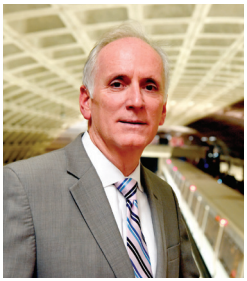
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Sustainability Report 2018

Office of Sustainability

A Commitment to Sustainability



Metro's commitment to sustainability is both inherent to our service as a public transit system – reducing the number of cars on the road and helping control greenhouse gas emissions – and part of ongoing efforts to keep Metro safe, reliable and affordable.

As you will read in this report, there are a number of sustainability initiatives underway at Metro. From January 2017 to July 2018, Metro successfully completed several projects that improved energy and water efficiency, reduced energy consumption and resulted in significant long-term cost savings.

Looking forward, Metro launched an Energy Action Plan to control operating costs, reduce risk, proactively manage energy consumption, and support safe and reliable service. The Energy Action Plan includes $65 million of energy efficiency projects to be completed between FY2019 and FY2025, which will save Metro approximately $30 million in combined annual energy and operations/maintenance costs each year.

Now as Metro begins a 10-year, $15.5 billion capital improvement program, sustainable practices must be integrated wherever possible. As we work to rebuild the system, it is critical that we invest smartly and demonstrate responsible stewardship of the region's dollars. Rebuilding sustainably will not only help Metro reach our environmental goals, but is necessary to help generate long-term cost savings that give the region the best return on its investment.

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Paul J. Wiedefeld
General Manager/Chief Executive Officer
Washington Metropolitan Area Transit Authority

What is Sustainability in Transit?

Every Metro rider is making a sustainable transit choice. Each trip taken on Metro instead of in a car reduces regional greenhouse gas (GHG) emissions. Sustainability also is about practices that make good long-term sense. It means investing in the economic, social, and environmental needs of our community. For Metro, this includes:

- Building things right – use sustainable building materials and incorporate energy efficiency and renewable energy
- Improving efficiency – reduce waste, increase fuel efficiency, deploy more efficient lighting, and upgrade technology to support energy-efficient propulsion systems
- Encouraging transit-connected communities – promote regional livability and mobility

In 2015, Metro signed the American Public Transportation Association (APTA) Sustainability Commitment, which establishes a transit industry standards for sustainability actions and reporting.

Metro's Sustainability Initiative

Metro's Sustainability Initiative, started in 2014, set forward three regional and seven internal sustainability targets to reach by 2025. The Sustainability Lab and Sustainability Awards were also created in 2014 as part of the initiative to promote cost effective innovation and best practice adoption across the Authority.

In 2018, Metro initiated an Energy Action Plan to meet the 2025 energy reduction goals and contribute to operating cost savings across the Authority. Metro will revisit and update the Sustainability Initiative Targets in 2019.

This report highlights initiatives and projects completed between January 2017 to June 2018, as well as upcoming projects. For more information visit:

wmata.com/initiatives

Dedicated Funding

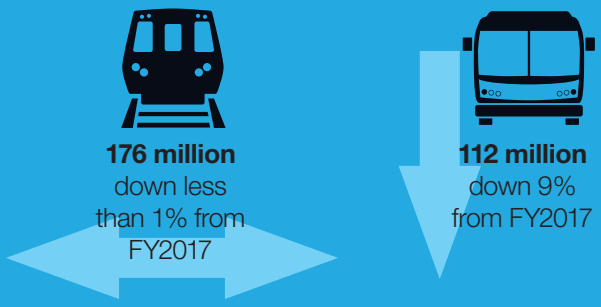
Legislation signed into law in Virginia, Maryland and the District of Columbia, provides Metro with $500 million in funding per year. Funds will allow Metro to complete an extensive capital improvement program to improve safety, reliability, and travel times for riders. Dedicated funding brings economic sustainability to Metro for the first time. With this legislation, Metro has committed to cap operating budget subsidy growth at 3% per year. Current and upcoming sustainability projects help address this through revenue and efficiency improvements.

Metro Connects Riders to Jobs, Entertainment, Shopping, Family, and Friends

Metro exists to move people safely, reliably, and affordably throughout the region. Metrorail and Metrobus move over 900,000 people daily providing 75% of the region's total passenger miles on public transit.

Consistent with national and regional trends, Metrobus and Metrorail ridership experienced a decline this past year. In total, 288 million trips were taken in FY18, a 4% decline from the previous year. Metro's economic sustainability depends on stabilizing and growing ridership. To this end, Metro is working on many fronts to improve the system's safety and reliability while keeping the system affordable and getting riders to their destinations quickly and on-time.

Ridership in FY2018



The FY 2026 ridership targets were set in the Sustainability Initiative, which was published in 2014 and based on regional ridership forecasts at the time. Since then, bus ridership has declined nationwide. Sustainability targets are scheduled for a comprehensive review in 2019.

Reimagining the Metrobus System

Metro, its funding partners, and local bus operators are developing a strategy to provide more efficient, sustainable, and quality bus service to the region. The Bus Transformation Project will include a comprehensive assessment of Metrobus' role, service, operations, and funding construct.

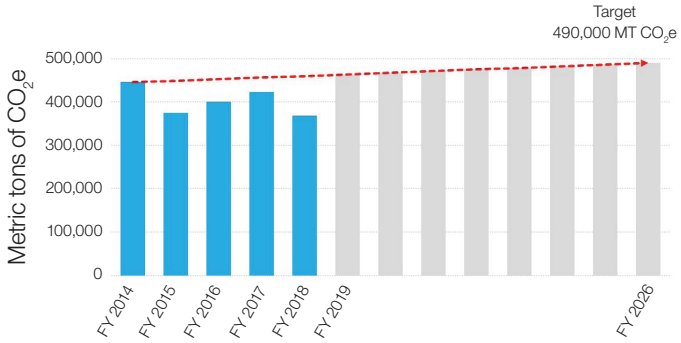
Speeding up Metrobus with Cash-Free Bus Fare Pilot

Metro is rolling out an innovative pilot program on Metrobus Route 79 (Georgia Ave) in DC. The pilot speeds up bus boarding and shortens passenger travel times. This pilot tests the impacts of SmarTrip®-only payment. Mobile ticketing, all-door boarding and bus lanes are also under consideration for future pilot projects.

Metro Mitigates Climate Change

Every trip taken with Metro and not a car reduces the region's carbon footprint. Metro's regional GHG emissions displacement is highly dependent on ridership and regional transportation trends; in FY 2018, Metro displaced 12% fewer GHG emissions than in FY 2017 — primarily due to decreased public transit ridership throughout the region (see opposite page).

METRO GHG EMISSIONS DISPLACEMENT



Reducing the Region's Overall Greenhouse Gas Emissions

Riders choosing Metro over a single-passenger car significantly reduce the GHG emissions for the region. The "emissions displacement" represents the net savings after subtracting out the GHG emissions of Metro's operations (367,000 MT CO_2e) from the estimated GHG emissions if all Metro trips were replaced by single-occupancy vehicles trips (737,000 MT CO_2e). The emissions displacement is approximately 370,000 MT CO_2e in FY 2018, as shown in the graph above, which is the equivalent to emissions from 41.6 million gallons of gasoline or the electricity from over 55,000 homes.

Metro Investments Reduced Resource Consumption Leading to Cost Savings

Saving energy is both good for the environment and Metro's bottom line. Energy conservation projects, as proposed in Metro's Energy Action Plan, are key to keeping operating costs down. Significant progress has been made within the last year to improve energy efficiency and reliability across the system.

Last year, in partnership with the DC Sustainable Energy Utility (DCSEU), Metro replaced outdated inefficient lighting at Shepherd Parkway Bus Facility with light emitting diode (LED) lighting – saving approximately $75,000 annually in energy costs. Additional lighting improvements completed last year at Metrorail stations are expected to reduce energy costs by $60,000 annually while dramatically improving lighting quality and safety for passengers.

All new bus garages will be "electric bus ready," and all facilities will be designed to meet Leadership in Energy and Environmental Design (LEED) Platinum requirements.

In addition, Metro has accelerated the station chiller replacement program. Improving chiller efficiency helps maintain ambient temperatures within stations and improves passenger comfort levels, particularly during the humid summer months. The new units feature variable frequency drives (VFDs) and frictionless magnetic bearings allowing the chiller unit to operate oil free. The new chillers save an estimated $15,000 in annual energy costs per station. In FY2018, Metro replaced the chillers at four stations and will replace eight more in FY 2019.

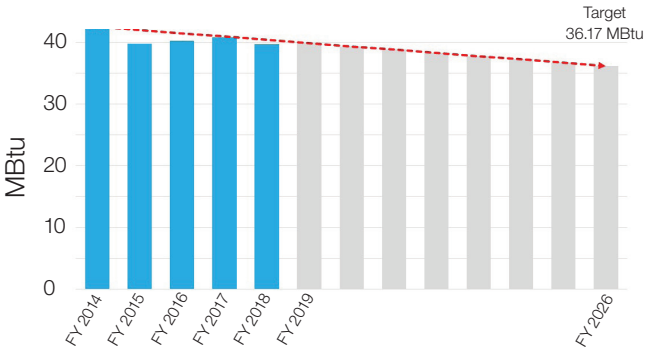
The **Energy Action Plan** identifies additional projects such as comprehensive LED relamping of Metro's non-revenue facilities and installation of regenerative braking technology to capture "wasted" energy from braking railcars; both projects are currently underway.

Upcoming projects include an electric bus pilot to better understand the performance, operations and maintenance requirements for this emerging technology, new bus garages designed to be "electric bus ready," and a commitment to Leadership in Energy and Environmental Design (LEED) Platinum design for new facilities.

Innovation with the Sustainability Lab

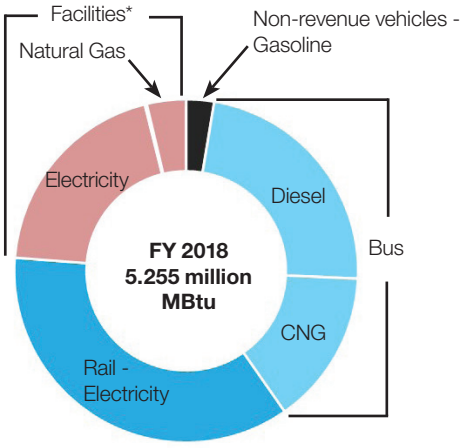
Metro's Sustainability Lab helps pilot cost-saving, environmental and efficient technology and practices across the Authority. In 2018, Metro completed a systemwide roll out of remote water treatment technology at all station chiller plants following a successful Sustainability Lab pilot/evaluation. This technology extends the life of Metro's chiller plants and saves an estimated $350,000 in operations costs annually.

ENERGY CONSUMPTION PER VEHICLE MILE



Metro is on target to achieve a 15% reduction in energy consumption per vehicle mile by FY 2026. LED relamping, chiller upgrades, and improved Metrobus fleet fuel economy have helped reduce energy consumption in FY 2018 by 3% from FY 2017. Efficiency investments identified in the Energy Action Plan (see opposite page) will help Metro continue to reduce consumption per vehicle mile.

ENERGY CONSUMPTION PER BUSINESS UNIT

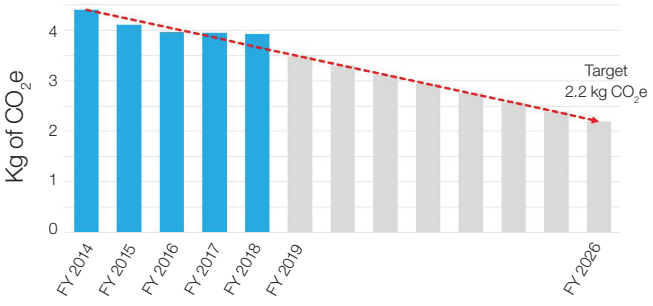


** includes Metrorail stations*

Optimizing Energy Use

New energy management software allows Metro staff to examine energy use and costs in a more comprehensive way. For example, staff now can determine the actual savings associated with a lighting improvement project by comparing electricity usage and costs at a specific facility before and after the project is implemented.

GHG EMISSIONS PER VEHICLE MILE



Reducing GHG emissions requires two elements: one, reducing overall energy use; and two, reducing the amount of carbon emitted by the energy source. While Metro has effectively reduced energy use, the carbon intensity of the regional power in DC and Maryland increased. This led to GHG emissions per vehicle mile being only slightly lower in FY 2018 compared to FY 2017.

To reduce GHG emissions while lowering costs, Metro is pursuing both partnerships for community solar projects and renewable electricity supply options.

Development at and Around Metrorail Stations Builds Sustainable Communities

Transit-oriented development (TOD) at and around Metrorail Stations, provides the necessary infrastructure to support walkable, bikeable, mixed-use communities. TOD improves regional air and water quality by focusing regional development around existing and planned transit instead of developing open space.

The Silver Line created the conditions for Fairfax County (VA) communities to reimagine suburban areas and create walkable neighborhoods. The new development around the McLean, Tysons Corner, Greensboro, and Spring Hill Stations, will add 20 million square feet of office space and 25,000 residential units to the region.

Metro also has been active in advancing key "joint development" projects (projects on Metro property) at College Park-U of Md, Grosvenor-Strathmore, New Carrollton, White Flint, and Wheaton Stations in MD and Deanwood Station in DC. These projects will replace underused station parking with valuable mixed-use projects.

Site Plan from the 117-acre, 1.7 million sqft residential and retail development, Montgomery County Grosvenor-Strathmore Metro Area Master Plan Amendment, July 2017. Infrastructure design began in 2018.

Pedestrian and Bike Access to Metrorail Stations Infrastructure Improves Air Quality

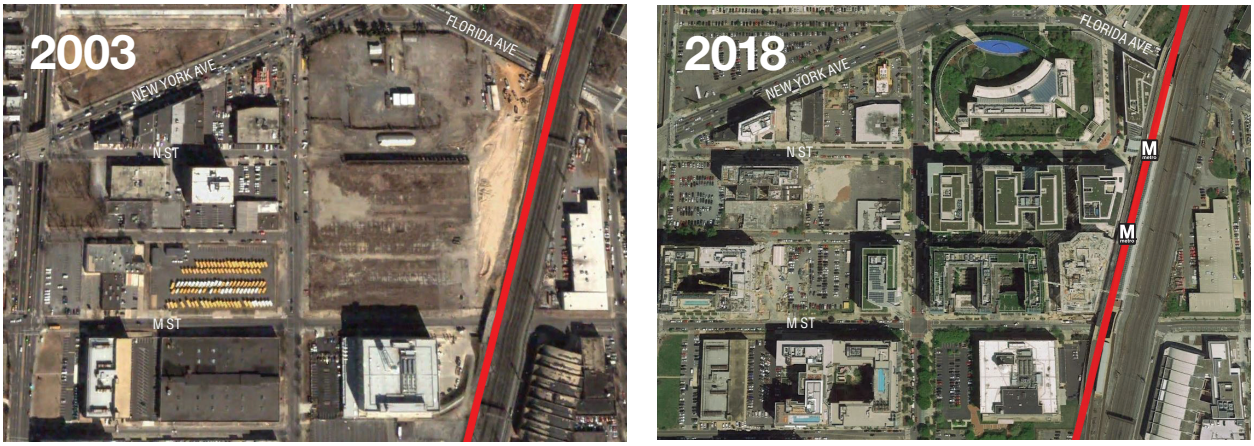
Transit-oriented development allows people to choose Metro, bicycling, or walking to get around — reducing air pollution and congestion on the roads.

In FY 2017 and FY 2018, Metro invested in new secure Bike & Rides for 204 bikes in Vienna and East Falls Church Stations. There are now 4,250 bike parking spaces throughout the Metrorail system. The "I'm a Bike Locker" marketing campaign helped increase bike locker usage at Metrorail stations by 19%.

Also in the past year, Metro partnered with local jurisdictions to improve Metrorail Station connections to the Central Ave Connector Trail, Metropolitan Branch Trail, and Greenbelt Station Trail.

Compact urban development at the downtown Silver Spring Metrorail Station and Paul S. Sarbanes Transit Center.

Creating a Neighborhood: A Retrospective on the Impact of NoMa-Gallaudet U Metrorail Station



The opening of the Metrorail station at NoMa-Gallaudet U in 2004, Metro's first "infill" station, created the conditions that enabled the creation of a new neighborhood. Over the past 15 years, NoMa has changed from an industrial warehouse district to a mixed-use, walkable neighborhood. Now, over 10,000 people live and 24,000 people work within the station area with more development in the pipeline. According to the "NoMa-Gallaudet U Metro Station: Success Built on Transit Report" (2015), the impact of the development in the region will result in "$1 billion in total cumulative revenue to the District."

Recycling Over 7,000 Tons in 2017 Reduces GHG Emissions

Metro generates over 15 thousand tons of waste and recycling at offices and support facilities, and stations, in a year. Metro's overall recycling rate in 2017 was 47%.

These recycled tons reduced Metro's GHG emissions by over 23,000 MT CO_2e.

Many recovered and recycled materials also provide Metro with additional revenue.

In 2017, Metro:

- Generated $1.5 million in asset recovery revenue from end-of-life equipment and materials
- Recycled 7,808 tires
- Recycled components of 200 retired railcars, which included over 2,000 tons of metal
- Recycled an additional 2,293 tons of metal and nearly 2,000 tons of railroad crossties from track repair projects
- Reused nearly 8,000 pounds of Freon in railcars, saving over $130,000 since January 2017
- Recycled all decommissioned escalator steps and gear boxes

Upcoming: Metro is preparing a system-wide waste management plan to reduce waste and improve recycling at offices and at Metrorail stations.

Metro will also investigate the option of collecting organic waste at offices for compost. This will set the Authority on a path towards a 100% diversion goal.

Reusing Railcars Through Regional Partnerships

As part of an innovative joint development project undertaken at Grosvenor–Strathmore Station, Metro worked with a private developer, to re-purpose decommissioned 1000-series railcars into temporary "pop-up" retail space on the plaza adjacent to the station. The pop-up shops "activated" the otherwise empty plaza bringing people, energy, and excitement to the station prior to the construction of the full joint development project.

Metro also donated 14 retired railcars to other government agencies including nine to the Department of Defense for counter-terrorism training. The donated railcars saved Metro $42,000 in disposal costs.

The majority of decommissioned 1000-series railcars were recycled; scrap metal is melted down to create products such as car parts, skins for appliances, piping, and ductwork.

Designing Buildings for Resource Efficiency and Lowest Total Cost of Ownership

Metro is opening two new bus garages. The garages, designed to LEED standards, include many sustainability features to reduce energy and water use and help protect the natural environment.

Andrews Federal Campus Bus Garage
Prince Georges County, Maryland

Facility designed to LEED Silver Standard for 175 buses

Includes heavy repair and overhaul shop, bus maintenance facilities, fueling, non-revenue vehicle servicing, central warehouse, and bus engineering

- Rainwater harvesting system to replenish and recirculate water for bus washing
- Micro-bioretention areas, pipe-stone infiltration, and bio-swales to retain stormwater on site
- Drought resistant and native plantings

Recycling Construction Debris

In addition to reducing energy and water use, LEED certified buildings are required to have at least 75% of construction and demolition debris (by weight) diverted from the landfill.

Metro's recent construction projects have exceeded the LEED guidelines. The Landover Bus Garage Paint Booth, opened in 2018, achieved a diversion rate of over 98%.

Cinder Bed Road Bus Garage
Lorton, Virginia

A LEED Gold Facility for 140 buses, includes:

- Tree and habitat restoration areas on site
- Daylight harvesting to reduce energy use (as seen in the photo below)
- Recirculated water for bus washing
- Zero water-use urinals reducing water consumption

Contributing to Cleaner Healthier Waterways

Many acres of Metro owned land across the region are covered in pavement. These impervious surfaces prevent rain from soaking into the ground and increase the flow of stormwater runoff, adding sediment, nutrients and contaminants into our rivers, streams and other water bodies.

Metro has completed a stormwater infrastructure assessment of all facilities to prioritize future green infrastructure investments. Additionally, engineering design is nearing completion for investments planned at nine Metro facilities in Maryland which are subject to the stormwater treatment retrofit requirements mandated in the Chesapeake Bay Restoration Act.

Metro will be implementing control measures to offset impervious surface areas and help capture stormwater in place. These control measures may include new stormwater ponds or pond retrofits, tree boxes added to stormwater inlets, or addition of vegetated bioswales.

Reducing the Use of Toxic Chemicals

Metro is investigating different technologies, including vinyl wraps, to reduce the chemical strength of railcar cleaning products.

This past year, Metro supervisors and custodial staff were trained, according to Green Seal™ GS-42, on how to transition to using environmental preferred cleaning products that reduce staff's exposure to harmful chemicals.

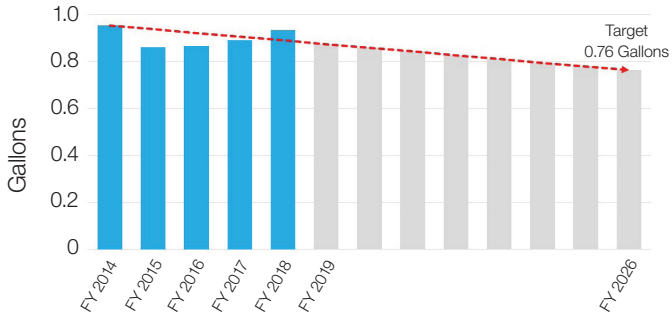
Making Metro Resilient to Extreme Weather

Metro is securing vent shafts and improving interior drainage in tunnels, which limits the risk and potential damage to Metrorail as a result of extreme weather events.

Giving Back to the Environment

A group of Metro personnel participated in the Anacostia Watershed Society's Earth Day Cleanup held in 2018. The group joined volunteers to pick up trash at designated sites along the Anacostia River and its tributary streams throughout the watershed in the District of Columbia, as well as Prince George's and Montgomery counties in Maryland.

WATER USE PER VEHICLE MILE



Metro water use increased 4% in FY 2018 from FY 2017. Despite the increase, water use per vehicle mile is still below FY 2014 levels.

Stormwater treatment area at Cinder Bed Road Bus Garage can treat a 10-year storm at 66 cubic feet per second of stormwater.

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