



Goal Facilitate Economic Opportunity and Reduce Congestion in Maryland through Strategic System Expansion

Invest in and pursue opportunities to promote system improvements that support economic development, reduce congestion, and improve the movement of people and goods

OBJECTIVES:

- Pursue capital improvements to the transportation system that will improve access to jobs and tourism and leverage economic growth opportunities
- Improve the movement of goods within and through Maryland by investing in intermodal connections, capital projects, congestion reduction operational strategies, and freight traveler information to reduce freight bottlenecks
- Strategically invest in expansion and operational improvements to reduce congestion along the multimodal transportation system



Maryland's extensive transportation system strengthens economic growth by connecting communities within Maryland, as well as the global economy. The state's nationally significant multimodal network relies on highways, railroads, airports, ports, and pipelines. Maryland serves as a crossroad of freight activity, not just in Maryland but for the entire Eastern Seaboard. Much of Maryland's freight intensive network supports both passenger and freight movements, but Maryland also has nationally significant freight rail infrastructure and connections.

The Helen Delich Bentley Port of Baltimore is one of Maryland's top economic generators. In 2021, the Port's public and private marine terminals handled 43.7 million tons of foreign cargo, 11th highest for any port in the nation, as volumes returned to pre-pandemic levels. The Port is 9th in the nation for cargo value, at \$61.3 billion, a record for MDOT MPA. Additionally, 37,300 direct, induced, and indirect jobs are generated by the Port and an additional 101,880 jobs in Maryland are related to port activities.

BWI Marshall Airport is the 25th busiest cargo airport out of both CY 2020 and CY 2021. With the opening of the new Midfield Cargo building in late 2019, BWI Marshall Airport has become one of Amazon's top five busiest air cargo facilities in the nation (out of 35) and currently employs more than 1,200 people. In 2021, BWI Marshall Airport handled 4% more cargo than the previous year and maintained 55% of the regional market share, handling more cargo than Dulles International and Reagan National airports combined. Moving forward, MDOT MAA continues to explore opportunities to accommodate growth in both the domestic and international air cargo markets.

There are several highway improvements on the way for the state that will support freight movement and reduce congestion. In April 2022, the Federal Highway Administration (FHWA) approved the Final Environmental

Impact Statement and Record of Decision (FEIS/ROD) for the Chesapeake Bay Crossing Study marking the completion of the Tier 1 NEPA Study. In June 2022, the Bay Crossing Study Tier 2 NEPA Study began to relieve congestion for generations to come at the Bay Bridge and along its 22 miles of approach highways.

MDOT SHA, in particular, supported freight mobility through efforts such as updating the Maryland Statewide Freight Plan with new and innovative strategies to support multimodal freight transportations projects and building a connected vehicle ecosystem through intelligent transportation system (ITS) and Transportation System Management and Operations (TSMO) solutions that leverage big data and connected vehicle applications, as well as the Freight Connected and Automated Vehicles (CAV) Working Group, which seeks to coordinate CAV freight opportunities in Maryland, with specific emphasis on potential for truck platooning.

The Transportation Business Units (TBUs) also created visualization tools to support MDOT's customers including metropolitan planning organizations (MPOs), local governments, regional organizations, and the private sector with transparent system performance information that helps identify bottlenecks so that MDOT can work collaboratively with stakeholders to resolve them and used innovative TSMO capacity expansion opportunities to improve freight movements on roadways, such as I-695.

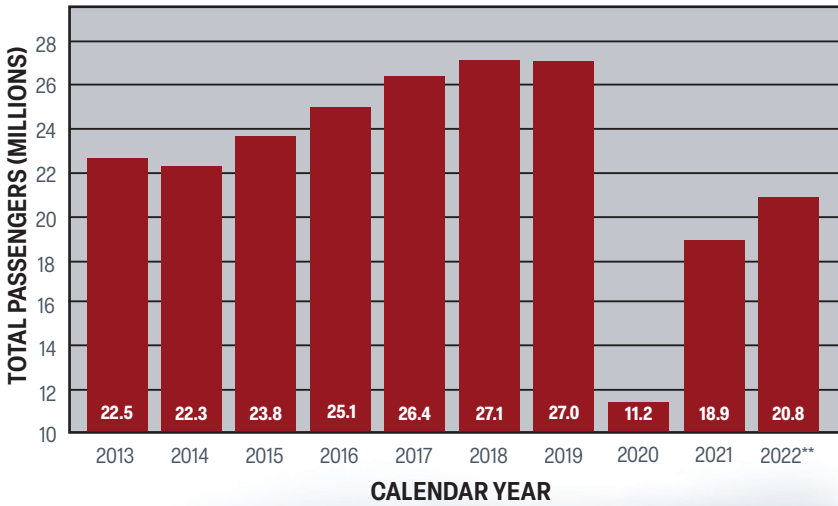
Finally, Tradepoint Atlantic, in a joint investment and partnership with Terminal Investment Limited, will build a new container terminal in Sparrows Point, which will ease capacity issues and boost growth for Maryland's Port of Baltimore. The multiyear project will eventually employ more than 1,000 people and give Maryland's port a substantial competitive advantage compared to other ports on the Eastern Seaboard.

OBJECTIVE: Pursue Capital Improvements to the transportation system that will improve access to jobs and tourism and leverage economic growth opportunities

BWI MARSHALL AIRPORT TOTAL ANNUAL PASSENGERS*



BWI Marshall Airport is a crucial point of entry and export for cargo and people. This measure accounts for the number of annual passengers using BWI Marshall Airport.



*2020 and 2021 data have been revised from previous report.

**2022 data is preliminary and subject to change.



WHY DID PERFORMANCE CHANGE?

- In the first three quarters of FY 2022, 15.5 million passengers flew through BWI Marshall Airport; this is an 89% increase over the same period of FY 2021 indicating a strong rebound in travel demand; total passenger levels are still below pre-COVID FY 2019 levels, however peak period activity during holiday travel is within a few percentage points of FY 2018 and FY 2019 levels
- BWI Marshall Airport remained the busiest airport in the Baltimore-Washington region with a 35% market share, ahead of both Dulles and Reagan National airports
- In FY 2022 BWI Marshall Airport added airline service from new carriers including Air Senegal, Play, Icelandair, and Avelo, and expanded service from existing carriers including Frontier, Spirit, and Southwest
- As of June 2022, BWI Marshall Airport has, on average, 259 daily departures to 86 nonstop destinations by 18 airlines

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT MAA continues to focus on improving the customer travel experience and route offerings through strategic investment in airport facilities, expanding and modernizing amenities and services, and developing a dedicated and efficient workforce

INTERNATIONAL CRUISES USING MARYLAND'S PORT OF BALTIMORE*



Maryland's Port of Baltimore is one of the busiest cruise ports on the Eastern Seaboard. This measure illustrates cruise-related business activity departing from Maryland's Port of Baltimore to foreign destinations.

| FISCAL YEAR | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|------|------|------|------|------|------|------|------|------|------|
| Number of International Cruises using MDOT MPA's Terminal | 93 | 99 | 75 | 94 | 86 | 94 | 94 | 69 | 0 | 67 |

TARGET: Maintain two year-round cruise line operations as the Port

**The entire cruise industry was shut down in March 2020 due to COVID-19 and remained under a CDC issued "no sail" order unless certain criteria were met.*

WHY DID PERFORMANCE CHANGE?

- Cruises from Maryland's Port of Baltimore started to resume in September 2021; since December 2021, two cruise lines have been sailing out of Baltimore on a weekly basis; both lines started operations with a limited (~75%) capacity restriction that have since been lifted; both cruise lines now sail at full capacity
- Norwegian Cruise Lines is planning to add seasonal cruises out of the Port starting in fall 2023

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT MPA works with the cruise lines to aggressively market the greater Baltimore-Washington area to cruise customers, as well as markets that are within driving distance to the Cruise Maryland Terminal; this promotes the local "drive-to" market to cruise lines as it seeks to maintain Baltimore's homeport status and increase its port calls
- MDOT MPA continues to upgrade the Cruise Maryland facility to make it more accommodating for year-round cruising

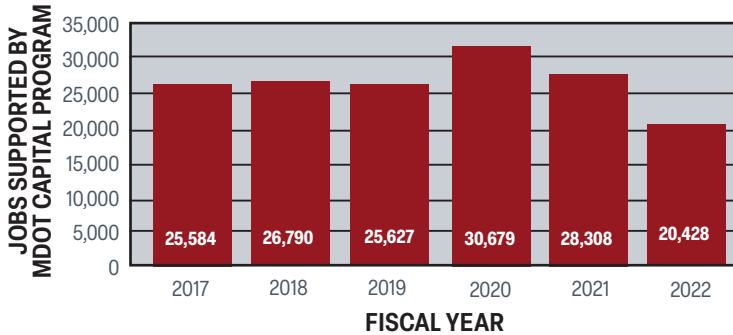


JOBS SUPPORTED BY MDOT CAPITAL PROGRAM*



Economic return from transportation investment is based on the estimated number of jobs created as a result of MDOT investments in capital projects.

Annually, the CTP lists MDOT's planned investments by TBU. These investments drive the creation of direct construction jobs, bolster manufacturing jobs, and support businesses directly affected by the patronage of construction staff. Construction and maintenance projects support economic activity beyond the project location.



*This measure will be reported in the AR until the replacement measure, Change in Market Access and Productivity Due to Improvements in the Transportation Network, is ready for reporting.

OBJECTIVE: Improve the Movement of Goods within and through Maryland by investing in intermodal connections and improvements to reduce freight bottlenecks

WHY DID PERFORMANCE CHANGE?

- An increasingly tight labor market and high inflation negatively impacted job creation this year
- Construction of the Nice/Middleton Bridge and the Purple Line provided many of the jobs supported by the MDOT Capital Program

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- An increasingly tight labor market and high inflation negatively impacted job creation this year
- Continue work on the I-695 TSMO project (project limits are from I-70 to MD 43), which is expected to continue through 2024



IMPROVING GOODS MOVEMENT: FREIGHT ORIGINATING AND TERMINATING IN MARYLAND

FREIGHT ORIGINATING AND TERMINATING IN MARYLAND*

| METHOD FOR MOVING FREIGHT | TOTAL VALUE (MILLIONS) | TOTAL TONNAGE (THOUSANDS) SATISFIED |
|-----------------------------|------------------------|-------------------------------------|
| Air | \$6,143 | 58 |
| Other** | \$286 | 96 |
| Pipeline | \$6,794 | 33,299 |
| Rail | \$12,549 | 21,341 |
| Truck | \$296,685 | 220,765 |
| Water | \$540 | 3,138 |
| All Freight | \$389,751 | 285,206 |
| Multiple Modes & Mail Goods | \$66,753 | 6,509 |

*Source: U.S. Department of Transportation Freight Analysis Framework (FAF5) the FAF version is 5.0, Freight Analysis Framework (FAF) (ornl.gov). FAF 5 is based on 2017 data. This version makes changes from previous versions in that it includes additional modal detail or classification than in the past. Therefore, previous FAF assessments cannot be accurately compared as value and tonnage may be attributed to different modes in previous versions. Prior to this version of FAF, MDOT was using a growth rate relative to GDP and the economy to factor the base year FAF data.

**Category "Other" includes movements not elsewhere classified such as flyaway aircraft, and shipments for which the mode cannot be determined as stated in the documentation for the Freight Analysis Framework Version 5.0.

Maryland is an important link in global supply chains due to its significant freight infrastructure, including Maryland's Port of Baltimore and major Class I rail lines, as well as interstate highways, such as I-95, US 50, I-81, I-70, I-83, and US 301. In 2021, freight volumes grew nationally and freight movement and related congestion returned to pre-COVID levels. Trucking is estimated to grow and continues to move the most tonnage in Maryland. Growth may be attributed to increased demand, as well as increased growth in e-commerce. Tonnage for rail and water freight is estimated to decrease, which may reflect some of the challenges with global supply chains and back ups due to production shutdowns in 2020. Global delays in shipping and slower logistics activities are expected to continue to improve. Maryland's Port of Baltimore remains the largest auto and roll on/roll off port in the U.S.

To support efficient and safe freight flow, MDOT is pursuing several activities. First, the state invested in new port infrastructure with a second 50-foot berth at Maryland's Port of Baltimore, which accommodates two large ships at the same time along with four additional supersized cranes that can help move more goods efficiently. The state also is in the process of reconstructing the 125-year-old Howard Street Tunnel. This will improve vertical clearance at 22 bridges for a double-stack rail corridor to and from Maryland's Port of Baltimore and the East Coast, supporting more efficient and expanded use of rail, which can relieve roadway congestion. MDOT has updated the Maryland Statewide Freight Plan with new and innovative strategies to support multimodal freight transportations projects that optimize Maryland's transportation network.

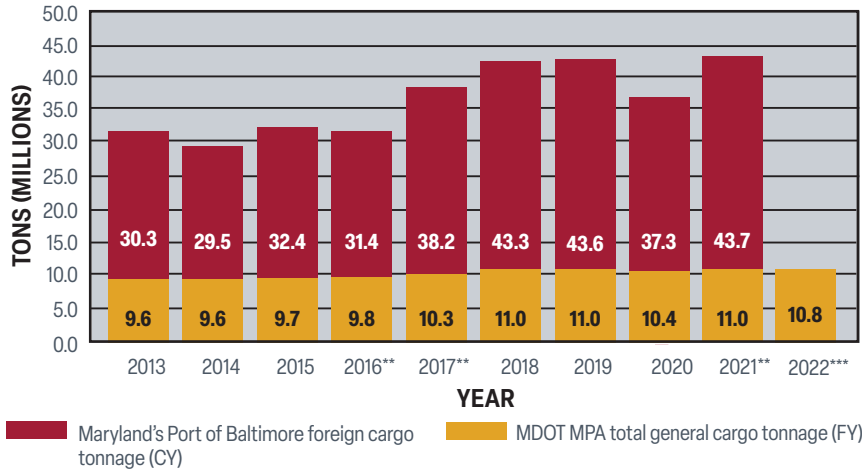


OBJECTIVE: Improve roadway clearance times and facilitate efficient and coordinated responses to emergency and disaster events throughout the transportation system

MARYLAND'S PORT OF BALTIMORE FOREIGN CARGO AND MDOT MPA GENERAL CARGO TONNAGE*



Measures the amount of foreign and general cargo moving through Marland's Port of Baltimore



*MDOT MPA cargo data is provided by fiscal year, but Port information is reported using the latest full calendar year because Port statistics combine data for public and private marine terminals that use different fiscal year reporting timeframes. Therefore, 2022 data cannot be reported until early 2023.

**2016, 2017, and 2021 data have been revised from previous report.

***(2022) MDOT MPA general cargo includes both foreign and domestic waterborne cargo, whereas, Port-wide data includes only foreign waterborne cargo. Port-wide data for calendar year 2022 is not yet available; fiscal data for 2022 is an estimate.

WHY DID PERFORMANCE CHANGE?

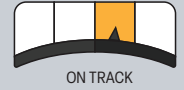
- Maryland's Port of Baltimore's public and private marine terminals performed well in 2021 as bulk imports and exports both increased
- Bulk commodities make up approximately 66% of the foreign cargo that moves through Maryland's Port of Baltimore; export coal, the largest bulk commodity, saw a large rebound from the peak of the COVID-19 pandemic and the Port remains the second largest port in the U.S. for export coal shipments
- Maryland's Port of Baltimore remains the largest auto and roll-on/roll-off port in the U.S.
- MDOT MPA handled nearly 10.8 million tons of general cargo in FY 2022, which was a 1.4% decrease from FY 2021
- Cargo volumes through MDOT MPA terminals had mixed results; overall container tons fell 4.9% as port congestion along the East Coast led to several vessels discharging their Baltimore-bound cargo at other nearby ports to make up time in their vessel schedules; lines chose to skip Baltimore as it did not offer them the option of railing containers to the Midwest on a double-stacked service; automobile numbers also declined because of supply chain shortages; imported forest products and roll-on/roll-off cargo such as construction and farm equipment both showed strong gains over the previous year

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT MPA continues to promote both the state-owned terminals as well as the privately owned marine terminals to cargo interests
- MDOT MPA also works with the U.S. Army Corps of Engineers to ensure that the 50-foot channel system is maintained and dredged on a regular basis to ensure that larger ships are able to access Maryland's Port of Baltimore
- Currently, MDOT MPA is working on a new strategic plan focused on the sustainable growth of Maryland's Port of Baltimore and also is executing major projects meant to increase competitiveness and cargo volumes
- Maryland's Port of Baltimore is receiving \$15.6 million from the Federal Railroad Administration (FRA) Consolidated Rail and Infrastructure Safety Improvements (CRISI) to update the intermodal rail yard infrastructure and support increased demand for double stacked trains of containerized cargo that will be possible due to the Howard Street Tunnel expansion project



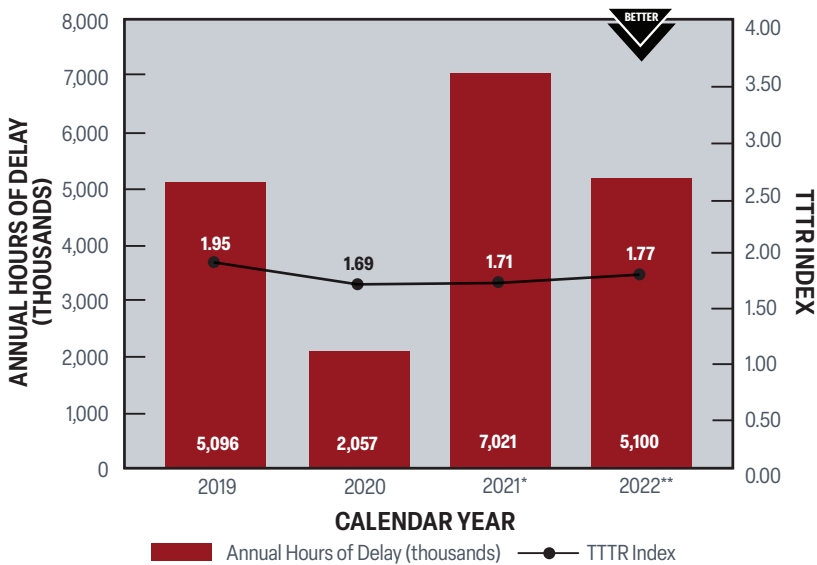
ANNUAL HOURS OF DELAY FOR TRUCKS AND TRUCK TRAVEL TIME RELIABILITY (TTTR) INDEX



Delay and reliability can affect many things in a supply chain beyond just the truck transporting the goods. An efficient and reliable system translates to improved goods movement, which supports Maryland's businesses and economic growth. MDOT has been a leader in measuring freight mobility following industry-tested and -supported methods. Maryland's annual Mobility Report allows MDOT to see how well freight moves and to identify and track freight bottlenecks over time. Additionally, MDOT continues to build new resources using truck probe data to understand freight mobility dynamics and the impact of delay on key Maryland supply chains.

In addition to MDOT's tracking of freight mobility, MDOT responds to the federal Moving Ahead for Progress in the 21st Century (MAP-21) and FAST Act performance measure requirements for the TTTR index.

The following graph shows the annual TTTR in relation to the annual hours of delay.



TARGET: 5,300 (\$5.3 million) Thousand Hours Of Truck Delay in 2021, TTTR of 1.92 in 2022

*2021 data have been revised from previous report.

**2022 data are preliminary and subject to change.

WHY DID PERFORMANCE CHANGE?

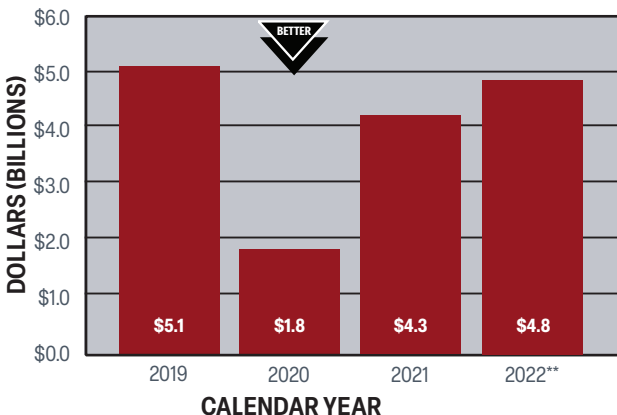
- Due to the uncertainty related to the pandemic and recovery, the estimation of the levels of truck travel has been difficult to determine, thereby affecting the 2021 actual data and requiring revisions to the future estimated data
- Using freight Vehicle Miles Traveled (VMT) as the measure of correlation, monthly truck activity fluctuated anywhere between 0% to 30% greater in 2021 compared to 2019; however, so far, 2022 is seeing a return to 2019 freight VMT levels with congestion for autos slowly recovering to pre-pandemic levels
- Freight VMT increased significantly during 2021 in comparison to previous years, while congestion observed in 2021 only moderately increased from levels seen during 2020; this resulted in differing trends seen in hours of delay and reliability index for trucks; see detailed explanation above

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- Major TSMO projects like the I-695 TSMO and I-270 Integrated Corridor Management projects as well as the upcoming I-495/I-270 P3 will have a significant positive impact on the network performance.
- MDOT SHA is completing ongoing research initiatives, including Work Zone Data Exchange (WZDX) and Mobile Road Weather Information System (MARWIS) integration aimed at improving safety and mobility
- MDOT SHA is facilitating real-time signal timing adjustment to support Eastern Shore Traffic Operations (ESTO) during summer months using Advanced Traffic Signal Performance Measures (ATSPM)
- The new Nice/Middleton Bridge recently opened with an additional lane in each direction and wider lanes with less steep grades to better accommodate trucks; the enhanced bridge will increase mobility and relieve traffic congestion in the area

OBJECTIVE: Strategically invest in expansion and operational improvements to reduce congestion along the multimodal transportation system

ANNUAL COST OF CONGESTION (BILLIONS) ON THE MDOT HIGHWAY NETWORK*



TARGET: 5.1 billion

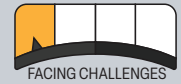
*2019 and 2021 data have been revised from previous report.

**2022 data is preliminary and subject to change.

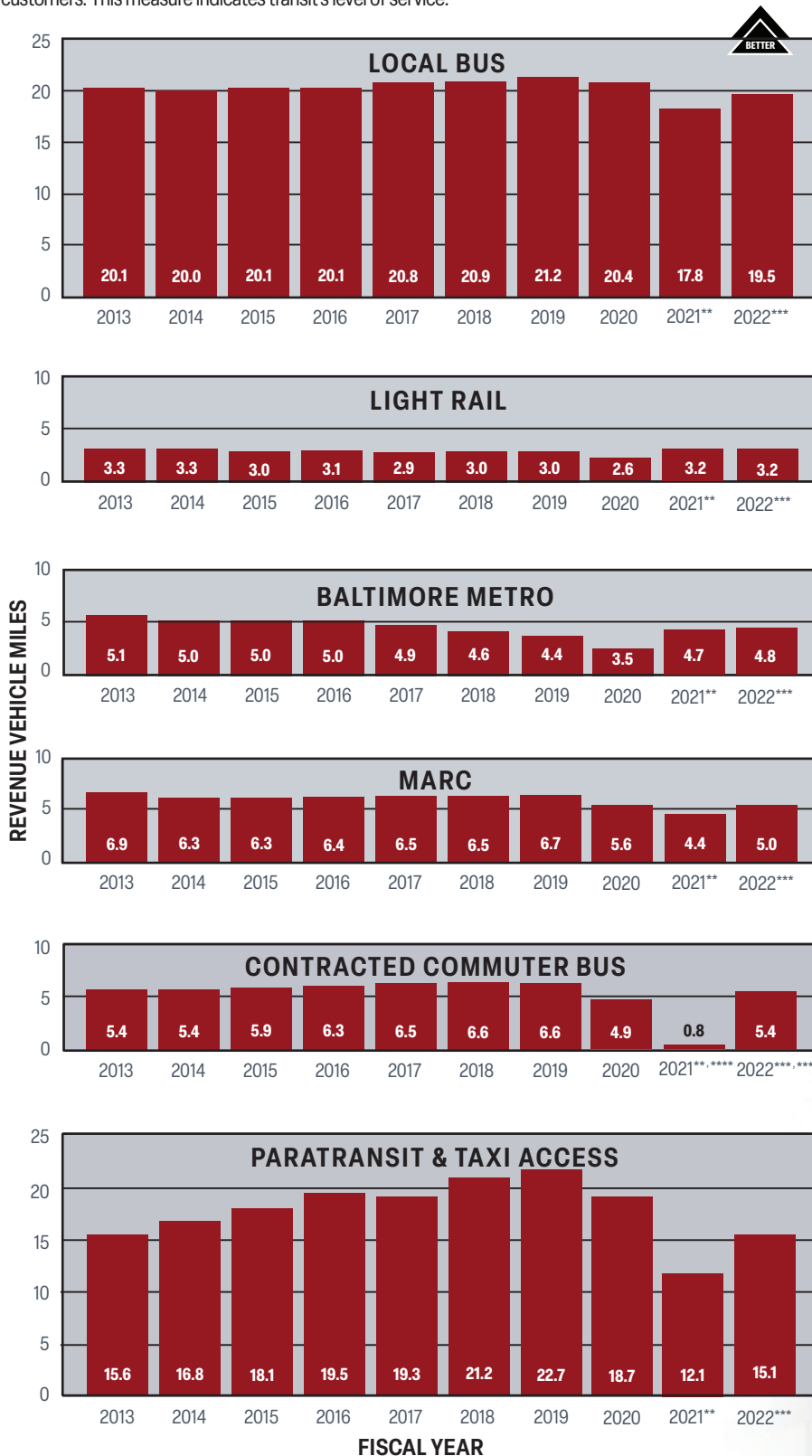
Congestion and reliability trends of vehicles needs to be monitored carefully as Maryland recovers from the COVID-19 pandemic and travel begins to go back to pre-pandemic conditions. Different corridors and regions likely will experience different recovery rates of peak hour travel conditions; therefore, data and performance driven capital and operational technology investments will be required accordingly.



ANNUAL REVENUE VEHICLE MILES OF TRANSIT SERVICE PROVIDED*



Revenue vehicle miles measure each mile for which a transit vehicle is in service and accepting customers. This measure indicates transit's level of service.



WHY DID PERFORMANCE CHANGE?

- MDOT MTA expanded scheduled trips on BaltimoreLink and bus service to select Baltimore City Public Schools, increasing the vehicle revenue miles
- Since Maryland has an aging population, more people are qualifying for and using MobilityLink (paratransit)
- Baltimore Metro SubwayLink continued to perform scheduled track repair and maintenance, having an impact on the revenue miles but little impact on the riding public because these projects were completed during the period of decreased ridership due to the COVID-19 pandemic
- During the pandemic, MDOT MTA sought feedback from the public and stakeholders on service priorities; as a result, MDOT MTA maintained service on all Core Local Bus routes and Mobility services

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT MTA is incorporating new technologies and data into a robust environment of operations information to better understand and manage service performance across all modes; this will not only expand real-time passenger information capabilities enabling greater transparency and access to our riders, but also will help better manage service operations
- MDOT MTA is studying how to better connect Towson with Baltimore City and expand service between the two urban centers

*All units are revenue miles (millions). Excludes Locally Operated Transit Systems (LOTS) and WMATA.

**2021 data have been revised from previous report.

***2022 data are preliminary and subject to change.

****Although we are almost back to pre-pandemic service levels, contracted bus services for 2021 and 2022 reflect a decrease in the number of buses in operation

