

GOAL:

Environmental Stewardship



Ensure that the delivery of the State's transportation infrastructure program conserves and enhances Maryland's natural, historic and cultural resources.

Facing Challenges

Summary of Goal Achievement



Objectives

- Limit the impacts of transportation on Maryland's natural environment through impact avoidance, minimization and mitigation
- Employ resource protection and conservation practices in project development, construction, operations and maintenance of transportation assets
- Implement transportation initiatives to mitigate the impacts of climate change and improve air quality
- Support broader efforts to improve the health of the Chesapeake Bay, protect wildlife, conserve energy and address the impacts of climate change

MDOT recognizes that transportation infrastructure can have a strong influence on the quality and health of Maryland's natural environment. MDOT's commitment to environmental stewardship is one aspect of a broad commitment to a more sustainable future. That future will require the transportation system to be resilient and our strategies for the protection of natural, cultural and community resources to be forward-looking and adaptive.

MDOT practices resource protection and conservation in all phases of a transportation assets lifecycle. MDOT is in the process of standardizing environmental management systems across all the modal agencies to help identify specific compliance needs, achieve environmental regulatory compliance and maintain compliance on an ongoing basis. MDOT is working with SHA and MDTA to implement planning processes, develop design criteria and construct stormwater controls and alternative water quality improvement strategies in order to meet the U.S. Environmental Protection Agency's (U.S. EPA) Chesapeake Bay Total Maximum Daily Load (TMDL) requirements by the year 2025. The FY 2014–FY 2019 CTP includes \$546.2 million in SHA funding to plan, design and construct stormwater controls and alternative water quality improvement strategies adjacent to Maryland roadways to help meet the TMDL requirements.

Mitigating and addressing the impacts of climate change and improving air and water quality are key objectives for MDOT. MDOT is an implementation partner in Governor O'Malley's *Smart, Green & Growing* initiative, and also plays a key role in the State's mitigation of greenhouse gas (GHG) emissions and response to the threats of global climate change in developing the Maryland Climate Action Plan.

Key Initiatives

MDOT: MDOT chairs the Maryland Electric Vehicle Infrastructure Council (EVIC) which has recommended a set of strategies to facilitate the successful integration of Electric Vehicles (EVs) and EV infrastructure into Maryland's transportation system.

As part of the State's response to the EPA's mandate of TMDLs for nutrients and sediment in the Chesapeake Bay and its tidal tributaries, MDOT facilitates agency strategies to meet the requirements of the Watershed Implementation Plan.

MAA: The MAA promotes stewardship of Maryland's environment through recycling programs, stormwater management and wetland remediation, energy efficiency improvements for airport facilities and vehicle fleets, and alternative energy sources. MAA recycles at least 20% of BWI Marshall's solid waste, has implemented an Energy Efficiency Program for BWI Marshall and Martin State Airport, and recently installed a solar photovoltaic (PV) energy system on top of the BWI Marshall daily parking garage.

MPA: MPA's GreenPort initiative is reducing waterborne litter by improving recycling and waste management, improving water quality through installation of stormwater treatment technologies, restoring shorelines and wetlands, improving air quality through the Mid-Atlantic Dray Truck Replacement Program and the Clean Diesel Program, and reducing energy consumption through facility heating and cooling improvements, lighting system upgrades, water conservation measures, and solar energy system installations.



Key Initiatives (continued)

MTA: The MTA environmental policy commits to comprehensive environmental protection through continual process improvement that prevents pollution, conserves energy, and supports conservation of our natural and cultural resources. The MTA operates over 230 hybrid buses and 26 new MP-36 locomotives which meet stringent new EPA requirements for all types of pollutants, is replacing electric fixtures and bulbs throughout the system with more energy-efficient components, and maintains a stormwater management program that includes working with the Jones Falls Watershed Association to restore, monitor and protect the watershed and build citizen awareness.

MDTA: MDTA administers environmental compliance programs at its nine maintenance facilities, two travel plazas, and weigh and inspection stations and leads a sustainability initiative focusing on energy conservation, materials and waste management, fuel management and alternative fuels, and stormwater management.

MDTA is addressing the EPA's Chesapeake Bay Restoration goals by completing and refining an inventory of impervious areas, investigating innovative approaches to implement stormwater retrofits, and designing and constructing bio-swale and bio-filter stormwater retrofits along MDTA highways to achieve goal of treating 20% of untreated impervious surfaces by 2020. MDTA performed 1,916 erosion and sediment control inspections with two non-compliance findings in FY 2013 for a compliance rate of 99.9%.

MVA: MVA is committed to the protection and enhancement of the environment through the development of a Compliance Focused Environmental Management System (CFEMS). The MVA continues to enhance provision of Internet-based services to avoid unnecessary vehicle trips, while also developing new technologies and services to facilitate vehicle emissions testing as well as new regulations to ensure compliance with State emissions testing mandates.

SHA: SHA continues to investigate opportunities to institute fleet reductions to cut overall fuel consumption and expand fueling locations for E-85 fuel, while also encouraging drivers of flex-fueled SHA vehicles to fuel up with E-85 fuel when practical.

SHA is increasing the use of recycled materials in highway construction in an effort to reduce greenhouse gas emissions and landfill waste. In CY 2012, SHA used 165,318 tons of recycled asphalt pavement in highway construction projects—the equivalent of 13% of all the asphalt placed on State roadways that year.

Planning, design and construction activities to meet EPA's Chesapeake Bay Restoration goals are ongoing. SHA is pursuing wetland, stream and forest banking sites for project mitigation and TMDL compliance that are beneficial for both improving water quality and providing greater ecological habitat functions.

Maryland Aviation Administration

The Maryland Aviation Administration promotes good stewardship of Maryland's environment while keeping our people and our economy moving. Approaches include recycling, energy efficiency, environment and community protection, and alternative energy.

Recycle: Continue to recycle at least 20% of BWI Marshall's solid waste.

Energy Efficiency: Implement an Energy Efficiency Program for BWI Marshall and Martin State Airport, including comprehensive lighting improvements and substantial energy infrastructure replacement projects. The Energy Efficiency project also includes water efficiency projects including ultra-low flow toilets, faucets and shower heads to reduce water consumption.

Environmental Protection: As the landlord for the more than 3,200 acres that comprise BWI Airport, MAA is also the steward of the many natural resources on its property. MAA must determine the potential effects of development on these resources and fulfill all applicable laws.

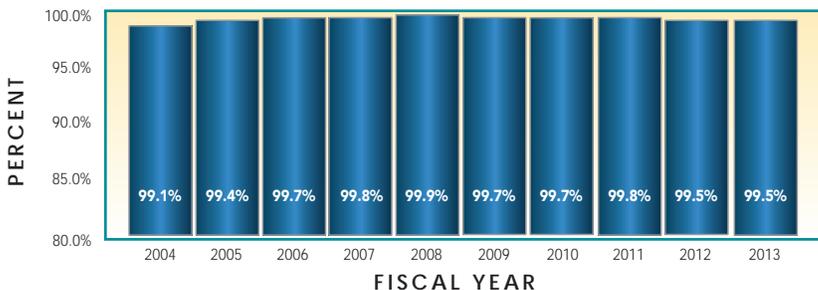
Community Protection: Through the Homeowner Assistance Program, MAA enhances the environment of neighboring communities by providing noise mitigation for homeowners residing within the BWI Marshall Airport Noise Zone.

Alternative Energy: Installed a 505 kW solar PV system on top of the BWI Marshall daily parking garage.



SHA: Percent of Compliance on Erosion and Sediment Control Ratings*

State and federal regulations mandate erosion and sediment control (ESC) during construction of any land disturbing activity. ESC is a system of structural and vegetative measures that minimize soil erosion and off-site sedimentation from construction and roadway runoff. At any given time, SHA has many construction and maintenance activities that cause earth disturbance and require ESC. Maryland Department of the Environment (MDE) has delegated inspection authority with oversight to SHA with specific parameters to be observed and rated. The results of the individual project inspection rating indicate compliance or non-compliance with the ESC requirements and the law.



Target: 100% Annually

* This is a new measure and has not previously been reported in the Attainment Report.

Why Did Performance Change?

- SHA performed over 4,000 erosion and sediment control inspections with only 20 non-compliance findings documented by SHA's Quality Assurance Team in FY 2013
- SHA's overall annual erosion and sediment control percentage of compliance in FY 2013 was 99.5%
- Erosion and Sediment Control training led by SHA and the Maryland Transportation Builders and Materials Association is now available online. Through FY 2013, 4,580 individuals completed this training

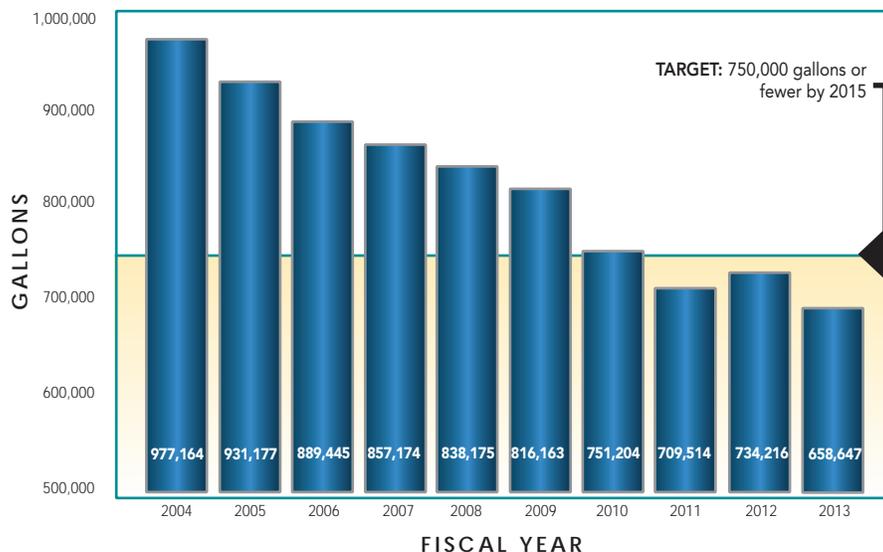


What Are Future Performance Strategies?

- SHA's quality assurance rating system now includes incentives/liquidated damages to ensure compliance statewide
- SHA is working towards the formal approval and implementation of delegated authority to allow SHA to approve erosion and sediment control field changes during construction. A nine-month pilot to test this new procedure will be completed in FY 2014
- SHA will continue to deliver erosion and sediment control training and certification programs for contractors and inspectors, and a certification training program for designers

SHA: Total Fuel Usage of the Light Fleet

This measure is tracked statewide to monitor success in reducing consumption of gasoline through conservation strategies, including use of higher fuel efficiency vehicles for scheduled fleet replacements.



Why Did Performance Change?

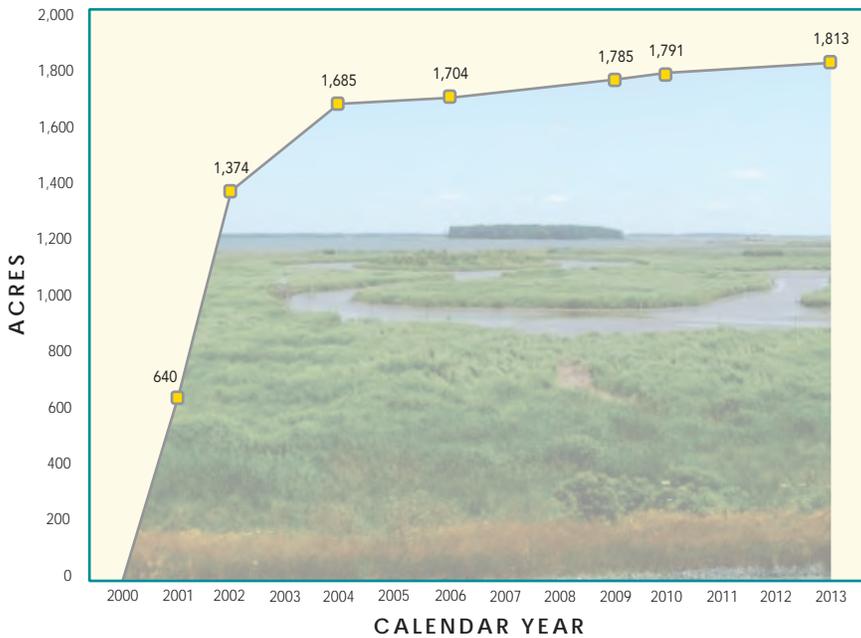
- SHA purchased 38 flex-fueled, half-ton pickup trucks in an effort to continue phasing out older gasoline pickups and sport-utility vehicles, allowing for further opportunities to expand E-85 fuel usage
- Reduced the SHA light-duty fleet from 922 in FY 2012 to 903 in FY 2013
- Fuel efficiency of sedans and light trucks continues to increase, but the efficiency of SHA heavy-duty trucks and construction equipment, both of which are essential to SHA's core mission, has not improved significantly
- Continued to enforce the automobile engine-idling policy for all employees and consultants, and encouraged employees to save fuel through carpooling and videoconferencing for State business trips
- Continued employee outreach to encourage use of other existing and planned E-85 fueling stations at Maryland State Police facilities

What Are Future Performance Strategies?

- Investigate opportunities to expand fueling locations for E-85 fuel and encourage drivers of flex-fueled SHA vehicles to fuel up with E-85 gas when practical
- Continue to look for opportunities to institute fleet reductions to cut overall fuel consumption
- Continue to replace older diesel pickup trucks with flex-fueled pickup trucks of similar hauling and towing capacity

MPA: Acres of Wetlands or Wildlife Habitat Created, Restored, or Improved Since 2000*

MPA is in compliance with the various permits that are granted to construct projects needed for MPA customers (e.g., landside tenants or steamship lines).



TARGET: Mitigate projects as required by federal, State and local statutes

*Represents cumulative mitigation efforts by MPA since 2000.

Why Did Performance Change?

- The remaining 22 acres of Masonville Uplands (Access Zone 1, Central) was completed and opened for public use and wildlife habitat
- In September 2013, the Masonville Cove environmental restoration project received a very unique recognition: being named the first national Urban Wildlife Refuge by the U.S. Fish and Wildlife Service

What Are Future Performance Strategies?

- When required to mitigate for a construction project, the MPA will continue to seek to create and improve wildlife habitat wherever appropriate and in conformance with permit requirements
- Long term efforts include creating and improving wildlife habitat as part of the Hart-Miller Island North Cell restoration and Poplar Island Expansion
- Continue Masonville eastern and peninsula uplands environmental improvement projects, which are noteworthy examples of coordinating with neighboring communities' needs which allows MPA to maintain its social license to operate



MVA: Compliance Rate and Number of Vehicles Tested for Vehicle Emissions Inspection Program (VEIP) Versus Customer Wait Time*

Monitoring the VEIP testing compliance rate ensures system effectiveness and identifies vehicles exceeding allowable standards. Tracking the average wait time at VEIP stations ensures that the 15-minute average wait time requirement is met. Timely and efficient customer service helps the State meet federal clean air standards by identifying polluting vehicles and encouraging regular vehicle maintenance.



Why Did Performance Change?

- In FY 2013, customers waited an average of only 5 minutes, well below MVA's target threshold of 15 minutes
- In FY 2013, vehicle inspections decreased slightly from FY 2012 by 39,849 vehicles
- The VEIP compliance rate for FY 2013 decreased slightly to 88% when compared to the FY 2012 rate of 91%

What Are Future Performance Strategies?

- Actively research new technologies and services to facilitate a more efficient vehicle emissions testing process
- In partnership with the MDE, continue to develop strategies, policies and regulations to ensure compliance with State emissions testing mandates and federal clean air standards
- Progressively monitor registered vehicles in eligible (non-attainment) counties to ensure VEIP testing compliance with State emissions regulations
- Continue to monitor wait times and implement process/procedure changes where necessary to maintain current wait time levels
- Plan, design and implement an enhanced technical platform that will allow for the full integration of core business services and processes, thus providing the customer with more efficient access to MVA driver and vehicle services and products

* 14 counties offer VEIP tests: Anne Arundel, Baltimore, Baltimore City, Carroll, Harford, Howard, Queen Anne's, Cecil, Washington, Calvert, Charles, Frederick, Montgomery and Prince George's.

Travel Demand Management

Maryland's transportation agencies promote Travel Demand Management (TDM) strategies as a way to combat congestion by offering incentives for Marylanders to choose to use public transit, carpool, ride a bike or walk instead of driving alone. Other strategies to reduce demand for roadways include promotion of telecommuting and flexible work hours as a way to reduce or shift trips to times when roadway capacity is less constrained. By cutting down on single-occupant vehicle trips and reducing peak period congestion, TDM initiatives also contribute to reduced emissions and improved air quality.



MTA/SHA: Reduction in Vehicle Miles Traveled (VMT) Through Park-and-Ride Usage

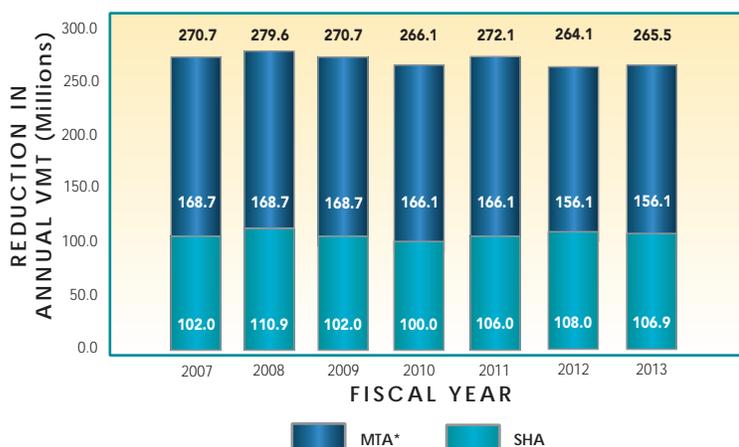
By offering park-and-ride facilities, SHA and MTA provide commuters with an alternative to driving to their destinations and supports increased carpooling and public transit ridership.

AGENCY	TOTAL # OF PARK-AND-RIDE FACILITIES	TOTAL SPACES	AVERAGE WEEKDAY UTILIZATION*	UTILIZATION SHARE
SHA (2013) (Estimated)	103	12,897	7,516	59%
MTA (2012)**	58	29,542	18,507	63%
Transit Multipurpose***	77	19,959	9,616	48%
Total	238	62,025	35,473	57%

* Facility usage fluctuates due to the economy; weather conditions; special events; emergencies; delays or shutdowns of parallel lines or modes; maintenance and repair; storage of plowed snow; increases in frequency, service, and capacity; and other factors.

** Includes facilities at Baltimore Metro, Light Rail and MARC stations only. MTA is conducting a survey in 2013, results will be available in 2014 and will be reported in the next Attainment Report.

*** Includes facilities operated by MTA, Amtrak, WMATA, Penn Station in Baltimore and Union Station in Washington, D.C. MTA is conducting a survey in 2013, results will be available in 2014 and will be reported in the next Attainment Report.



Why Did Performance Change?

- Statewide, SHA park-and-ride lots in FY 2013 are at an estimated 59% capacity, which is in line with the historic average. Construction of an additional 490 spaces are estimated for completion by the end of 2013
- Statewide, MTA park-and-ride lots in FY 2013 are at an estimated 63% capacity, which is in line with the historic average
- In St. Mary's County, the Charlotte Hall park-and-ride lot opened with 300 spaces

What Are Future Performance Strategies?

- SHA plans to complete a total of 327 spaces in FY2014 and advertise another 246 spaces for construction. MTA has programmed funding to expand parking at the MARC West Baltimore Station from 316 to 638 spaces, as well as construct new 500 space lots at Dunkirk and Waldorf for commuter bus service
- As part of master development agreements as part of a joint-development at Transit-Oriented Developments (TODs), negotiate increased park-and-ride facility capacity
- Continue to install EV charging posts at park-and-ride locations
- Continue to look for the opportunities to construct park-and-ride lots when planning major highway projects along interstates and principal arterials
- MTA will investigate how to bolster capacity by utilizing single deck parking structures at over-capacity park-and-ride facilities, without increasing stormwater runoff
- Continue to explore the adaptation of park-and-ride lots along freight corridors to allow long-haul trucks to park overnight where appropriate
- Bus Communications System Upgrades will commence in 2014 including unified, integrated, state-of-the art on-board bus equipment and fixed end systems to enhance the delivery of safe and reliable customer service
- Real Time Passenger Information Systems will be implemented in 2014 on Local Bus, Light Rail and Baltimore Metro services which will allow customers to check next bus or train arrival times through their phone or other device, on-line, as well as shown on LED signs at the rail station platforms

* MTA park-and-ride lot VMT reductions are estimated based on the same assumptions used to calculate VMT reductions associated with MTA TERMS. These assumptions differ from SHA's VMT reduction calculation methodology.



MDOT: Reduction in Vehicle Miles Traveled Through Transportation Emission Reduction Measures

Maryland supports a wide variety of programs and projects to promote TDM, including Commuter Choice Maryland, Commuter Connections, the Telework Partnership, transit marketing and subsidy programs, and statewide park-and-ride facilities. These programs support reductions in single-occupant vehicle driving while increasing ridesharing, transit, and telecommuting.



Estimated Annual Regional VMT Reduction through TERMS



2012-2013 MDOT AND MTA TRANSPORTATION EMISSION REDUCTION MEASURES

PROGRAM	PROGRAM DESCRIPTION	DAILY REDUCTION IN VEHICLE TRIPS*	DAILY REDUCTION IN VEHICLE MILES OF TRAVEL*
Commuter Connections Transportation Emission Reduction Measures**			
Guaranteed Ride Home	Provides transit users or carpoolers up to four rides home per year in a taxi or rental car in the event of an unexpected personal or family emergency	8,140	212,448
Employer Outreach	Supports marketing efforts to increase employee awareness and use of alternatives to driving alone to work every day	92,129	1,690,447
Integrated Rideshare	Promotes other alternative transportation services to employers and to the general public. Commuter information system documentation is provided with comprehensive commute information, to include regional TDM software updates, transit, telework, park-and-ride and interactive mapping	1,751	52,584
Commuter Operations and Ridesharing Center	Updates and maintains the Commuter Connections database for ride-matching services and provides information on carpooling, transit, Guaranteed Ride Home services and alternative mode choices for the Washington-Baltimore metropolitan region	6,312	183,961
Telework Resource Center	Provides information to employers on the benefits of telecommuting and assists in setting up new or expanded telework programs for employers	12,745	246,595
Mass Marketing	Promotes and communicates the benefits of alternative commute methods to single-occupant vehicle commuters through the media and other wide-reach communications	7,058	79,838
MTA Transportation Emission Reduction Measures			
MTA College Pass	Offers a subsidized monthly transit pass to full- or part-time students enrolled in greater Baltimore metropolitan area colleges or universities	3,859	30,486
MTA Commuter Choice Maryland Pass	Baltimore region program that allows employers to purchase transit passes and vouchers for their employees. Employers can subsidize these for their employees or allow employees to purchase passes or vouchers with pre-tax income	9,531	160,788
Transit Store in Baltimore	Provides customer access to transit information and for purchases of transit passes. Some 15-20% of total transit pass sales occur through this outlet	3,017	50,987

* The impacts shown reflect the current definitions and most recent data available for each of the measures.

** The Commuter Connections program is run through the Metropolitan Washington Council of Governments. The reduction in trips and VMT for Commuter Connections reflect reductions for all of the Metro Washington region, including Maryland, District of Columbia and Virginia.

MDOT: Transportation-Related Emissions by Region*

Reducing vehicle emissions improves air quality in compliance with federal regulations and provides health benefits for Maryland residents. MDOT programs supporting TDM, transit, ridesharing, bicycling and walking, as well as projects that reduce roadway congestion all support air quality goals.

PERFORMANCE MEASURE	REGION	CALENDAR YEAR***			% CHANGE 2002-2011
		2002	2008	2011	
Volatile Organic Compound (VOC) Tons per Day	Baltimore	78.2	50.1	45.3	-42%
	Washington**	73.4	42.8	40.0	-46%
Nitrogen Oxide (NOx) Tons per Day	Baltimore	209.4	125.7	116.7	-44%
	Washington**	175.1	102.2	103.0	-41%
Carbon Monoxide (CO) Tons per Day	Baltimore	1,243.5	844.3	699.9	-44%
	Washington**	1,085.4	666.0	575.1	-47%
Particulate Matter (PM2.5) Tons per Day	Baltimore	8.1	5.8	5.6	-31%
	Washington**	6.3	4.4	4.7	-25%

* Emissions calculated using EPA's MOVES2010a model.

** All Washington data represents Maryland's share of emissions in the Washington region non-attainment area, including Charles, Frederick, Montgomery and Prince George's counties.

*** CY 2011 emissions data is preliminary. Final data will be published by EPA in late-2013.

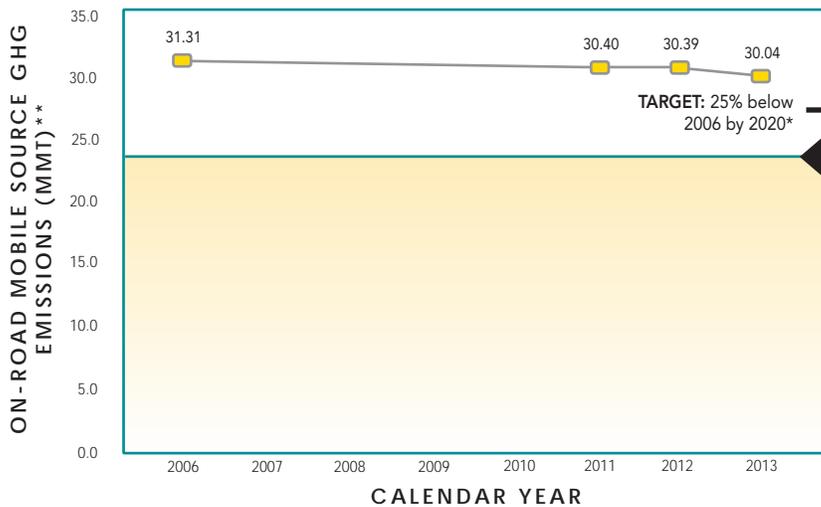


What Are Future Performance Strategies?

- Promote mobile source emission reduction efforts including support of TERMS. MDOT supports the reduction of emissions through congestion mitigation, ridesharing and commuter incentive programs (\$25.0 million in dedicated funding in the FY 2014–FY 2019 CTP)
- Implement the Baltimore Regional Transportation Board (BRTB) and the Metropolitan Washington Council of Governments (MWCOC) Transportation Planning Board (TPB) 25-year long-range transportation plans, which meet Clean Air Act requirements confirming that the plan does not worsen the region's air quality or delay the attainment of federal air quality standards
- Continue to replace older diesel buses in the MTA bus fleet, with the goal of ensuring that 100% of the MTA fleet are hybrid buses
- Replace MARC locomotives to maintain safe and reliable operation and to comply with EPA air quality emissions standards (the FY 2014–FY 2019 CTP identifies \$44.0 million in funding for replacement activities)

MDOT: Transportation-Related Greenhouse Gas Emissions

A reduction in the growth of overall Vehicle Miles of Travel (VMT) is one of several strategies that MDOT is pursuing to address climate change through mitigation of GHG emissions. Reducing growth in VMT through providing transportation alternatives has other potential benefits to Marylanders, such as reduced congestion, reduced travel costs and improved travel time reliability. Other strategies include providing alternatives to SOV travel and transitioning to a less carbon intensive vehicle fleet and lower carbon fuels.



* The MDOT selected GHG emission reduction goal (25% below 2006 emissions by 2020) is consistent with the statewide target set in the 2009 Greenhouse Gas Reduction Act. For on-road transportation, the goal equals 23.48 mmt CO₂e in 2020.

** MMT stands for million metric tons, the standard unit of measurement for GHG emissions.

Why Did Performance Change?

MDOT responded to the 2009 Greenhouse Gas Reduction Act by setting a GHG reduction goal for the transportation sector of 25% below 2006 emissions by 2020. MDOT developed the MDOT Climate Action Plan in 2011 and contributed to the 2012 Greenhouse Gas Emissions Reduction Act Plan.

- The Transportation Act is supporting additional funding for alternative modes of transportation in both urban and non-urban locations throughout Maryland
- MDOT implemented emission-reduction strategies in nonattainment areas to foster transportation alternatives to single occupancy vehicles
- Vehicle GHG emissions decreased nationwide due to improved vehicle technologies, growing consumer preference for more fuel efficient vehicles including hybrid and electric vehicles, and little to no growth in VMT caused in part by economic conditions

What Are Future Performance Strategies?

All MDOT modal agencies have implemented strategies to reduce on-road and off-road energy usage, as well as ozone and GHG related emissions and are continuing to do so.

- Continue to develop processes to include climate change mitigation and adaptation considerations into project selection, design, maintenance, operations, construction and emergency response
- In partnership with the University of Maryland, SHA is developing a Carbon Footprint and Reduction Recommendations Report to guide future efforts in reducing GHG emissions across the agency
- SHA is developing a Climate Change Vulnerability Report that will be used to categorize highway transportation asset issues and guide development of engineering options to adapt to changing climate conditions
- Encourage continued growth in transit ridership through ongoing system enhancements, service expansion, and outreach combined with continued support and implementation of TOD projects
- Continue MTA's green bus fleet service expansion: 57 new hybrid buses were put into service in FY 2013 and 50 more will be put into service in FY 2014, MTA plans to add more hybrid buses to the fleet in the future
- MDOT will continue to work with multiple State agencies and private partners to implement recommendations of the EVIC. Many of EVICs recommendations will be pursued within the context of an overarching goal of widespread electric vehicle adoption and are intended to provide sufficient support to reach an ambitious goal of 60,000 PEVs on the road in Maryland by 2020, or 2.3% of the State's passenger vehicle fleet
- MDTA is replacing fluorescent fixtures with light-emitting diode (LED) fixtures at the Fort McHenry Tunnel (I-95), is evaluating converting parking lot and other High Intensity Discharge (HID) light fixtures with LED fixtures, and is investing in solar panel light fixtures for warning signs located at ramp entrances
- MDTA is planning to convert two toll plazas, the Hatem Bridge (US 40) and the Francis Scott Key Bridge (I-695), to All Electronic Tolling (AET) to enhance the free flow of traffic through the toll plaza areas within the next six years
- MVA has taken an aggressive approach to reducing energy, fuel and water consumption while simultaneously reducing MVA's carbon footprint by utilizing various new technologies at MVA's full-service and express branch locations

