainability Webpage: <https://www.wmata.com/initiatives/sustainability/>
- 2021 Sustainability Report: <https://www.wmatabonds.com/wmata-bonds-dc/documents/downloads/i2812?docTypeId=40196>
- Energy Action Plan FY22 Progress Report: <https://www.wmatabonds.com/wmata-bonds-dc/documents/downloads/i2812?docTypeId=40196>
- Zero-Emission Bus Webpage: <https://www.wmata.com/initiatives/plans/zero-emission-buses.cfm>