GOAL PROMOTE ENVIRONMENTAL STEWARDSHIP: MINIMIZE AND MITIGATE THE ENVIRONMENTAL EFFECTS OF TRANSPORTATION

Key Outcomes: The four objectives and 11 performance measures outlined here will promote environmental stewardship. By utilizing environmentally-focused strategies and setting sustainability goals, MDOT will protect Maryland's natural, historic and cultural resources and minimize the impacts of fossil fuel consumption and other environmentally harmful practices.

MDOT has a well-rounded approach to environmental stewardship spanning a range of natural resources including air, land and water. MDOT's actions encompass climate change mitigation by reducing greenhouse gas (GHG) emissions, as well as climate change adaptation through resiliency efforts. MDOT promotes the conservation of resources for more sustainable operations and service delivery, as well as methods to protect and enhance Maryland's abundant and valuable natural resources.

With the passage of the Climate Solutions Now Act (CSNA) in 2022, Maryland has committed to a nation-leading interim goal of a 60% reduction below 2006 carbon emissions by 2031, progressing to a requirement to reach net-zero emissions by 2045. MDOT's modal administrations have already been working towards this goal. SHA is replacing light duty fleet vehicles with electric vehicle (EV) models and MTA is planning facility upgrades and installation of charging infrastructure in preparation for introducing zero emission buses (ZEBs) into the transit bus fleet. MAA and MPA are electrifying many of their vehicles used at airports and seaports to promote this objective as well.

Performance Measures

OBJECTIVES	PERFORMANCE MEASURE	RATING
Protect and enhance the natural environment through avoidance, minimization, and mitigation of adverse impacts related to transportation infrastructure	Percent of MDOT's Five-year Municipal Separate Storm Sewer System (MS4) Permits Attained	N/A*
Employ resource protection and conservation practices in project development, construction, operations and maintenance of transportation assets	Diversion Rate and Weight of Municipal Solid Waste; Demolition, Construction and Maintenance (DC&M) Waste; and Hazardous Waste	N/A*
	Annual Dredged Material Capacity Remaining for Harbor and Poplar Island Material (Million Cubic Yards)	MAKING PROGRESS
	Increase the Beneficial Use and Innovative Reuse of Dredged Materials	FACING CHALLENGES
Minimize fossil fuel consumption, reduce greenhouse gas emissions, and improve air quality and support the growth of alternative fuels	Vehicle Miles Traveled (VMT)/VMT Per Capita	FACING CHALLENGES
	Number of Employee Partners in Statewide Transportation Demand Management (TDM) Programs	FACING CHALLENGES
	Greenhouse Gas (GHG) Emissions From LDV VMT (Light-Duty) Vehicles and MHDV VMT (Medium-Heavy-Duty) Vehicles Statewide TDM Programs	N/A*
	Statewide Vehicle Emissions Inspection Program (VEIP) Testing Compliance Rate	MAKING PROGRESS
Support the widespread adoption of alternative fuels electric vehicles, and innovative technologies	Percentage of MDOT Fleet Composed of Electric Vehicles (EVs)	N/A*
	Percent of Electric Vehicles (EVs) Registered From Total Registered Vehicles	MAKING PROGRESS
	Level 2 and DC Fast Charging Ports Per 1000 Residents	N/A*

Target under development

In September 2023, MDOT won an $11.5 million award through the federal discretionary Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program to acquire three new battery electric locomotive and one battery charger at the Port of Baltimore. With the adoption of the Advanced Clean Cars II rule in 2023, Maryland is expected to reach more than 1 million registered EVs by 2030. This accelerated growth in EV adoption is critical to meeting Maryland's goals of a 60% reduction in GHG emissions from 2006 levels by 2031 and net-zero carbon emissions by 2045.

Objective: Protect and enhance the natural environment through avoidance, minimization and mitigation of adverse impacts related to transportation infrastructure

PERCENT OF MDOT'S FIVE-YEAR MS4 PERMITS ATTAINED*

In 2015, SHA received a National Pollutant Discharge Elimination System (NPDES) MS4 permit (No. 11-DP-3313) from the Maryland Department of the Environment (MDE) to control storm-drain-system pollutant discharges in MS4-designated areas. The permit requires that we use restoration practices to treat 20% of existing SHA impervious surfaces and address stormwater wasteload allocations (WLAs) established under U.S. Environmental Protection Agency (EPA)-approved Total Maximum Daily Loads (TMDL).

	FISCAL YEAR								
AGENCY	2015	2016	2017	2018	2019	2020	2021	2022	2023
SHA	34.6%	47.6%	53.7%	60.1%	67.2	100%	100%	100%	100%
MTA							100%	100%	100%
MDTA				100%	100%	100%	100%	100%	100%
MVA								100%	100%
MAA								100%	100%
MPA								100%	100%

TARGET: Target being developed for next year's report

**This performance measure is new to the AR.*

***100% compliance means that MDOT has treated the MDE-required area of previously built impervious surfaces. Treatment of impervious surfaces means that stormwater runoff impacts from an acre of impervious surface (e.g., pavement) are indistinguishable from an acre of natural systems (e.g., stormwater runoff from an acre of forest).*

What Is the Trend?

- The percent of MDOT five-year MS4 permits attained has reached 100%** for all modal administrations as of FY 2021.
- The smart pond credits were all finally certified in May of 2021 and the SHA Phase I permit requirements had to be met by October 8, 2020.
- MDOT continues to submit annual reports, but since the new Phase I permit hasn't been issued and the Phase II permit just expired, their requirements haven't changed since 2021, so they all remain at 100% attainment.

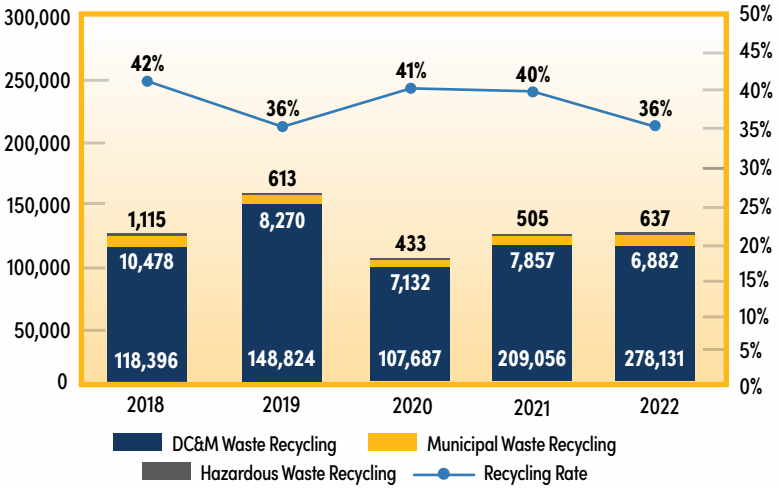
What Are Future Strategies?

- The new Phase I permit has not been issued and the Phase 2 permit likely will not be released for several years. (Even though the Phase II permit expired Oct 30, 2023, permit holders have until 2025 to implement all their projects.)
- Once the new permits are issued, MDOT will track percentage complete (performance) trends.

Objective: Employ resource protection and conservation practices in project development, construction, operations and maintenance of transportation assets

DIVERSION RATE AND WEIGHT OF MUNICIPAL SOLID WASTE; DEMOLITION, CONSTRUCTION AND MAINTENANCE (DC&M) WASTE; AND HAZARDOUS WASTE*

For years, MDOT has been working to minimize waste, reuse materials and reduce GHG emissions through energy efficiencies and alternative energy sources. This measure tracks this progress for asphalt, metals and concrete from maintenance activities and construction/ demolition projects.



TARGET: Target being developed for next year's report

**This performance measure is new to the AR.*

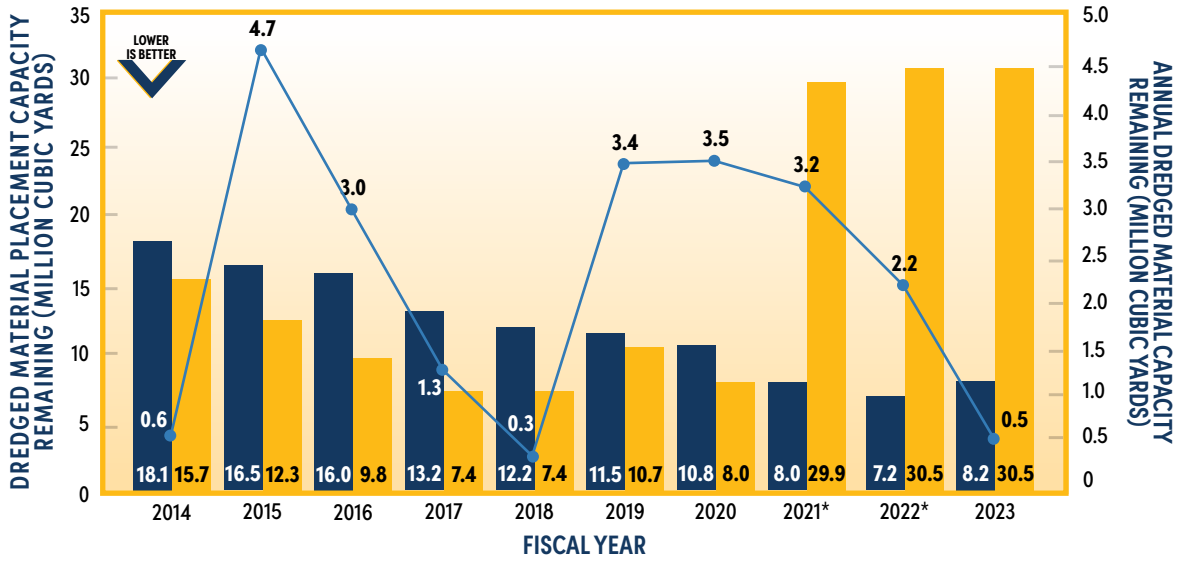
What Is the Trend?

- COVID-19 caused a decrease in overall waste production and recycling. However, MDOT's waste production and recycling is now returning to normal.
- DC&M waste recycling has steadily increased over the five-year period of calendar years 2018 to 2022, demonstrating MDOT's commitment to constant improvement.

What Are Future Strategies?

- MDOT has proposed development of a comprehensive MDOT Waste Reduction and Action Plan, pending approval and funding.
- MDOT is piloting a waste profiling and composting program at TSO to reduce compostable materials being wasted via standard trash pickup.

ANNUAL DREDGED MATERIAL CAPACITY REMAINING FOR HARBOR AND POPLAR ISLAND MATERIAL (MILLION CUBIC YARDS)



Harbor - Annual Dredged Material Capacity Remaining

Poplar Island - Annual Dredged Material Capacity Remaining

Annual Dredging to Keep Channels Clear, With Placement into MPA Managed Sites (Millions)

TARGET: 20-Year Capacity

**2021 and 2022 data have been revised from previous report.*

What Is the Trend?

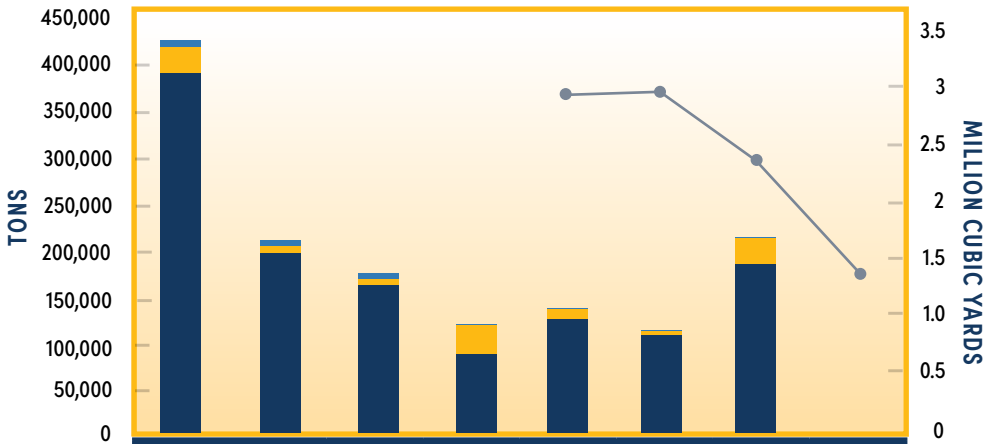
- Maryland's Port of Baltimore continued to refine harbor dredged material placement capacity and dredging needs due to a reassessment of previous assumptions and current survey and engineering data. On average, there are 1.3 million cubic yards (mcy)/year of maintenance and state/federal new work dredging projects in the Harbor to make improvements to the channel system.
- The state's Dredged Material Management Program (DMMP) continues to support the U.S. Army Corps' Federal DMMP, which was updated and approved in FY 2018.
- Safety and mobility efforts to ensure unimpeded shipping access to the Port have been effective; the Port of Baltimore compares extremely well with the other fully functioning U.S. East Coast ports with 50-foot-deep channels.

What Are Future Strategies?

- MPA, with the U.S. Army Corps, initiated the Seagirt Loop Feasibility Study in October 2020 to assess the need for navigational improvements to the Seagirt Loop Channel system. The effort was completed in June 2023, and the plan recommends the channel be deepened to 50-feet and widened. These changes will improve navigation efficiencies at the Port of Baltimore to help meet demand for future capacity at the Port facilities, including efficient handling of increased container volume at Seagirt Marine Terminal and faster and safer movement of vessels transiting the channels.
- Construction of the base dike widening, necessary for the Stage One expansion of the Cox Creek Dredged Material Containment Facility, was completed in FY 2021. Construction of the +60-dike raising began late summer 2021 and is expected to be completed in early 2024. Completion of this phase of expansion activities will add 9.8 mcy of harbor dredged material capacity.

INCREASE THE BENEFICIAL USE AND INNOVATIVE REUSE OF DREDGED MATERIALS*

Dredged materials, while often viewed as a waste product, also can be recognized as a valuable resource. MPA is a national leader in advancing the innovative reuse of dredged material through implementation of demonstration-scale projects and research studies and has also successfully shown how dredged sediments can be beneficially used to restore aquatic ecosystems and rebuild lost island habitat. MPA's long-term goal is to implement sustainable innovative reuse and beneficial use programs and projects to address capacity recovery and implement management solutions within Maryland's DMMP, thus supporting the long-term success of the Port of Baltimore.



	2015	2016	2017	2018	2019	2020	2021	2022
Metals	5,382	5,975	2,604	1,707	1,408	1,077	1,642	
Concrete	28,508	3,629	2,531	31,358	9,085	532	22,019	
Asphalt	370,590	194,399	158,929	85,332	138,332	106,078	185,394	
Use/Reuse of Dredged Materials					2,656,218	2,831,625	2,351,823	1,430,714

TARGET: 500,000 cubic yards dredged

**This performance measure is new to the AR.*

What Is the Trend?

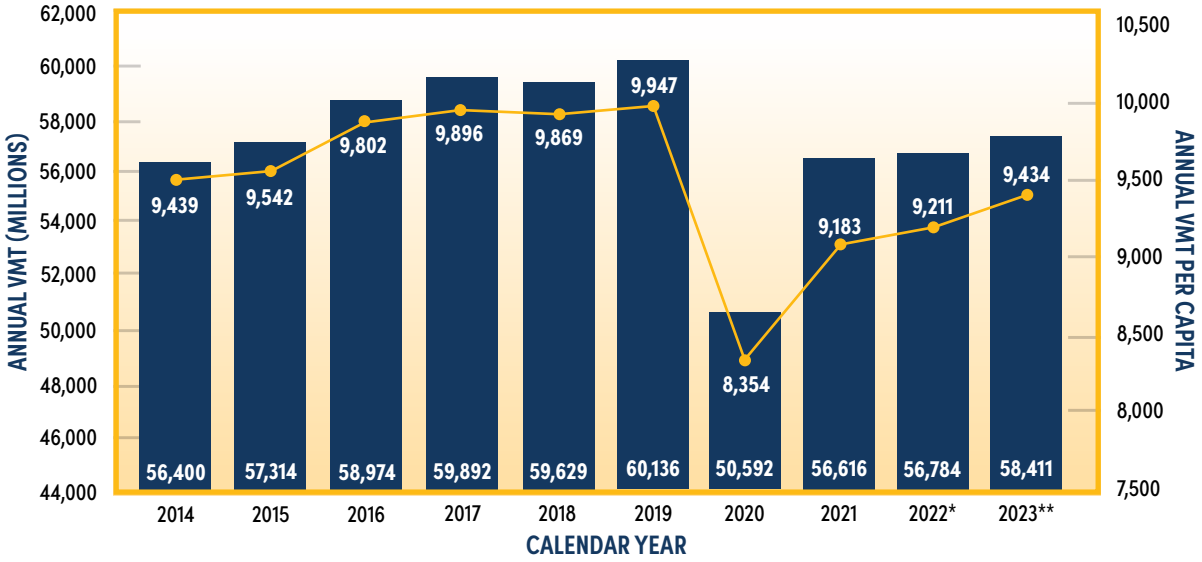
- Volumes were down in FY 2023 because MPA is evaluating various tests of innovative reuse of harbor dredged material that were made over the past few years.
- MPA continues to explore and test new methods to reuse dredged material from the Port of Baltimore harbor channels.

What Are Future Strategies?

- MPA has solicited private companies that used harbor dredged material for products ranging from brick to light-weight aggregate.
- MPA started to develop the Cox Creek Sediment Technology and Reuse (STAR) site to continue the advancement of the innovative reuse of dredged material.
- MPA will continue to investigate other possible uses of dredged material to meet its ultimate goal of using 500,000 cubic yards for the innovative reuse and beneficial use of harbor dredged material annually.

Objective: Minimize fossil fuel consumption, reduce GHG emissions, and improve air quality and support the growth of alternative fuels

VEHICLE MILES TRAVELED (VMT)/VMT PER CAPITA



TARGET: 10% decrease of VMT per capita by 2030 and 20% decrease by 2050

**2022 data have been revised from previous report.*

***2023 data are preliminary and subject to change.*

What Is the Trend?

- Historically, VMT is generally reflective of economic growth and conditions. That is, VMT generally increases during times of greater economic prosperity and decreases during economic depressions.
- As the traffic pattern was too unstable, 2020 was skipped as a base comparison year which is one of the factors affecting the current VMT growth.
- Starting in 2022, the previous year is used now as the base comparison. The VMT in 2022 has increased by 0.3% compared to 2021 but is down 5.6% compared to 2019 (pandemic levels). There has been a reduction in truck VMT, but passenger vehicles VMT has increased.

What Are Future Strategies?

- MDOT aims to achieve a 10% reduction in VMT per capita in the coming years, and then a 20% reduction by 2050.
- MDOT is implementing active transportation policies and infrastructure (bike lanes, shared-use paths, etc.) and promoting Transportation Demand Management (TDM) strategies and incentives (rideshare, alternative work hours, work from home, Guaranteed Ride Home, etc.) to reduce VMT.

NUMBER OF EMPLOYEE PARTNERS IN STATEWIDE TRANSPORTATION DEMAND MANAGEMENT (TDM) PROGRAMS*

TDM strategies and policies are an impactful and cost-effective way to offset vehicle congestion and reduce VMT by promoting alternatives to driving alone, such as taking transit, ridesharing, walking, biking and teleworking. Commuter Choice Maryland is MDOT's TDM program and provides options to maximize travel choices and deliver solutions that can reduce congestion, conserve energy, facilitate economic opportunity and enhance the life of all Marylanders. Commuter Choice Maryland's Employer Partner Program recognizes Maryland employers and organizations for their leadership in offering transportation benefits and creative commuting incentives to their employees.

CALENDAR YEAR	NUMBER OF EMPLOYEE PARTNERS
2021	50
2022	48

TARGET: 500 partners by 2030 and 1,000 partners by 2050

**This performance measure is new to the AR.*

What Is the Trend?

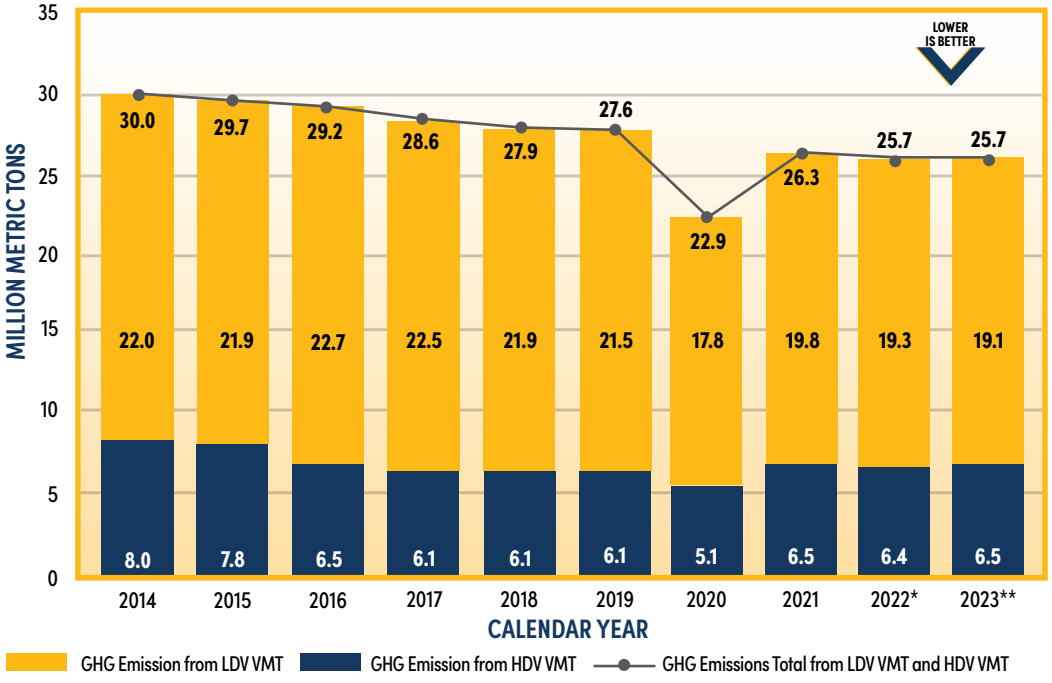
- This is a new performance measure for this year's AR. MDOT will develop a way to measure this going forward to monitor performance.
- Participation in the program has declined largely due to employers' closing, relocating out of state or focusing on other priorities as a result of the COVID-19 pandemic. However, it is understood that employers continue to offer commuter benefits that would qualify them to become an Employer Partner, and participation in the program is expected to increase as workplace commuting continues to rebound from the pandemic.

What Are Future Strategies?

- Commuter Choice Maryland continues to form strong partnerships with local TDM program managers and other state agencies including MDE, the Maryland Department of Commerce and the Maryland Department of Labor to make new connections with the employer community.
- The Employer Partner Program is constantly identifying new outreach opportunities at in-person events and through digital communications to reach employers.
- Commuter Choice Maryland continues to evaluate opportunities to incentivize participation in the Employer Partner Program by identifying employers that should be recognized for the benefits that they already provide while offering support to expand commuter benefits and incentives.

GREENHOUSE GAS (GHG) EMISSIONS FROM LIGHT-DUTY VEHICLES (LDV) VMT AND MEDIUM-HEAVY-DUTY VEHICLES (MHDV) VMT

GHG emissions from on-road vehicles is primarily a product of two trends: VMT and the efficiency of on-road vehicles. GHG reductions are achieved by reducing VMT and improving efficiency of vehicles. Reducing VMT has other potential benefits to Marylanders, such as reduced congestion and improved travel time reliability. Emissions are calculated using the most recent inventory and MOVES model available at time of analysis. MOVES3 was used for analysis years 2021-2023. EV registrations in Maryland are factored into the GHG estimate.



TARGET: Baseline target in first year

*2022 revised from previous report to reflect final 2022 HPMS.

**2023 data are preliminary and subject to change

What Are Future Strategies?

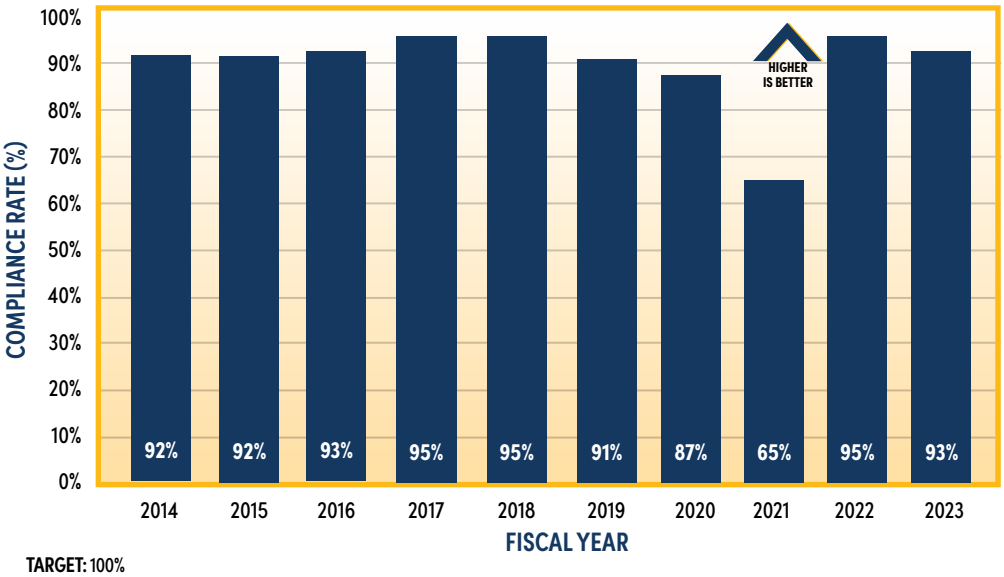
- The Federal Highway Administration (FHWA) Carbon Reduction Program (CRP) supports a variety of MDOT strategic investments that achieve carbon reduction. MDOT's Carbon Reduction Strategy (CRS) will be finalized in November 2023 in collaboration with metropolitan planning organizations (MPOs). The CRS summarizes MDOT activities to reduce carbon emissions and reflects federal, state, and regional strategies pertaining to carbon reduction.
- The passage of Advanced Clean Cars II Program (ACCII) builds on Maryland's existing Clean Cars Program and requires automakers to increase the share of ZEVs sold beginning with model year 2027 so that by model year 2035, 100% of the passenger car and light-duty truck sales are zero emission. In addition, ACCII establishes increasingly stringent emission standards for gas cars and heavier passenger trucks.
- MDOT continues to seek additional state and local organizations, nonprofits and private sector companies as partners for its Commuter Choice Maryland Employer Partner Program to help promote commuter benefits.
- MDOT continues to support local government Transportation Demand Management (TDM) programs to offer free commuter assistance and to support employers in their efforts to develop commuter benefits programs.
- Maryland continues to support and promote the adoption of low-carbon and emission reduction vehicles, including personal vehicles, school bus fleets, transit bus fleet, through legislation, incentives and rebates.

What Is the Trend?

- In July 2023, VMT was up 2.7% compared to 2022. VMT annual levels 2020 through 2022 reflected pandemic restrictions and altered travel patterns, following relatively stable annual VMT levels from 2017 through 2019. Despite growth in VMT, GHG emissions from on-road transportation continue to decline, reflecting continued improvements in vehicle fleet efficiency.
- Electrification of on-road vehicles continues to expand. EVs represent almost 1.5% of all registered vehicles in Maryland, with over 23,500 EVs newly registered between July 2022 and July 2023. Over 62 ZEV models are available for purchase in 2023 by consumers, including trucks and large vehicles, motorcycles and cars, with automakers committed to bringing more EVs to the market in 2024 and 2025.
- The Maryland Commuter Tax Credit was expanded to offer greater incentives to employers for subsidizing non-single-occupancy vehicle (SOV) commute options for employees. In addition, new rewards have been added to incenTrip and new features have been developed including customizable multimodal trip planning, an employer dashboard for workplace commute challenges, and corridor challenges that focus on incentivizing ridesharing and transit use on specific congested corridors.
- SHA's Coordinated Highways Action Response Team (CHART) program continues to reduce congestion and improve travel efficiency by responding to incidents and clearing obstructions from the highway quickly. In 2022, CHART provided 63,474 incident responses and disabled vehicle assists, with an average incident response time of 11.97 minutes.

STATEWIDE VEHICLE EMISSIONS INSPECTION PROGRAM (VEIP) TESTING COMPLIANCE RATE

MAKING PROGRESS



TARGET: 100%

What Is the Trend?

- Statewide VEIP testing compliance rate has been high in the most recent two years at 93% and 95% in 2023 and 2022, respectively. This is a considerable increase from 2021 and 2020 when the compliance rate dropped to 65% and 87%, respectively. The present higher percentages of compliance reflect the long-term trend of a compliance rate greater than 90% that has occurred for most years since 2014.

What Are Future Strategies?

- MVA is identifying opportunities to engage with customers about the VEIP program and their due dates.
- MVA is no longer requiring vehicle models 2019 or newer to start inspections three years after purchase and instead these vehicles do not require testing for the first six years of the vehicle's life.

Objective: Support the widespread adoption of alternative fuels, EVs and innovative technologies

PERCENTAGE OF MDOT FLEET COMPOSED OF ELECTRIC VEHICLES (EVs)*

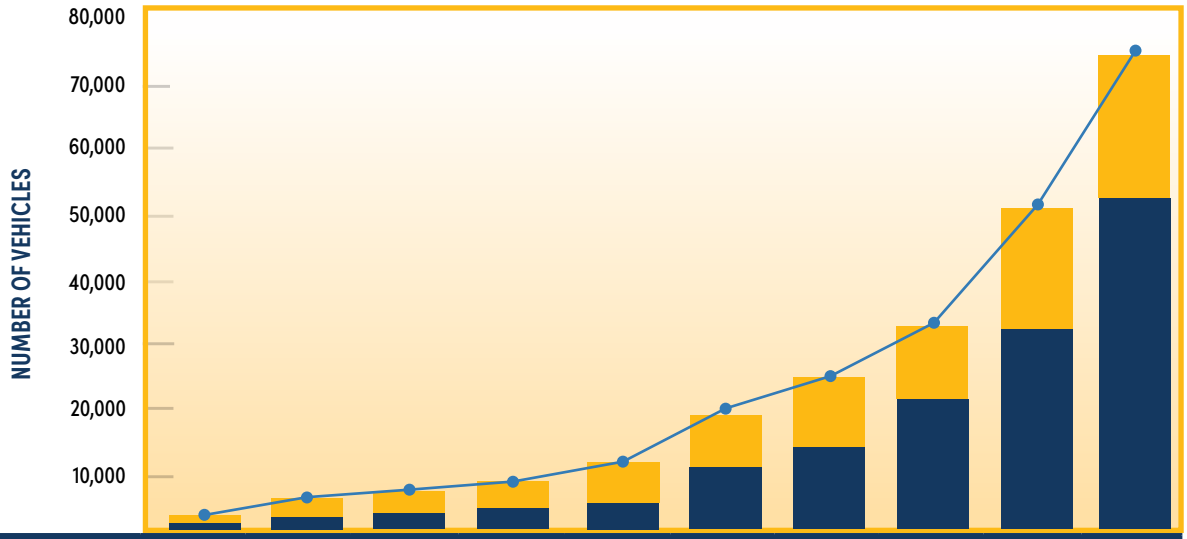
MDOT is working on developing this performance measure and collecting data across all MDOT modes for next year.

TARGET: Target being developed for next year's report

**This performance measure is new to the AR.*

PERCENT OF ELECTRIC VEHICLES (EVs) REGISTERED FROM TOTAL REGISTERED VEHICLES

Reducing emissions from on-road vehicles is a priority of the Administration, and a paramount strategy in reducing transportation-related GHG emissions in the near-term. By increasing the percentage of EVs from total registered vehicles, Maryland will reduce VMT from internal combustion engine vehicles that rely on carbon-intensive fuels, subsequently lowering GHG emissions. This percentage consists of the number of light-duty, registered EVs in the state out of the total number of light-duty, registered vehicles. EVs include both Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs).



FISCAL YEAR	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BEV	1,421	1,943	2,643	3,745	5,495	10,938	14,930	21,076	33,230	52,008
PHEV	1,757	3,521	4,345	5,624	7,712	9,784	10,812	13,765	19,089	23,853
BEV + PHEV	3,178	5,464	6,988	9,369	13,207	20,722	25,742	34,841	52,319	75,861
% EVs of total Registered Vehicles	0.1%	0.1%	0.1%	0.2%	0.3%	0.4%	0.5%	0.7%	1.0%	1.5%
Total Registered Vehicles	4,872,481	4,950,019	4,992,358	5,030,505	5,086,501	5,126,010	5,159,469	5,084,777	5,231,513	5,151,222

TARGET: 1.1 million EVs in 2030

Source: MVA Office of Data Management, EV Registration Data 6/30/2023

What Is the Trend?

- 23,542 EVs were newly registered in Maryland in the 12-month period between July 2022 and July 2023, representing 45% growth in the number of EVs on the road.
- Of the 23,542 newly registered EVs, over 18,700 were BEVs and over 4,700 were PHEVs. In FY 2019, BEVs overtook PHEVs as having the largest EV market share in Maryland.

What Are Future Strategies?

- With the Advanced Clean Cars II program (ACC II) in 2023, which will require auto manufacturers to continuously increase the share of EVs sold in the state beginning with model year 2027, Maryland is expected to reach approximately 1.34 million registered EVs by 2031.
- Consumers are taking advantage of the amended Maryland EV Tax Credit that took effect July 1, 2023, which allows buyers to claim a State tax credit up to $3,000 for their purchase of a new EV. The tax credit will be in effect through June 30, 2027.

LEVEL 2 AND DC FAST CHARGING PORTS PER 1,000 RESIDENTS*

The expansion of public EV charging infrastructure in Maryland will be necessary to support Maryland's projected growth to more than 1 million EVs registered by 2030. These future EV registrations are a component of ensuring that Maryland meets air quality and GHG reduction goals. Level 2 charging stations are ideal for locations where there would be longer dwell times, and provide approximately 20 miles of driving range for each hour charging. DC Fast charging stations are ideal for locations with shorter dwell times, such as along highways or commercial sites, and provide approximately 200 miles of driving range for each hour charging.

FISCAL YEAR	VALUE
2023	0.62 charging ports per a thousand residents**

TARGET: Target being developed for next year's report

**This performance measure is new to the AR.*

***Souces: Charging Ports data: Alternative Fuel Data Center 6/30/2023 download; Population data: 7/1/2022 Population Estimates from the US Census, MD Population: 6,164,660.*

What Is the Trend?

- At mid-year, there were more than 1,400 publicly accessible charging stations in Maryland with more than 3,900 charging ports. Approximately 20% of public charging ports are DC fast chargers.
- MDOT completed the 2023 update of the Maryland National Electric Vehicle Infrastructure (NEVI) Plan and submitted it to the Joint Office on August 1, 2023. The Plan outlines the approach for deploying charging infrastructure and achieving the goals of the federal NEVI Program.
- MDOT prepared to launch the Maryland NEVI Program by issuing two Requests for Information (RFIs) to interested stakeholders. The first RFI solicited information pertinent to program funding and costs. The second RFI solicited information pertinent to data collection and reporting.
- MDOT developed and launched an EV Charger Siting Tool to assist potential applications to the NEVI and CFI programs. The interactive tool consolidates data from a variety of state and federal agencies to help determine whether a site would a good candidate for grant funding.

What Are Future Strategies?

- MDOT will release its NEVI Program Round 1, with a goal of awarding contracts for installations of DC Fast chargers along Maryland's 23 EV Alternative Fuel Corridors (AFCs). Through the NEVI Program, MDOT aims to support the establishment of an interconnected network that will facilitate data collection, equitable access and network reliability.
- MDOT coordinated with local jurisdictions and Maryland Clean Energy Center (MCEC) on their applications to the federal CFI grant program. Successful grant applications will secure CFI grant funds for community and corridor charging installations.
- Under MDOT's Leadership, the Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC) is dedicated to accelerating the adoption of EVs and expanding EV infrastructure to support EVs.