

# Goal: Promote Environmental Stewardship

## Minimize and Mitigate the Environmental Effects of Transportation

**Key Outcomes: Four objectives and 11 performance measures support the goal to promote environmental stewardship. By utilizing environmentally focused strategies and setting sustainability goals, MDOT will work to protect Maryland's natural, historic and cultural resources and minimize the impacts of fossil fuel consumption and other environmentally harmful practices.**

With the passing 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. By adopting the Advanced Clean Cars II (ACC II) regulation, Maryland also has committed to follow California's pioneering goal of requiring all new passenger cars and light trucks sold in the Maryland market to be zero-emission vehicles (ZEV) by model year 2035.

At the end of 2023, MDOT released its Climate Pollution Reduction Plan (CPRP), which lays a framework for the

department to support the State's achievement of its carbon reduction goals. In June 2024, Governor Wes Moore signed an Executive Order to advance the State's CPRP by requiring all agencies to submit a Climate Implementation Plan by November 1, 2024.

To reduce greenhouse gas (GHG) emissions, MDOT is using federal funding to advance carbon reduction projects. MDOT launched the Climate Focused Funding Portal in 2024, which allows applicants to submit project proposals aimed at reducing carbon emissions. These projects will receive funding from the approximately \$94 million Maryland is receiving from the federal government via the Carbon Reduction Program (CRP). Furthermore, MDOT, along with the Maryland Department of the Environment (MDE), were awarded \$80.5 million in Climate Pollution Reduction Grants in 2024 that will go towards infrastructure for zero-emission medium- and heavy-duty vehicles along the I-95 corridor in the State.

### Objective: Protect and Enhance the Natural Environment Through Avoidance, Minimization and Mitigation of Adverse Impacts Related to Transportation Infrastructure

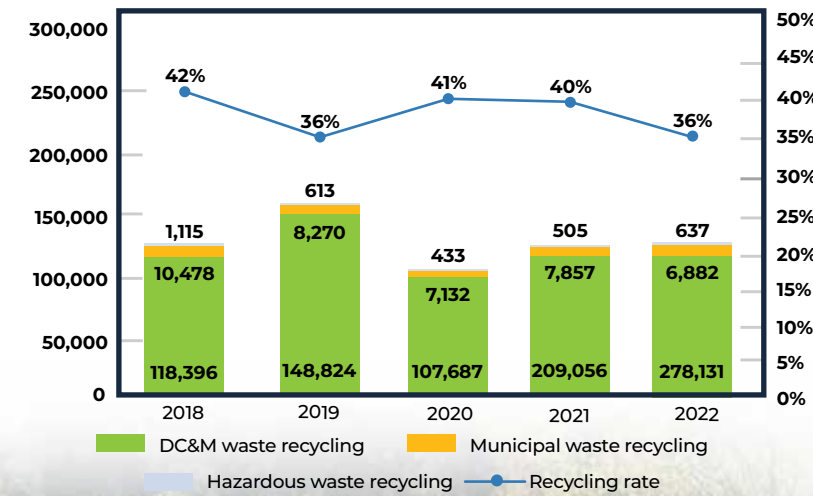
MDOT continues to be a recognized leader in the planning and implementation of transportation resiliency strategies. One of these strategies is to mitigate, minimize or ideally, avoid, adverse impacts that the transportation system can cause to the environment. MDOT goes beyond this by seeking to enhance the natural environment in Maryland. MDOT administers the highly successful Urban Tree Grant Program, which supports tree plantings in areas that have been previously impacted by the removal of trees due to the development of transportation projects. SHA continues to coordinate with the Chesapeake Bay Critical Area Commission to develop a regional banking program. The goal of this program is to develop mitigation in advance of impacts so that projects, including resiliency improvements, can be designed and constructed more efficiently and responsibly. MDOT's Transportation Resilience Improvement Plan (TRIP) was also approved by FHWA in FY 2024.

MPA and the University of Maryland received a grant to study dredged material that can be used for vegetative berms. The initial testing for environmental and physical properties was completed and found to be acceptable. The project moved into the second phase of the project with material blended at different ratios, formed into a berm and planted with grass seed to test the mixtures for vegetative growth.



# Objective: Employ Resource Protection and Conservation Practices In Project Development, Construction, Operations and Maintenance of Transportation Assets

## DIVERSION RATE AND COST OF DISPOSING CONSTRUCTION, DEMOLITION, AND MAINTENANCE MATERIALS IN LANDFILLS AND INCINERATORS



### What Is the Trend?

- Recycling performance varies from year-to-year and is based heavily on capital improvement project schedules and budgets.
- During calendar years 2022 and 2023, roadway resurfacing initiatives in Frederick, Westminster, and Dayton, and travel way improvements to BWI Thurgood Marshall Airport accounted for most of MDOT's recycled concrete and asphalt tonnages.

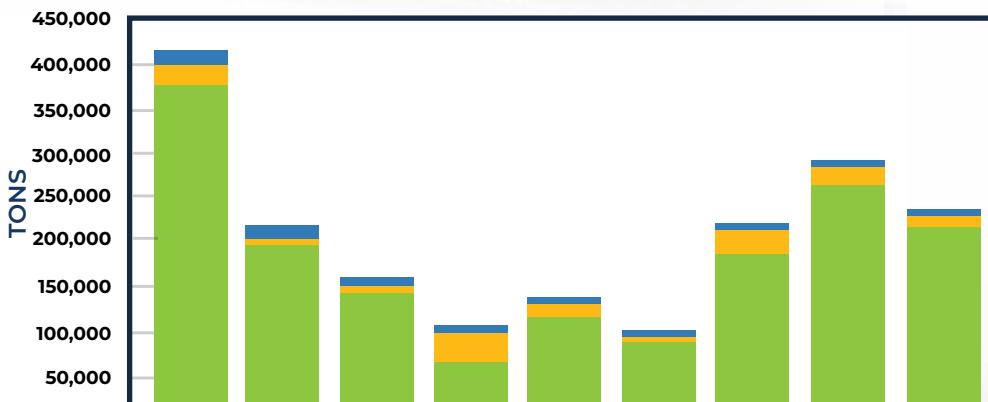
### What Are Future Strategies?

- MDOT has proposed the development of a comprehensive MDOT Waste Reduction and Action Plan, pending approval and funding. This plan would include strategies and best practices for, among other items, implementation of sustainable pavements with revised maintenance projections based on ongoing life cycle assessments. Using this approach would help MDOT more accurately measure travel way performance, reduce maintenance, and diminish Scope 3 (lifecycle) GHG emissions.

TARGET: NONE

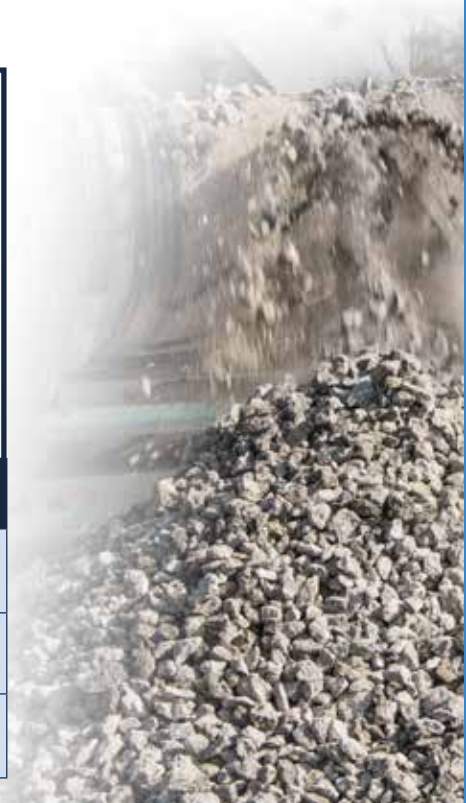


## RECYCLED/REUSED MATERIALS FROM MAINTENANCE ACTIVITIES AND CONSTRUCTION/DEMOLITION PROJECTS

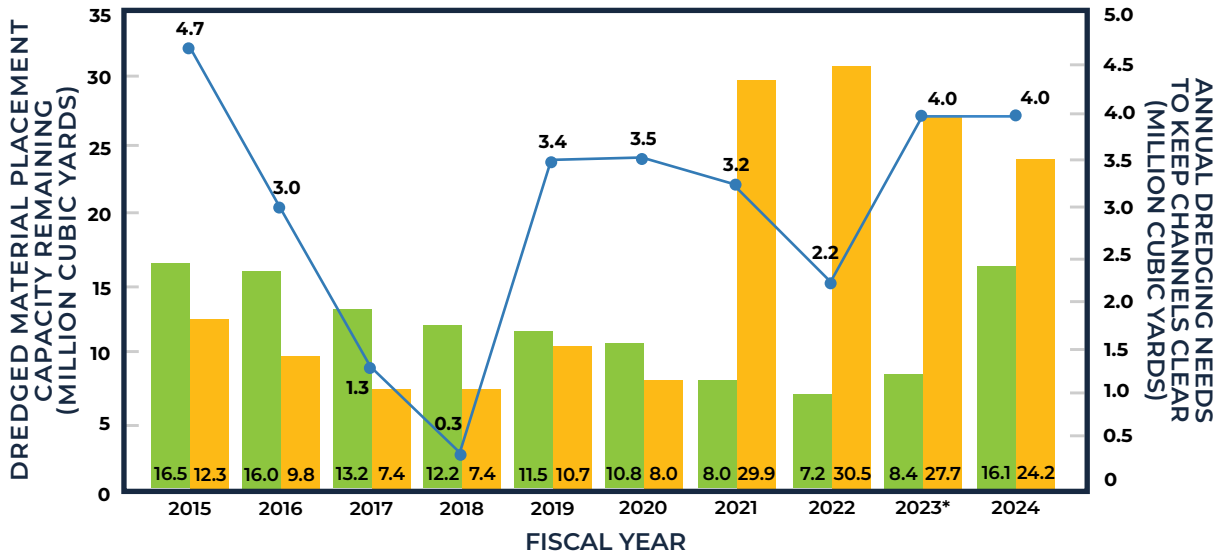


FISCAL YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Metals</b>	5,382	5,975	2,604	1,707	1,408	1,077	1,642	1,882	1,213
<b>Concrete</b>	28,508	3,629	2,531	31,358	9,085	532	22,019	19,897	7,844
<b>Asphalt</b>	370,590	194,399	158,929	85,332	138,332	106,078	185,394	256,351	210,169

TARGET: NONE



# ANNUAL DREDGED MATERIAL CAPACITY REMAINING FOR HARBOR AND BAY MATERIAL (MILLION CUBIC YARDS)



- Harbor - annual dredged material capacity remaining\*\*
- Bay Material - annual dredged material capacity remaining
- Annual dredging to keep channels clear, with placement into MPA managed sites (millions)

TARGET: THE 20-YEAR DREDGING DEMAND (FROM JUNE 30, 2024) FOR MARYLAND BAY CHANNELS AND BALTIMORE HARBOR IS 65 MCY

\* Data have been revised from previous report.

\*\* Harbor capacity is the total remaining volume at Cox Creek and Masonville dredged materials containments facilities (DMCFs).

## What Is the Trend?

- Maintaining and improving the shipping channels for safe, unimpeded access to the Port remains a priority and is still on track with four mcy dredged this year. The annual dredged material placement capacity remaining is above 16 mcy for both the Baltimore Harbor DMCFs and Bay Material this year.

## What Are Future Strategies?

- MPA must have a 20-year plan to handle dredged material placement for all channels serving the Port of Baltimore. MPA plans to achieve this plan by expanding dredged placement sites and using dredged material for beneficial use and innovative reuse as outlined in their Dredged Material Management Program Annual Report.

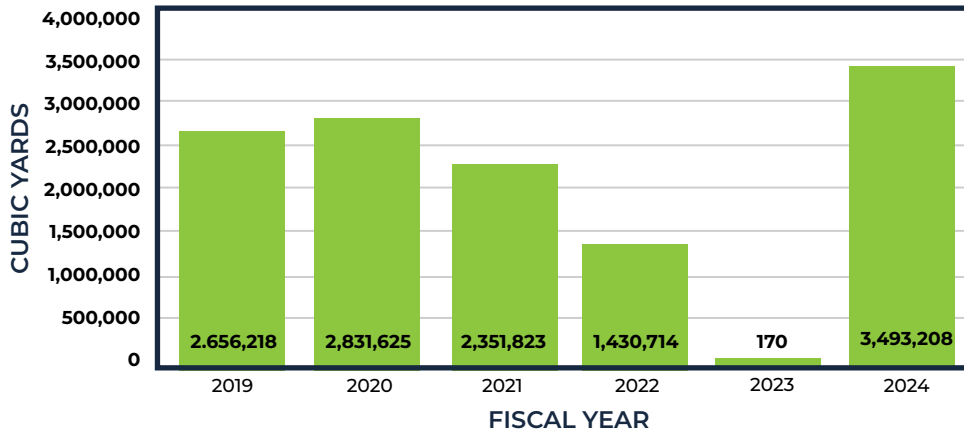




## INCREASE THE BENEFICIAL USE AND INNOVATIVE REUSE OF DREDGED MATERIALS



MPA leads nationally in innovative reuse of dredged materials through demonstration-scale projects and research as well as restoration of aquatic ecosystems and island habitats using dredged sediments. To support the Port of Baltimore's long-term success, MPA aims to implement sustainable reuse programs to address capacity recovery and manage Maryland's Dredged Material Management Program.



TARGET: 500,000 CUBIC YARDS ANNUALLY

### What Is the Trend?

- The use and innovative reuse of dredged materials increased to nearly 3.5 mcy in FY 2024, well above the 500,000 cubic yard annual target.

### What Are Future Strategies?

- MPA is developing the Cox Creek Sediment Technology (STAR) site to continue the advancement of innovative reuse of dredged material.
- MPA continues to investigate other uses of dredged material to meet its ultimate goal of using 500,000 cubic yards of dredged material annually for beneficial use and innovative reuse.





# 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 (FROM 2006 BASELINE)

\* 2023 data have been revised from previous report.

\*\* 2024 data are preliminary and subject to change.

### What Is the Trend?

- The estimated VMT in 2024 is 1.3% higher compared to CY 2023 but it is down 3.0% compared to CY 2019 pre-pandemic levels. Similarly, VMT per capita is up 1.1% from the previous year and down 5.4% since CY 2019.

### What Are Future Strategies?

- MDOT supports all modes of transportation by expanding transit services across the State, finding ways to improve existing transit options and routes and implementing active transportation policies and infrastructure. MDOT also promotes TDM strategies and incentives. Commuter Choice Maryland supports these efforts through outreach, including the incenTrip app and the Maryland Commuter Tax Credit.
- The USDOT awarded \$1,000,000 to MDOT's Office of Real Estate and Economic Development for MDOT to evaluate potential TOD and parking optimization opportunities at commuter rail stations owned by MDOT in the Baltimore region.



## NUMBER OF EMPLOYEE PARTNERS IN STATEWIDE 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, teleworking and flexible work hours. 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.

CY	NUMBER OF EMPLOYEE PARTNERS
2021	50
2022	48
2023	48
2024	36*

TARGET: 500 PARTNERS BY CY 2030 AND 1,000 PARTNERS BY CY 2050

\* 2024 value is an estimate subject to change.

### What Is the Trend?

- Participation in the program has decreased during the past few years; several employers who participated when the program launched originally have closed, relocated out of State or focused their attention on other priorities. Conversely, several employers participate consistently, and there is renewed interest through program promotion and through Maryland Commuter Tax Credit registrations.

### What Are Future Strategies?

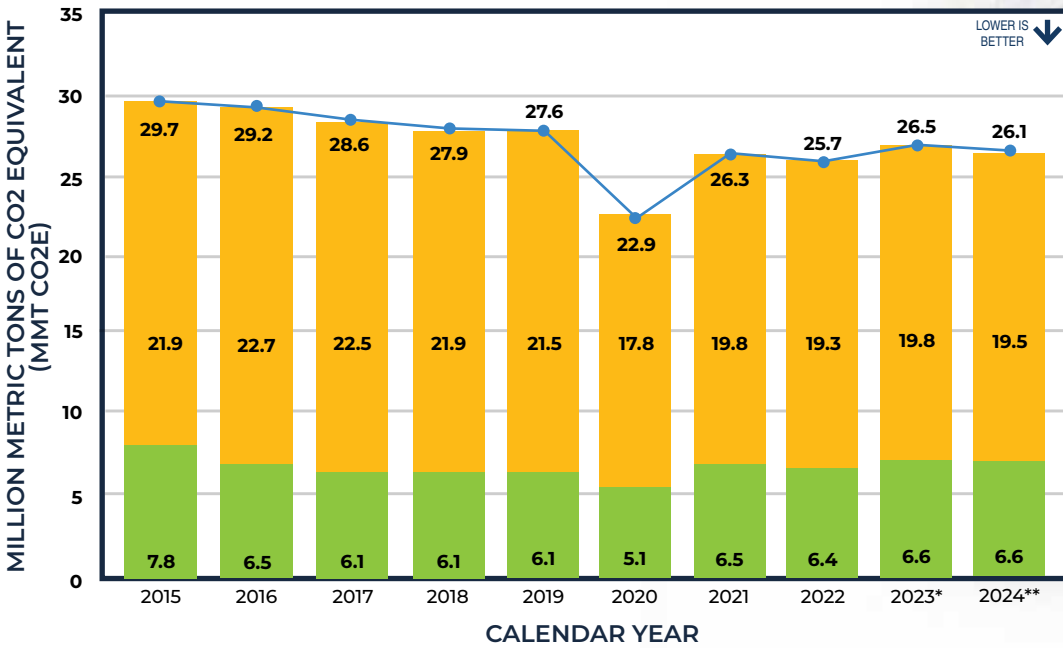
- Commuter Choice Maryland will continue leveraging relationships with other State agencies and other large employers as well as local TDM program managers to connect with their employer contacts. The program also will seek additional State and local organizations, nonprofits and private sector companies as partners and identify new outreach opportunities where employers are most likely to attend. The program will explore and try new digital business-to-business communications channels to raise awareness of the program.



# GHG EMISSIONS FROM LIGHT-DUTY VEHICLE (LDV) VMT AND MEDIUM/HEAVY-DUTY VEHICLE (MHDV) VMT



GHG emissions from on-road vehicles result from the VMT of LDV and MHDV. Two factors contribute primarily to the reduction of GHG emissions from on-road vehicles: VMT reduction and increased vehicle efficiency.



Legend: ■ GHG Emission from LDV VMT ■ GHG Emission from HDV VMT —●— GHG Emissions Total from LDV VMT and HDV VMT

TARGET: AS DESCRIBED IN MDOT'S CPRP, THE MMT CO2E PER YEAR TARGET BASED ON IMPLEMENTING COMMITTED STRATEGIES AND POLICIES IS 17.85 MMT CO2E PER YEAR BY 2031. THIS REPRESENTS A REDUCTION OF 41.9% BELOW THE 2006 BASELINE. WITH ADDITIONAL REDUCTIONS FROM POTENTIAL NEW INITIATIVES, GHG EMISSIONS COULD DECREASE TO 15.64 MMT CO2E PER YEAR. THIS REPRESENTS A REDUCTION OF 49.1% BELOW THE 2006 BASELINE.

\* 2023 data have been revised using MOVES4 model and final 2023 VMT data

\*\* Data for 2024 uses MOVES4 model and is preliminary using a projection for 2024 VMT.

## What Is the Trend?

- Though VMT increased annually across the State, GHG emissions from on-road vehicles declined from 26.5 mmt CO2e to 26.1 mmt CO2e due to continued improvements in vehicle efficiency.

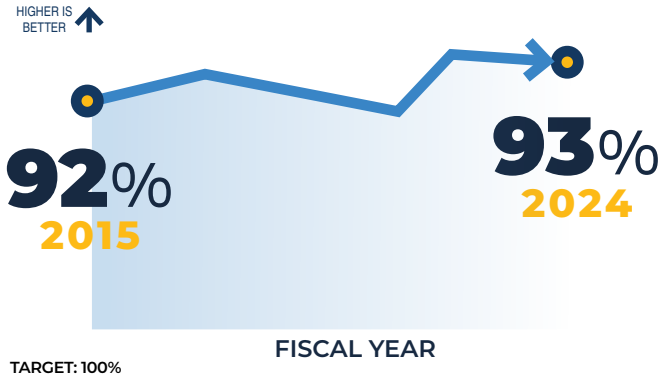
## What Are Future Strategies?

- The CRP, established by the Bipartisan Infrastructure Law and administered by the Federal Highway Administration (FHWA), provides funding to Maryland over five years supporting MDOT strategic investment to achieve carbon reduction. The first round of CRP has been awarded for State and local government projects that will reduce transportation carbon dioxide emissions.
- MDOT continues to support local government TDM programs to offer free commuter assistance and to support employers in their efforts to develop commuter benefits programs.





## STATEWIDE VEHICLE EMISSIONS INSPECTION PROGRAM (VEIP) TESTING COMPLIANCE RATE



### What Is the Trend?

- VEIP continues to support a healthier Maryland by requiring vehicle testing on their recommended schedule; 93% of registered vehicles in non-attainment counties are in compliance in 2024.

### What Are Future Strategies?

- Identify opportunities to engage with customers about the VEIP program and individual vehicle due dates.

## Objective: Support the Widespread Adoption of Alternative Fuels, Electric Vehicles (EVs) and Innovative Technologies

### PERCENTAGE OF MDOT FLEET COMPRISED OF EVS



The CSNA of 2022 set a target for the electrification of the State's fleet of LDV, defined as vehicles with a gross vehicle weight of 8,500 pounds or less. The target does not apply to vehicles that have special performance requirements necessary for the protection and welfare of the public (police vehicles) or vehicles that are used by MTA or MDOT to provide paratransit service.

FY	NUMBER OF EVS, ALL MDOT MODES	PERCENTAGE OF MDOT LIGHT-DUTY FLEET COMPRISED OF EVS	NUMBER OF LDV, ALL MDOT MODES
2024	42	3.80%	1,106

TARGET: 100% OF LDVS TO BE ZEV BY 2036

Note: Tracking of LDV Fleet Electrification performance data began in 2024. Prior year metrics utilized various methodologies.

### What Is the Trend?

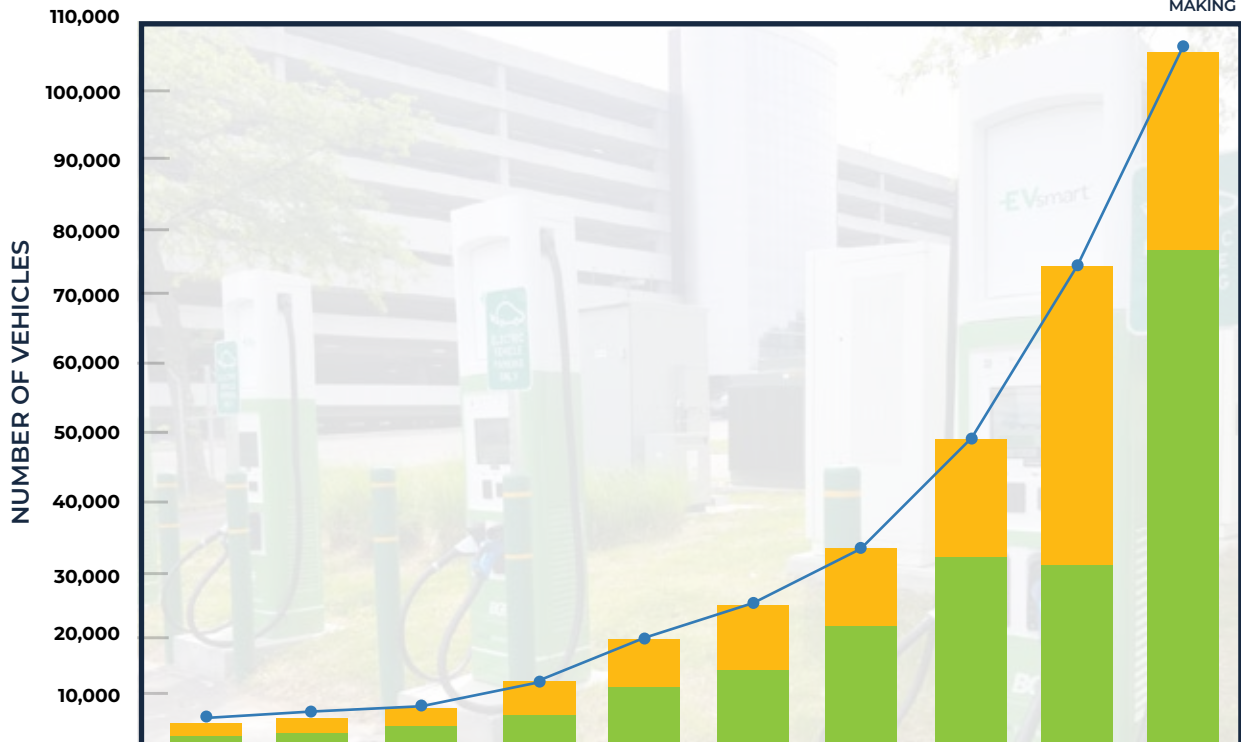
- All MDOT modal administrations have begun to purchase EVs in accordance with the goals and targets established in the CSNA. EVs in operation include Ford Mustang Mach-Es, Chevrolet Bolts and Nissan Leafs.

### What Are Future Strategies?

- Modes will continue to utilize the EV Infrastructure Program (EVIP) managed by the Department of General Services (DGS) for assistance with implementing and activating fleet charging. With funding from the DGS EVIP, EV charging has been installed at nine locations, with 15 additional locations planned or currently in procurement.
- MDOT's Fleet Electrification Strategy is guiding the transition of all modal administrations' light-duty fleets to EVs to ensure MDOT meets the goals established by the CSNA. MDOT's Fleet Electrification Working Group was launched in 2024 to address barriers to fleet electrification and create an MDOT-wide charging infrastructure deployment plan and timeline.



# PERCENT OF TOTAL REGISTERED VEHICLES THAT ARE EVS



FISCAL YEAR	2015	2016	2017	2018	2019	2020	2021	2022*	2023*	2024
<b>Battery Electric Vehicle (BEV)</b>	1,943	2,643	3,745	5,495	10,938	14,930	21,076	33,230	52,008	76,587
<b>Plug-in Hybrid Electric Vehicle (PHEV)</b>	3,521	4,345	5,624	7,712	9,784	10,812	13,765	19,089	23,853	31,997
<b>BEV + PHEV</b>	5,464	6,988	9,369	13,207	20,722	25,742	34,841	53,219	75,861	108,584
<b>% EVs of total Registered Vehicles</b>	0.1%	0.1%	0.2%	0.3%	0.4%	0.5%	0.7%	1.1%	1.6%	2.2%
<b>Total Registered Vehicles (millions)</b>	4.95	4.99	5.03	5.09	5.13	5.16	5.08	4.78	4.80	4.94

TARGET: 1.1 MILLION EVS IN 2030

Note: MVA EV registration data (PHEV, BEV, and total) reported as of June 30 each year.

\* Total registered vehicles and percent of EVs registered from total registered vehicles for 2022 and forward have been updated from previous report.

## What Is the Trend?

- 32,723 EVs were registered in Maryland in the 12-month period between July 2023 and July 2024, representing 43% growth in the number of EVs on the road during this time period. This year, Maryland surpassed the milestone of 100,000 total EVs registered in the State.
- EVs now represent more than 2% of all registered vehicles in Maryland and are estimated to represent approximately 12% of new LDV sales in the CY 2023.

## What Are Future Strategies?

- Maryland has adopted the ACC II, which 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, ACC II establishes increasingly stringent emission standards for gas cars and heavier passenger trucks.
- MDOT conducts educational outreach to consumers by maintaining the MarylandEV online platform. Through the MarylandEV platform, MDOT amplifies incentives and other resources available to consumers through State, utility and federal programs.

## LEVEL 2 AND DIRECT CURRENT FAST CHARGING (DCFC) PORTS PER 1,000 RESIDENTS

Expansion of EV charging infrastructure supports Maryland's larger goal of 1.1 million EVs registered in the State by 2030. This goal is a component of ensuring that Maryland meets air quality and GHG reduction goals. A reliable and convenient charging network in Maryland supports these goals by serving existing EVs and by encouraging future EV adoption. A Level 2 charger typically takes 4-10 hours to charge an EV battery fully. Each hour of charging on a Level 2 charger adds approximately 10-20 miles of driving range. DCFC is typically available at commercial sites and along highways. Depending on battery size and acceptance rate, DCFCs can charge some EVs up to 80% in as few as 20-30 minutes. Each hour of charging on a DCFC adds approximately 180-240 miles of driving range.

	FY 2023	FY 2024*
<b>Level 2 Charging Ports</b>	3,037	3,753
<b>DCFC Ports</b>	782	995
<b>Total Charging Ports</b>	3,819	4,748
<b>Charging Ports Per Thousand Residents**</b>	0.62	0.77

TARGET: WILL BE DEVELOPED BY THE ZERO EMISSION VEHICLE INFRASTRUCTURE PLAN

\* Charging ports data: Alternative Fuels Data Center 6/30/2024. Population data: population estimates from the US Census, MD Population: 6,164,660.



## What Is the Trend?

- By June 30, 2024, there were more than 1,600 publicly accessible charging stations in Maryland with more than 4,700 charging ports. Approximately 20% of public charging ports are DCFCs.
- MDOT conditionally awarded its first round of National EV Infrastructure (NEVI) funding in July of 2023 to install charging stations with up to 130 DCFC ports.
- MDOT has allowed Maryland electric utilities to install and operate public EV Charging stations on MDOT-owned sites, under the terms of the Public Service Commission (PSC) EV Pilot Program Phase 1. These chargers are allowed to operate through 2025, and will be subject to a new PSC Order governing Phase 2.
- MDOT and MDE, as part of a regional coalition, were awarded a Climate Pollution Reduction Implementation Grant from the EPA. This grant will provide \$78 million for MDOT, in coordination with MDE, to deploy medium- and heavy-duty zero emission vehicle charging hubs along Maryland's segment of the I-95 corridor.

## What Are Future Strategies?

- MDOT will release future round(s) of its NEVI Program, funding additional charging installations to fully build out Maryland's EV AFCs.
- MDOT will continue to work on the Zero Emission Vehicle Infrastructure Plan (ZEVIP) and Multi-Agency Strategy, required by the Governor's Executive Order on implementing Maryland's CPRP, into 2025.
- MDOT is continuing to seek grant funds for EV charging installations via Round 2 of the Charging and Fueling Infrastructure Grant Program. MDOT participated in a multi-State application with neighboring States. If awarded, this effort would deploy medium- and heavy-duty EV charging and/or hydrogen fueling along the I-81 corridor to I-78 corridor from Maryland through New Jersey.

