



## **Goal:** Ensure a Safe, Secure and Resilient Transportation System

### **OBJECTIVES:**

- Reduce the number of lives lost and injuries sustained on Maryland's transportation system
- Provide for the secure movement of people, goods and data
- Provide a resilient multimodal system by anticipating and planning for changing conditions and hazards whether natural or man-made
- Improve roadway clearance times and facilitate efficient and coordinated responses to emergency and disaster events throughout the transportation system

Safety within Maryland's transportation system is important to ensuring the orderly movement of goods and services within the State. With safety as MDOT's top priority, the goal of many roadway safety initiatives in Maryland is to reduce the number of roadway-related crashes, serious injuries and fatalities across the State. Recent increases in traffic-related deaths prompted MDOT Secretary Pete Rahn to issue a challenge to the more than 10,000 MDOT employees, to take the traffic safety pledge and agree to follow the State's highway and bicycle safety guidelines whenever they drive, ride or walk. Traffic safety starts at home among the individuals working for MDOT, which is why he urged every employee to lead by example and demonstrate safe behavior. MDOT also urges each and every Maryland citizen to accept this challenge, and follow the rules when traveling on Maryland roadways. For more information, see the safety pledge at <https://www.surveymonkey.com/r/MDOTsafetypledge>.

Several Maryland transportation plans focus on improving safety. The 2016-2020 Strategic Highway Safety Plan (SHSP) outlines goals, strategies and action steps to address roadway safety by focusing on priority areas including impaired driving, young drivers, distracted driving, seat belt usage and more. The SHSP and the Highway Safety Improvement Program (HSIP) outline the actual behavioral programs and infrastructure projects being implemented to reach zero fatalities on Maryland's roadways, in accordance with MDOT's Toward Zero Deaths goal. The current program objective is to reduce the 2008 fatalities and serious injuries by half in 2030 to work toward achieving zero deaths.



To enforce laws governing road safety, the MDOT MVA Maryland Highway Safety Office (MHSEO), MDOT SHA, MDTA and Maryland State Police (MSP) collaborated throughout FY 2017 to address the State's most urgent safety challenges such as pedestrian crosswalk violations, impaired driving, speeding and seat belt usage. MDOT also implements the Maryland SafeZones Automated Speed Enforcement program, a joint effort involving MDTA, MDOT SHA and the MSP, to enforce speed limits along heavily traveled roadways by placing automated enforcement vehicles on some roadway shoulders in construction zones.

Safety and security priorities extend across MDOT. In early 2018, the Port of Baltimore was awarded the U.S. Coast Guard's highest security ranking for the ninth consecutive year. MDOT MTA also received national recognition for its safe operations for the fourth consecutive year. A national study by the Metropolitan Atlanta Rapid Transit Authority (MARTA), showed that MDOT MTA saw a 36% decrease in crimes between 2014 and 2017.

MDOT has also been developing vulnerability assessment data and resiliency plans to address current and future impacts of climate change on the state's transportation network. MDOT's TBUs are actively integrating data from vulnerability assessments into all aspects of planning and programming to ensure a resilient multimodal system.

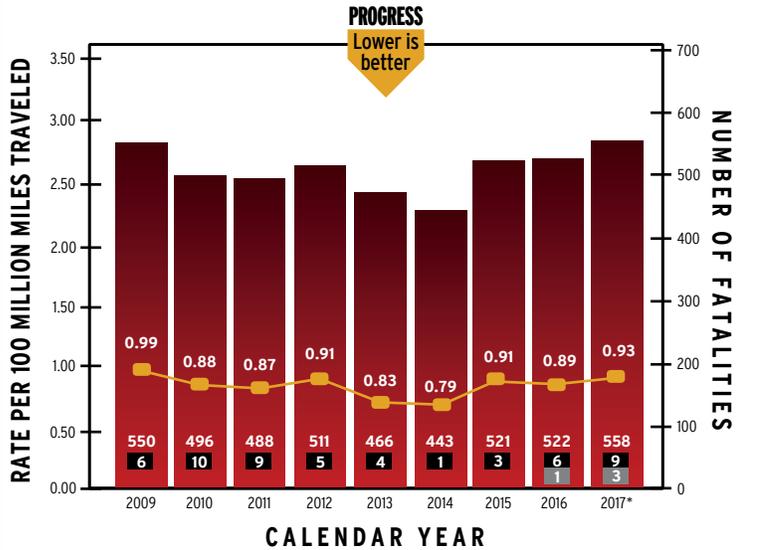
# OBJECTIVE:

Reduce the number of lives lost and injuries sustained on Maryland's transportation system



## ANNUAL NUMBER OF TRAFFIC FATALITIES & INJURIES ON ALL ROADS IN MARYLAND AND ON TRANSIT FACILITIES

### ANNUAL NUMBER OF FATALITIES



- Annual number of traffic fatalities on all roads in Maryland (including MDTA-owned roads)
- Traffic fatality rate per 100 million miles traveled on all roads in Maryland
- Annual number of traffic fatalities on all MDTA-owned roads, a subset of total annual number of traffic fatalities on all roads in Maryland
- Annual number of transit passenger fatalities

Target: ≤0.64 traffic fatality rate on all roads in Maryland by 12/31/2020, ≤4 transit fatalities per year by 12/31/2020, ≤391 traffic fatalities on all MDTA-owned roads per year by 12/31/2020

\* 2017 data is preliminary and subject to change.

Maryland supports the long-term goal towards zero deaths and is committed to adopting strategies to achieve that important milestone. Measuring bicycle, pedestrian and transit passenger fatalities and injuries illustrates Maryland's commitment to the safety of all transportation system users and informs the prioritization of investments and strategies to improve safety.

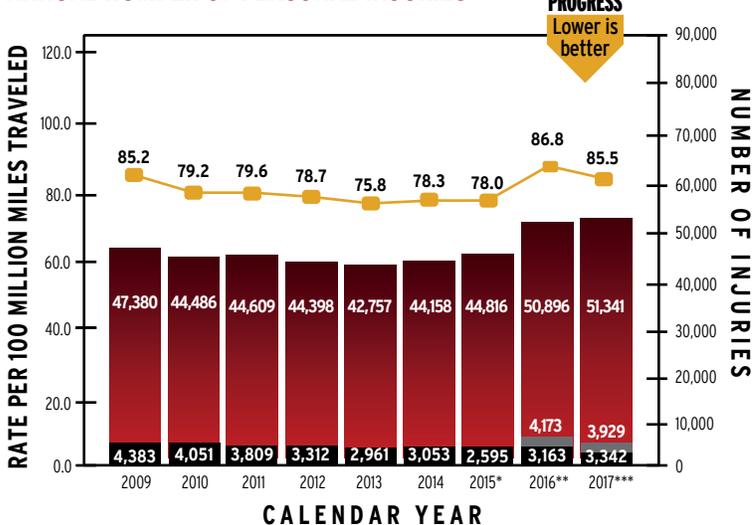
### Why Did Performance Change?

- Piloted a Mobil-eye Camera system to help transit operators (drivers) see in blind spots
- Conducted high visibility traffic safety outreach and education campaigns to address critical traffic safety issues, including aggressive driving, impaired driving and occupant protection
- Increased seat belt use continues to be the most practical way to reduce fatalities (92.1% seat belt use in Maryland in 2017, which is above the national average of 89.7%)
- Continued to implement best practice approaches to maintaining safe roadway infrastructure, including the installation of rumble strips to reduce roadway departure and head-on crashes
- MDOT MTA worked with local jurisdictions to understand where preventable accidents are most likely to occur

### What Are Future Performance Strategies?

- Develop and implement enforcement practices, identify and implement effective engineering and technological solutions, and conduct public awareness, training and media programs that address SHSP emphasis areas
- Promote and support legislation and adjudication to reduce aggressive, distracted and impaired driving, increase occupant, bicycle and pedestrian protection, and facilitate highway infrastructure-related improvements
- Evaluate and improve data quality (timeliness, accuracy, completeness, uniformity, accessibility and integration) for problem identification and program evaluation purposes
- Enhance and improve enforcement of adult and child occupant protection laws
- Identify intersections where the Crash Severity Index is high and implement safety improvements
- Complete Light Rail and Metro SubwayLink vehicle upgrades to enhance safety including installing new software and hardware that will assist MDOT MTA in monitoring performance and reducing accident frequency

### ANNUAL NUMBER OF PERSONAL INJURIES



- Annual number of personal injuries on all roads in Maryland
- Personal injury rate per 100 million miles traveled on all roads in Maryland
- Annual number of serious personal injuries on all roads in Maryland
- Annual number of transit passenger personal injuries on all roads in Maryland

Target: ≤5.23 serious personal injury rate on all roads in Maryland by 12/31/2020, ≤5.073 serious injury rate of tansit passengers on all roads in Maryland by 2020

\* Changes to law enforcement crash data collection has affected serious injury statistical reporting, since the implementation of the Automated Crash Reporting System (ACRS) on January 1, 2015.

\*\* 2016 data has been revised from previous report.

\*\*\* 2017 data is preliminary and subject to change.



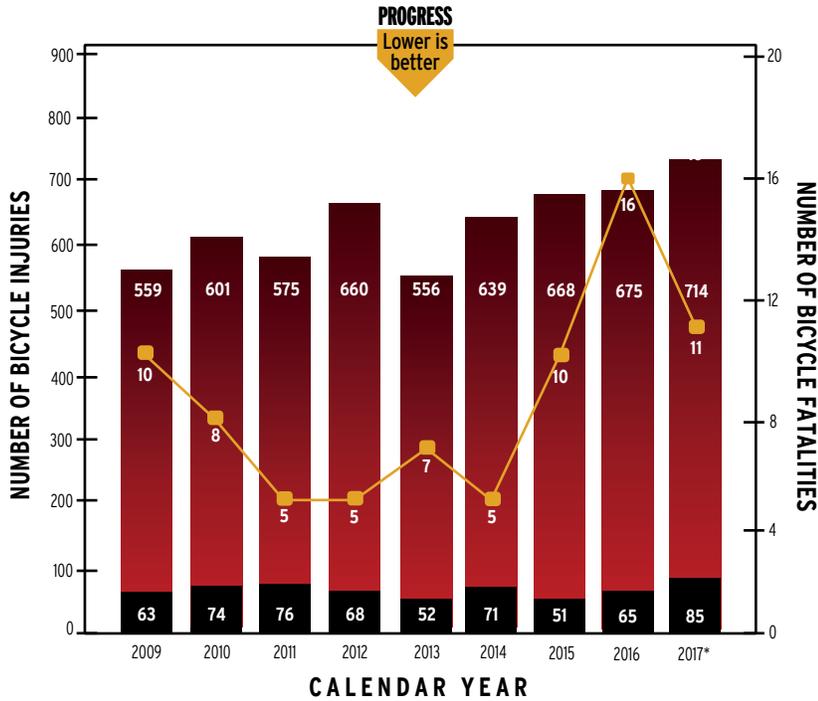
# OBJECTIVE:

Reduce the number of lives lost and injuries sustained on Maryland's transportation system

## NUMBER OF BICYCLE & PEDESTRIAN FATALITIES & INJURIES ON ALL MARYLAND ROADS



### NUMBER OF BICYCLE FATALITIES AND INJURIES



■ Number of bicycle injuries on all roads in Maryland  
 —● Number of bicycle fatalities on all roads in Maryland  
 ■ Number of serious bicycle injuries on all roads in Maryland

Target: ≤5 bicycle fatalities per year by 12/31/2020 (2016-2020 average),  
 ≤52 serious injuries per year by 12/31/2020 (2016-2020 average)

\* 2017 data is preliminary and subject to change.

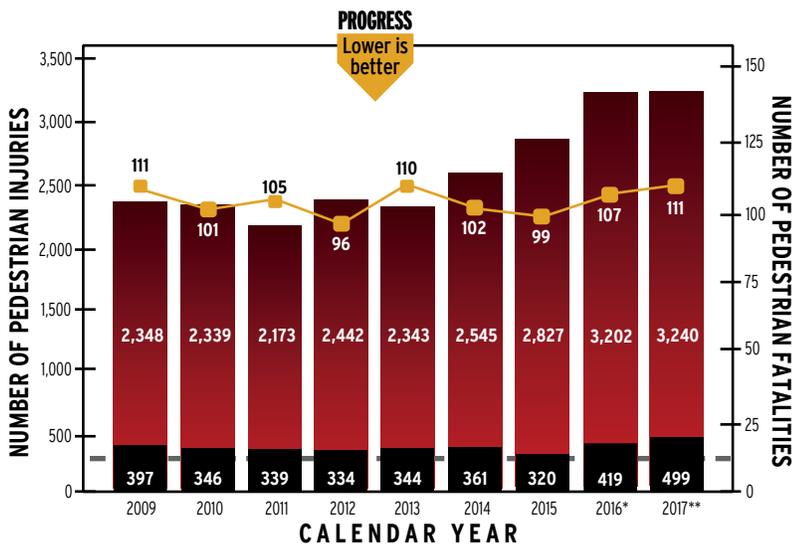
### Why Did Performance Change?

- Increases in severe and fatal crashes are attributed to a change in police reporting and the increase in VMT
- Focused on strategies identified in the SHSP and continued to install bicycle improvements, such as marked bicycle lanes, where feasible
- Continued work with the MDOT SHA bicycle committee to improve bicycle guidance and policies pertaining to MDOT SHA roadways
- Identified and implemented engineering solutions identified in MDOT SHA Pedestrian Road Safety Audits (PRSAs) to improve pedestrian safety in high-incident locations
- Invested in the new statewide education and outreach campaign, "A Cyclist May Be Someone You Know" which features actual Maryland professionals who bike and share safety messages

### What Are Future Performance Strategies?

- Focus on geospatial analysis of crash data
- Coordinate with local governments to identify locations for approved innovative bicycle treatments, such as green pavement, cycle tracks, bicycle signal heads and other bicycle treatment
- Identify and target pedestrian and bicycle safety issues through the collection, analysis and evaluation of data
- Develop, apply and promote technological approaches, including those in vehicles and emergency response equipment, to better prevent and reduce the severity of collisions involving pedestrians and bicyclists
- Create and improve pedestrian and bicycle safety culture in Maryland, including the promotion and implementation of legislation and training of professionals and stakeholders about best safety practices
- Implement engineering treatments, land use planning and system-wide countermeasures
- Streamline the MDOT SHA PRSA reporting; develop a data management program to integrate seamlessly with eGIS portal developing recommendations that more readily fit into existing MDOT SHA funding programs

### NUMBER OF PEDESTRIAN FATALITIES AND INJURIES



■ Number of pedestrian injuries on all roads in Maryland  
 —● Number of pedestrian fatalities on all roads in Maryland  
 ■ Number of pedestrian serious injuries on all roads in Maryland

Target: ≤78 pedestrian fatalities per year by 12/31/2020 (2016-2020 average),  
 ≤293 serious injuries per year by 12/31/2020 (2016-2020 average)

\* 2016 data is revised from previous report.

\*\* 2017 data is preliminary and subject to change.



## OBJECTIVE:

### Provide for the secure movement of people, goods and data

The introduction of new transportation technologies increases the importance of cybersecurity, respecting privacy, safeguarding data and facilitating trust. As the transportation system becomes more connected and technologically driven, the security of the transportation system becomes more important to transportation planning for state DOTs. MDOT is invested in ensuring the privacy and security of transportation data. Information technology (IT) improvements are planned in Network Maryland and the Center for Internet Security Multistate Information Sharing and Analysis Center (MS-ISAC). MDOT is also working to develop and implement a comprehensive SMS for aviation, establishing a formalized process for consideration of operational risk factors related to infrastructure development projects. It will also continue to upgrade security infrastructure such as closed-circuit television, security cameras and other technology on the multi-modal transportation system. MDOT MVA introduced a new driver's license design that offers a secure and convenient way to display identification documents.

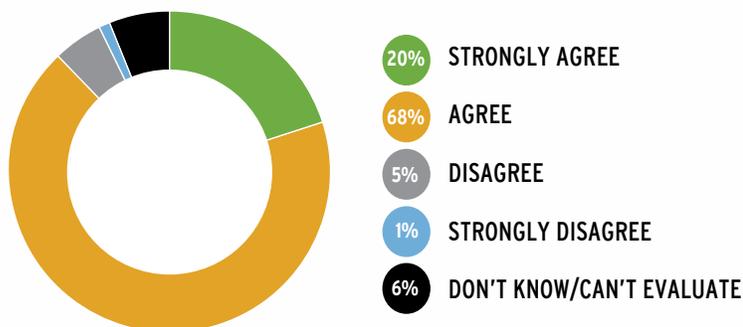
## MDOT-WIDE OVERALL PERCEPTION OF SAFETY: CRIME AND SAFE MOVEMENT



Customer surveys determine if MDOT is successful in its efforts to provide a safe transportation experience. This survey provides an indication of transportation system users' overall perception of safety in the entire Maryland transportation system, and their experience with crime while utilizing the transportation system. The safety customers feel while using the system is an important indicator of their future or continued use of MDOT's transportation assets.

### PERCEPTION OF SAFETY ON THE MARYLAND TRANSPORTATION SYSTEM (Including BWI Marshall Airport, Ports, Roads, Transit)

**MDOT Survey question: I feel safe on the Maryland transportation system**



### Why Did Performance Change?

- MDOT SHA's Coordinated Highways Action Response Team (CHART) incident management program handled 152,482 events
- MDOT SHA and MDTA achieved bare pavement on primary and interstate highways during winter events in fewer than four hours, on average for the past eight winter seasons
- MDOT MTA continued safety and security programs such as unannounced and highly visible police sweeps of facilities and CompStat, a weekly review of all reported incidents
- MDOT MTA continued use of closed circuit television (CCTV) and created a Mobile Field Force Team, a deployable team of officers with special crowd control equipment and training
- MDOT MTA initiated the Light Rail Fare Evasion Prevention Program to reduce crime and fare evasion
- MDOT MAA ensures security through coordination with MDTA Police, the Transportation Security Administration (TSA) and operations personnel, and through application of technology (cameras, sensors, CCTV), hardened facilities (fences and gates) and police presence in terminals

### What Are Future Performance Strategies?

- MDOT MAA will continue perimeter hardening improvements at MDOT MAA facilities and will incorporate the latest security technologies for all phases of the passenger travel experience
- MDOT MAA will maintain adequate emergency response facilities to accommodate growing passenger and airfield demands
- MDOT SHA will continue an aggressive bridge rehabilitation and preservation program
- MDOT SHA and MDTA will assure adequate anti-icing equipment is available and under contract to enable its shops to anti-ice their entire State-maintained network, as needed
- MDTA and MDOT MTA will continue to review crime data on a weekly basis and utilize the information for resource allocation, targeted enforcement and determination of areas of security concern

## OBJECTIVE:

Provide for the secure movement of people, goods and data



## PREVENTABLE ACCIDENTS PER 100,000 VEHICLE MILES

MDOT MTA has developed a baseline from which to target preventable accidents on transit to reduce fatalities and injuries, increase efficiency and provide a safer ride to customers.

PROGRESS

Lower is better

| CALENDAR YEAR                                   | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | TARGET |
|---|------|------|------|------|------|------|------|------|--------|
| Preventable Accidents Per 100,000 Vehicle Miles |      |      |      |      |      |      |      |      |        |
| Core Bus  | 2.61 | 2.43 | 1.49 | 1.42 | 1.43 | 1.54 | 1.54 | 1.44 | 1.50   |
| Light Rail                                      | 0.13 | 0.24 | 0.03 | 0.06 | 0.14 | 0.24 | 0.02 | 0.03 | 0.25   |
| Baltimore Metro                                 | 0.10 | 0.06 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 | 0.02 | 0.06   |
| Paratransit/Taxi Access                         | 0.48 | 1.74 | 1.55 | 1.10 | 0.79 | 1.04 | 1.04 | 0.77 | 1.00   |

### Why Did Performance Change?

- Better training for MDOT MTA operations staff
- Piloting Mobil-eye Camera system to help operators see in blind spots
- MDOT MTA Operations Control Center (OCC) working with the local jurisdiction to understand where preventable accidents are most likely to occur

### What Are Future Performance Strategies?

- Continue to improve training of MDOT MTA staff
- Vehicle upgrades to the Light Rail and Metro SubwayLink will enhance safety
- New FTA SMS policies targeted towards reducing preventable accidents

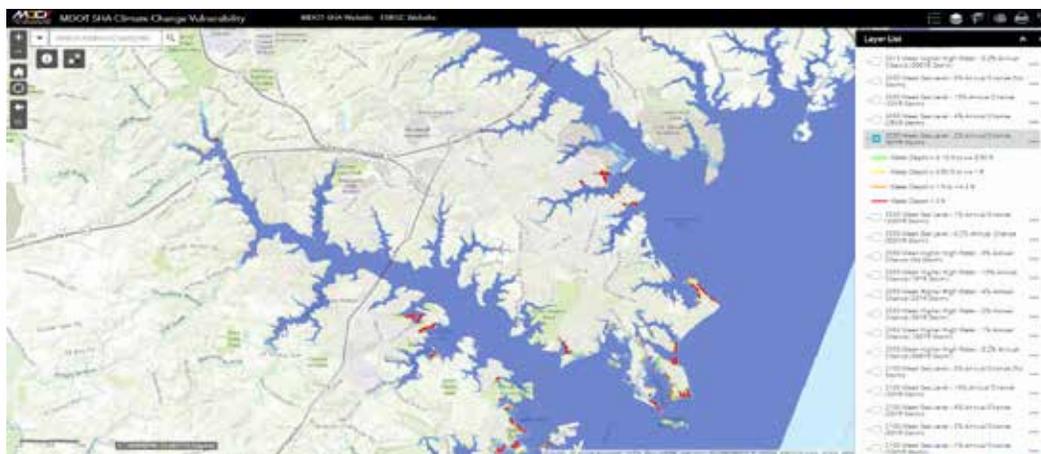


## OBJECTIVE:

Provide a resilient multimodal system by anticipating and planning for changing conditions and hazards, whether natural or man-made

Transportation systems are critical infrastructure designed to operate under defined conditions. However, disruptions to those conditions, such as a storm or incident, are inevitable and can have a significant impact on the transportation system and user safety. MDOT is dedicated to improving the resiliency of the State's multimodal transportation system through vulnerability assessments of future conditions and our ability to recover from disruptions. MDOT tracks the readiness of emergency personnel dedicated to emergency response by ensuring awareness and understanding of the National Incident Management System (NIMS) and Incident Command System (ICS). NIMS is a consistent, nationwide approach for government agencies at all levels, along with non-government agencies, to work effectively and efficiently during all incidents. NIMS, combined with ICS, is an integrated comprehensive approach to domestic incident management, crisis management and consequence management. There are several approaches to resiliency. MDOT adaptation strategies such as innovative design in new construction, relocation, and other protective or adoptive measures to address existing and potential future network disruptions.

With over 17,000 lane-miles of roadway and nearly 2,900 bridges on the MDOT highway network, MDOT is planning for resiliency of these critical transportation assets. As MDOT needed a way to systematically identify vulnerabilities, rank the importance of its extensive assets, and define solutions to improve the system's resiliency to a changing climate, it worked with federal, university and local partners to develop a Climate Change Vulnerability Viewer tool for the Maryland shoreline and roadways, that offers maps and data of observed and projected climate variables. For roadways and bridges that are potentially vulnerable to various climate-related threats, MDOT can take action to develop adaptation or protective measures to increase the resilience of the transportation network. This information is also shared with local partners as a communication tool with an intent to develop collaborative strategies or as additional information for their planning purposes.



The image to the left depicts a screen of a geographic information system (GIS) tool that MDOT uses to identify and address vulnerable locations. Based on the insights of this analysis and other agency information, MDOT works with its partners to ensure resiliency of the Maryland transportation system.

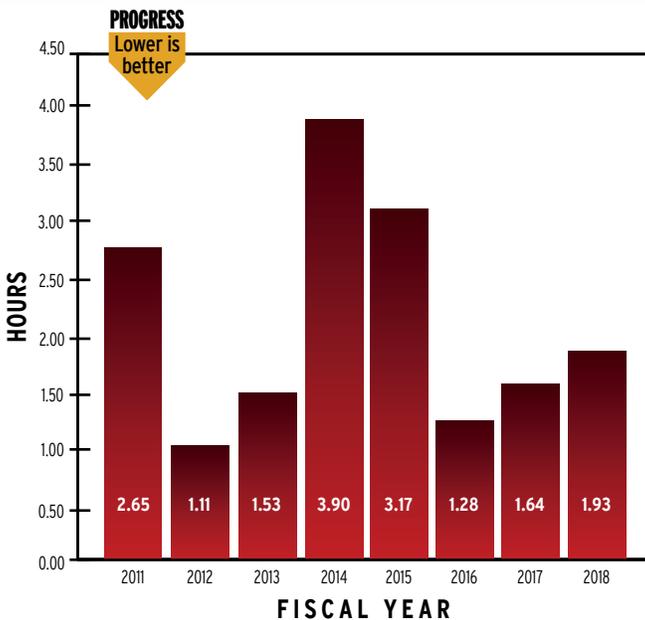
## OBJECTIVE:

Improve roadway clearance times and facilitate efficient and coordinated responses to emergency and disaster events throughout the transportation system

### RESTORING TRANSPORTATION SERVICES: AVERAGE TIME TO RESTORE NORMAL OPERATIONS AFTER A WEATHER EVENT



A safe, well-maintained, efficient and reliable transportation system with minimal disruption is important to Maryland's residents, businesses, and for emergency services. Disruptions in the transportation system due to inclement weather require specialized operations experience and response to restore normal operating conditions. This measure illustrates Maryland's efficiency in quickly restoring transportation services on primary and interstate highways after weather events (up to eight inches of snow).



Target: 4 hours of fewer to regain bare pavement

#### Why Did Performance Change?

- MDOT SHA added more contract anti-icing equipment allowing the anti-icing of more State Highways closer to the starting time of events
- After a successful rubber/ceramic plow blade pilot from the 2016-2017 winter season, MDOT SHA added new specifications to the existing Department of General Services (DGS) contract for plow blades, to utilize this new technology
- Internal upgrades to the Emergency Operations Reporting System (EORS) were made to improve data integrity
- Direct Liquid Application (DLA) can deplete brine resources quickly; therefore, MDOT SHA procured an additional 196,000 gallons of brine storage tanks and strategically placed them statewide

#### What Are Future Performance Strategies?

- Ensure adequate supplies of brine storage tanks statewide for DLA operations and expand MDOT SHA DLA program to all seven districts and increase the number of routes using DLA
- Train 20% of MDOT SHA maintenance personnel in winter operations (in the required Snow College) annually so that 100% of employees are trained at least once every five years
- Procure additional loader scales to improve snow operations and assure adequate contract anti-icing equipment to enable MDOT SHA shops to anti-ice their entire State-maintained highway network

