to live, work and do business. System that will help ensure Maryland remains a great place for investment in the state's transportation infrastructure.

The 2040 Maryland Transportation Plan (MTP) sets a long-term framework of strategic goals, objectives, and strategies for meeting those needs. The Maryland Department of Transportation (MDOT) updates the MTP every five years. Is performance-based, which means it uses measures to help gauge progress toward the goals and objectives.

The MTP examines the state's most critical transportation needs and challenges and provides MDOT a tool to influence the state's economic growth, improve safety, and make transportation more efficient. MDOT uses this tool to develop a six-year transportation improvement program (TIP) which prioritizes funding for individual transportation investments.
MTP GOALS

The 2040 MTP sets a long-term foundation for MDOT’s performance management and project programming activities over the next five years.
What is MDOT?
Maryland's Major Statewide Transportation System

17,143 state maintained lane miles of roadways

2 state airports

9 toll facilities

66 local bus routes, one light rail line, one metro line

38 commuter bus routes

24 MVA Service Locations

18 Maryland Vehicle Emissions Inspection Program Stations

700 miles of sidewalks along state roadways

68 miles of shared-use paths

343 rail-trail miles

171 miles of short line freight rail and Maryland Area Regional Commuter (MARC) commuter rail service

7 State-owned public cargo terminals

1 international cruise terminal at the Port of Baltimore

MDOT also supports 33 public use airports in the State through federal grant programs, provides technical assistance for transit systems in 23 counties, and is a funding partner of the regional Washington Metropolitan Area Transit Authority (WMATA).
The top three priorities identified in the online survey are:

1. Safety
2. Security
3. Maintenance

Other priorities identified in the online survey include:

- Reliability
- Travel

Comments:

- 4,341 comments
- 5,927 participants

Engagement Session

MOOT employees from all 66 half months for one and a half days in English and Spanish

Online survey conducted for preliminary engagement

Engagement Process

Development process: MOOT discussed key development milestones with partners and the public via a project website (http://www.mormontreynyandgo.myp) and email updates. Social media posts, a project website, video, an online survey, a photo survey, and public meetings encouraged by the MDOT Planning Council.

Engagement Process:

- MOOT employees from all 66 half months for one and a half days in English and Spanish
- Online survey conducted for preliminary engagement
Maryland’s Five Regions

Though Maryland is the ninth smallest state, it contains a remarkable degree of geographic diversity. Reflecting that diversity, Maryland is divided into five regions – Eastern Shore, the Baltimore Metro Region, the Washington Metro Region, Southern Maryland, and Western Maryland. Each of the regions has its own character, distinct needs, and associated transportation system.
Trends and Considerations

Demand for travel is directly tied to population, employment, density, and demographics. Population and employment growth adds daily trips that the transportation system needs to accommodate. Where people live, how they travel to work, and their stage of life, all influence travel demand in Maryland.

- **Population**: 6.0M (2018 CY) +4.4% (2010-2016)
- **Employment**: 3.6M (2015 CY) +6.2% (2010-2015)
- **Registered Vehicles**: 5.1M (2016 FY) +4.9% (2010-2016)
- **Licensed Drivers**: 4.3M (2016 FY) +4.8% (2010-2016)
- **Electric Vehicle Registrations**: 6,788 (2016) +1014.6% (2012-2016)
- **Annual Vehicle Miles Traveled (VMT)**: 58.9B (2016 CY) +4.9% (2010-2016)
- **Annual VMT Per Capita**: 9,802 (2016 FY) +0.9% (2010-2016)
- **MVA Transactions**: 11.1M (2016) +0.8% (2010-2016)

**Vehicle Hours of Travel (by Region)**

Source: Maryland Department of Transportation State Highway Administration, MSTM V1.1
- Rural areas have higher concentrations of older residents.
- Maryland's population is getting older with a 24% increase between 2010 and 2016.
- More than 82% of the State's population live in the Baltimore and Washington regions.
- Population is concentrated in central Maryland along the I-95 corridor and along radial lines extending out from Washington, D.C.
Average Commuting Times and Destinations by County

**AVERAGE COMMUTING TIME**
- 20 - 22 Minutes
- >22 - 26 Minutes
- >26 - 32 Minutes
- >32 - 36 Minutes
- >36 - 43 Minutes

- Average commute time in Maryland = 32.3 minutes
- Tied for first place longest average commute time in the country
- Along the center of State, commutes longer than State average

**PERCENT COMMUTING WITHIN COUNTY**
- 23 - 25%
- >25 - 33%
- >33 - 42%
- >42 - 50%
- >50 - 65%

**PERCENT COMMUTING TO ANOTHER COUNTY**
- 20 - 27%
- >27 - 36%
- >36 - 49%
- >49 - 58%
- >58 - 67%

**PERCENT COMMUTING OUT OF MARYLAND**
- 4 - 7%
- >7 - 10%
- >10 - 15%
- >15 - 20%
- >20 - 43%
would take 20 minutes in heavy traffic.

A trip that takes ten minutes in light traffic
2040. A TTI of 2.0 or above indicates that
Maryland is expected to increase by 50 percent or more.

The following maps show that by 2040,
travel time under congested conditions,
particularly in central Maryland. The maps
display the travel time index (TTI), which
compares free flow travel time (TTI = 1) with the
peak travel period within the state.

The following maps show that by 2040,
under congested conditions during the
peak travel period within the state.

Maryland Congestion Trends

Maryland Strategic Transportation Model 2015

Congestion Level Increase 2015-2040

- 50% Increase in TTI
Challenges and Opportunities

Transportation Strategy

Programs that impact the core of MDOT’s
strategic investment in asset management
and infrastructure maintenance continue to
monitor and minimize Maryland’s road and
bridge infrastructure.

Security

Cybersecurity attacks:
Carole increases the risk of exposing customer data to
the continuous stream of digital motor vehicle
transactions. The increase in the number of cyberattacks
is an important aspect of transportation planning for
system security. The transportation system has been

Mobility

Shared Economy

Ultimate outcomes are hard to predict.
As a result of new methods and
innovations, cities continue to evolve.

System, creating more congestion in the future.

Congestion

These critical challenges and ensure Maryland remains a great place to live, work, and do business.

The transportation needs of the next 20 years are complex, and require the collaboration of federal programs and projects that address
modality economy through innovation, including some significant steps to accommodate the changing landscape in Maryland.

The impact of transportation-related economic development is significant. The transportation network and infrastructure
critical to the state’s economy, and the state is working on initiatives to ensure the safe and efficient movement of people and goods, while
others are focused on changing transportation needs associated with

Maryland’s Transportation Network Faces a Number of Challenges. Some are inherent to the network itself – continuing

Maryland’s extensive multimodal transportation network faces a number of challenges. Some are inherent to the network itself – continuing

Maryland’s extensive multimodal transportation network faces a number of challenges. Some are inherent to the network itself – continuing

Transportation Systems
ELECTRIC VEHICLES
Depending on the pace of advances in battery technology, refueling access, electric grid capacity, and oil prices in the future, electric vehicles promise lower transportation costs and a cleaner environment in Maryland, however rapid adoption of electric vehicles will hurt gas tax revenue that pays for most infrastructure.

MILLENNIAL GENERATION
Millennials show a preference for spending their wealth on experiences like entertainment, restaurants, or travel rather than material goods, which has the potential to redistribute non-work trips by time of day and destination; whether this will increase or decrease congestion remains to be seen.

CONNECTED AND AUTOMATED VEHICLES (CAV)
As Connected and Automated Vehicles (CAV) achieve significant fleet penetration, as is widely predicted over the next several decades, crashes caused by driver error may decline while computer-controlled vehicles operating safely at high speed could add capacity to existing highways. Infrastructure investments will be needed to fully realize the benefits of CAVs. On the other hand, the convenience of CAV travel may encourage more VMT and more dispersed work and living locations and different transportation infrastructure needs.

AGING POPULATION
Maryland’s population is getting older. The increase in older and non-working transportation users could change travel patterns and travel times and affect public transportation agencies, non-profit transportation providers, and/or private providers.

CLIMATE IMPACTS
Rising seas, more flooding, and hotter temperatures will stress infrastructure differently than today. This will require changes in design specifications to maintain system resiliency.

SUPPORT FOR DISTRESSED ECONOMIC REGIONS
Maryland’s largest employment centers are in the Baltimore and Washington regions, but other parts of the State require transportation investments to ensure the continued growth of their economies. Striking a balance between congested and growing areas and slower growth areas in need of investment is an important policy challenge facing Maryland.

DEVELOPMENT PATTERNS
Decentralized growth, while a local choice in Maryland, often results in longer vehicle trips compared to dense development. It typically features few transportation options and it can pose extra costs to build and maintain state roads.
Transportation System Needs and Revenue

Transportation departments require additional revenue to fund major projects and operations. The current transportation system needs to be expanded and maintained to meet future transportation needs.

Key revenue sources include:
- Bond sales
- Motor vehicle taxes and fees
- Federal aid
- Motor fuel tax
- Operating revenues
- Corporate income tax
- Tolling tax

These revenues are used to maintain, expand, and operate the transportation system.
This covers a range of transportation system needs from connecting Maryland with expanded transit options, to addressing congestion, to optimizing waterways for trade. MDOT’s highest priority continues to be to operate, maintain, and preserve its existing transportation infrastructure in a state of good repair; doing so improves safety. MDOT ensures all necessary debt service and contractual obligations, O&M, and system preservation needs are addressed first before expanding the system.

Developing needs starts with evaluating and reporting on the performance of the transportation system, which MDOT does through the AR. Another key resource in the development of its needs is through various asset management plans developed by the TBUs which look to ensure its pavement and bridge, transit assets, and multimodal infrastructure meet the performance goals through asset management systems. Much focus is now also being placed on investments needed to address the emergence of new trends (e.g. ride- sharing) and technology (e.g. CAVs) that will likely impact the future of the State’s transportation system.

Transportation needs in Maryland are primarily funded from an integrated account called the Transportation Trust Fund (TTF), the revenue sources of which are illustrated on the previous page. The Transportation Infrastructure Investment Act of 2013 (Transportation Act) substantially increased and advanced the TTF revenues. The changes included an increase in state motor fuel taxes; the indexing of principal revenue streams (e.g. motor fuel taxes and MDOT MTA passenger fares) to inflation; and restrictions on the transfer of funds from the Trust Fund to the State’s General Fund.

Funds from the TTF are not necessarily earmarked for specific agencies or programs. This approach affords Maryland tremendous flexibility to meet the varying service and infrastructure needs to support its diverse transportation system. With the exception of MDTA, which is funded primarily through tolls and concessions revenues, all activities of MDOT are supported by the TTF. This includes debt service, maintenance, operations, administration, and capital projects. Unexpended funds remaining in the TTF at the close of the fiscal year are carried over and do not revert to the State’s General Fund. Disbursements for all MDOT programs and projects are made from the TTF.

Though the Transportation Act provided a boost to the TTF over the past 5 years, MDOT’s transportation infrastructure needs to maintain and preserve the extensive system, strategically expand the system, and modernize the system is projected to exceed MDOT’s ability to fund all needed improvements. This coupled with the conservative assumptions about availability of future federal funds, highlights the importance of other project funding options including partnerships. Partnerships with other state and local agencies, and increasingly private entities are critical to ensuring the available funding to implement projects and meet the State’s transportation needs.
We thank the AARC members for their work on this Committee and ensuring that the performance measures best speak to our customers in showing our performance towards achieving these goals and objectives.

Performance measures tell us how well we're doing in meeting our goals. The AARC is responsible for developing and revising these performance measures.

In the context of the 2035 MTP, this committee is tasked with identifying key performance measures and the data needed to support them. The AARC is responsible for developing and revising these performance measures.

A goal is a broad statement with a desired result that MDOT evaluates through measures.

The performance measures are developed to ensure how well the goals are met. The AARC is responsible for developing and revising these performance measures.

Many of these measures are used to evaluate the goals of the 2040 MTP. The AARC is responsible for developing and revising these performance measures.

The AARC is responsible for developing and revising these performance measures.

The AARC is responsible for developing and revising these performance measures.
Enhance the safety and security of Maryland’s multimodal transportation system and provide a transportation system that is resilient to natural or man-made hazards.

### 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. |

### Annual Attainment Report Performance Measures

| Annual number of traffic fatalities and personal injuries on all roads in Maryland |
| MDOT-wide overall perception of safety: crime and safe movement |
| Qualitative discussion of current initiatives to improve resiliency and address climate change, including resiliency efforts and vulnerability assessments |
| Average Time to Restore Normal Operations after a Weather Event |
| Annual number of bicycle and pedestrian fatalities and injuries on all Maryland roads |
| Preventable accidents per 100,000 vehicle miles |
| Qualitative discussion of current initiatives to address data security |

### In the Last 5 Years:

- MDOT MAA completed a $350 million Runway Safety Area, Pavement Management and Standards Compliance Program in 2016 which brought all the runways at BWI Marshall Airport in compliance with FAA Runway Safety Area Standards.
- MDOT SHA promoted the Transportation Alternatives Program, Bikeways Program, Bicycle and Pedestrian Priority Areas, and Pedestrian Road Safety Audits delivering engineering, enforcement, and education support to local jurisdictions to improve multi-modal safety and mobility of all roadway users.
- MDOT MPA made improvements to truck drive lanes at the Port of Baltimore to improve safety and efficiency and increase inbound truck gate lanes.
- MDOT MVA introduced new driver's license designs that are more secure and less prone to identity theft, and piloted a digital driver's license, which offers a secure and convenient way to display identification documents.
- MDOT SHA completed a $158.5 million safety and congestion relief project in 2017 to dualize MD 404 between US 50 and Denton.
- MDOT MTA was named America’s safest transit system in terms of Part I crimes for four consecutive years (2014, 2015, 2016, and 2017) from among 12 of the largest transit agencies.
Improve the Quality and Efficiency of the Transportation System to Enhance the Customer Experience

Increase the use of technologies and operational improvements to enhance transportation services and communication to satisfy our customers.

OBJECTIVES

Increase the efficiency of transportation services through partnerships, advanced technologies, and operational enhancements to improve service delivery methods.

Enhance customer satisfaction with transportation services across all modes of transportation.

Minimize travel delays and improve predictability of travel times on Maryland's transportation system.

Apply enhanced technologies to improve communications with the transportation system users and to relay real-time travel information.

ANNUAL ATTAINMENT REPORT PERFORMANCE MEASURES

MDOT MVA alternative service delivery transactions as percent of total transactions

Percent of toll transactions collected electronically (i.e., E-ZPass)

Discussion on current use of partnerships, technologies and operational enhancements to improve service delivery methods

MDOT MVA metrics on transactions

MDOT MVA Branch office customer wait time versus customer satisfaction rating

MDOT MVA Branch office customer visit time versus customer satisfaction rating

Overall satisfaction with MDOT

MDOT MTA Percent of service provided on time

Percent of VMT in congested conditions on freeways/expressways and arterials in Maryland during the evening peak hour

Annual hours (thousands) of delay on the MDOT highway network

Travel time reliability of the MDOT highway network

Customer satisfaction with the accuracy of real-time information systems provided

IN THE LAST 5 YEARS:

- Coordinated Highways Action Response Team (CHART) responded to 30,314 incidents, provided 42,048 motorist assists, averted 43.6 million hours of delays, and saved drivers $1.5 billion in the cost of delays in 2017.

- MDOT MVA expanded Customer Call Center hours by an hour each weekday, from 4:30 p.m. to 5:30 p.m., to increase capacity by 21% to better serve customers and allowed MDOT MVA to answer an additional 323,829 calls since it was implemented.

- MDOT MVA implemented self-service Vehicle Emissions Inspection Program (VEIP) Kiosks in 10 MDOT MVA locations with over 88,000 transactions completed using the Kiosks to date.

- In 2018, MDTA announced it will be replacing existing toll-lane terminals and upgrading to third-generation (3G) E-ZPass® System.

- MDOT MTA launched BaltimoreLink, a complete network redesign for the Baltimore region's transit system.

- MDOT launched the MDOT OneStopShop customer-focused website where Marylanders can address most of their transportation needs at one centralized web destination.

- MDOT MTA received a US DOT TIGER discretionary grant to advance the North Avenue Rising project improving safety and service along the North Avenue corridor for transit, pedestrian and bicycle movement.
Provide Better Transportation Choices and Connections

Improve transportation connections to support alternative transportation options for the movement of people and goods.

## OBJECTIVES

| Enhance, through statewide, regional and local coordination, transportation networks to improve mobility and accessibility. | Increase and enhance multimodal connections to improve movement of people and goods within and between activity centers. | Inform and educate customers on transportation options and benefits. |

## ANNUAL ATTAINMENT REPORT PERFORMANCE MEASURES

| Total VMT and VMT per capita | Access to Transit (Percent of population within walk/bike distance of fixed-route transit or multimodal center) | Mode Share |
| Transit ridership | Bicycle Access to transit | Travel Demand Management; Transportation Emission Reduction Measures (TERMs) |
| Number of Directional Miles improved for Bicycle Access | MDOT survey - Perceptions of multimodal connectivity | Travel Demand Management; Transportation Emission Reduction Measures (TERMs) |
| Qualitative discussion of Travel Demand Management initiatives |

## IN THE LAST 5 YEARS:

- MDOT MPA received a US DOT TIGER discretionary grant for a project nearing completion, which widens the shipping channel to Seagirt Marine Terminal allowing access by larger ships transiting the enhanced Panama and Suez Canal, expanding Rail capabilities to provide MDOT MPA's tenants at Fairfield Marine Terminal greater options for cargo handling, and increasing cargo storage capacity with 7 acres of new land adjacent to the Fairfield vessel moorings.

- MDOT MTA opened the Takoma Langley Crossroads Transit Center, the largest, non-Metrorail station transfer point in the Washington Metro Region.

- MDOT MTA launched commuter bus service between the Eastern Shore and Baltimore as part of BaltimoreLink and expanded commuter bus service to downtown Frederick MARC station creating service to Frederick for the first time.

- MDOT installed bikeshare stations at 8 rail stations and through bicycle and pedestrian grants funded a variety of improvements across the State.
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.

IN THE LAST 5 YEARS:

- MDOT MTA built 5.5 miles of dedicated bus lanes, installed real-time information signs at 6 multi-modal transfer locations, and built the West Baltimore MARC transfer center.
- MDOT MPA purchased 70 acres of property at the Point Breeze Business Center for the long-term expansion of the Seagirt Marine Terminal to accommodate larger ships from the expansion of the Panama Canal representing the MDOT MPA’s first major land purchase for new cargo opportunities since 2001.
- MDOT SHA promoted Innovative Congestion Management (ICM) solutions, which broke ground on busy I-270 between Frederick and Washington, D.C., adding 23 new lane miles, more than 25 real-time traffic communication signs, and more than 30 intelligent signals.
- MDOT allocated $765 million in funding in 2016 for construction of a new Potomac River crossing on US 301 from Charles County, Maryland, to King George County, Virginia which is vital to the nation's security and to the quality of life of thousands of Marylanders.
River Basin.

MDOT SHA completed the new Dover Draw bridge in the Patapsco River. The bridge was built in 1923, replacing a historic truss bridge. Since completion, the bridge has been in service.

MDOT SHA improved water quality through several initiatives.

- NCWMA installed a 300-kilowatt solar array.
- NCWMA introduced green vehicle charging infrastructure.
- Total publicly available electric vehicle charging stations registered in Maryland.
- Total electric vehicles registered in Maryland.
- Customer wait time for vehicle charging.
- Emissions from transportation infrastructure.
- Emissions from transportation projects.
- Renewable energy generated.
- Energy use.

ANNUAL ATTAINMENT REPORT PERFORMANCE MEASURES

OBJECTIVES

Deliver sustainable transportation infrastructure improvements that protect and reduce impacts to Maryland's natural historic, and cultural resources.

Ensure environmental protection and sensitivity.
Promote Fiscal Responsibility

Ensure responsible investment and management of taxpayer resources to add value and deliver quality transportation improvements through performance-based decision-making and innovative funding mechanisms and partnerships.

IN THE LAST 5 YEARS:

- The Port of Baltimore has been recognized as one of the nation's most efficient container terminals, and has a successful long-term Public-Private Partnership (P3) with Ports America Chesapeake.

- MDOT SHA has improved the construction bidding and project delivery process through Bid Express, E-Construction and A+E Bidding.

- MDOT has begun the process to participate in the largest P3 highway project in North America to add new lanes to I-270, the Capital Beltway, and the Baltimore-Washington Parkway.

- MDOT officials signed the $5.6 billion P3 contract with the Purple Line Transit Partners to design, build, finance, operate, and maintain the light rail system. The Purple Line will run east-west inside the Capital Beltway with 21 stations.
In fiscal year 2020, MDOT will include the following measures in its Highway Safety Improvement Program:

- Number of MDOT-reported crashes
- Number of serious injuries
- Number of fatalities
- Rate of fatalities per 100 million vehicle miles traveled (VMT)
- Rate of serious injuries per 100 million VMT

MDOT is currently updating its annual performance targets for the System Performance Report and includes measures related to safety and asset management performance.

The 2040 MTP will include measures that were adopted on or after May 20, 2019, and will be included in the final 2040 MTP and Air Quality Plan.

The System Performance Report is a quarterly report that includes performance measures related to safety and asset management.

In addition to the 2019 performance measures, the following measures are included in the 2019 report:

- Number of crashes
- Number of injuries
- Number of fatalities
- Rate of crashes per 100 million vehicle miles traveled (VMT)
- Rate of injuries per 100 million VMT
- Rate of fatalities per 100 million VMT

The performance measures are used to evaluate the effectiveness of the MDOT's performance management system and to identify areas for improvement.

In addition to these measures, the 2019 report includes measures related to asset management, such as the number of crashes involving severe injuries and the number of crashes involving fatalities.

The report also includes information on the MDOT's budget and funding sources, as well as the agency's financial statements and performance plan.
Western Maryland's transportation system is primarily automobile-oriented, but locally operated fixed-route bus service is provided in Cumberland and Hagerstown. Intercity bus providers connect parts of western Maryland to the Baltimore metro area. The transportation system in the region also connects travelers to Pennsylvania and West Virginia.

Over the next 20 years...

- MDOT SHA will complete I-81 corridor improvements from the West Virginia State Line to the Pennsylvania State Line, including upgrading and widening to reduce congestion, especially related to high truck volume, and provide capacity for planned development.
- MDOT will address truck parking shortages statewide, including at I-68 at the Youghiogheny Overlook.
- MDOT SHA will complete US 219 corridor improvements to enhance accessibility and promote economic development through upgrades and relocation of US 219 from I-68/US 40 to the Pennsylvania State Line.
- MDOT SHA will conduct a US 220 joint planning study with West Virginia.
- MDOT will improve the connection between the Cumberland Amtrak station and the Allegheny Highlands Trail.
Eastern Shore Transportation System

The Eastern Shore's transportation system is critical for connecting communities to the greater region and fostering economic growth. Some communities in the region rely on this transportation network to their daily activities and commerce.

Over the next 20 years...
The Southern Maryland Region's transportation system is automobile-oriented. Each of the region's counties operates its own fixed-route bus system. Commuter bus routes also provide access from the region to Washington, D.C. metro area. The transportation network in the region connects Maryland to Virginia across the Potomac River.

Over the next 20 years...

- MDOT MDTA will complete construction of the Nice Bridge, a new Potomac River crossing from Charles County, Maryland, to King George County, Virginia. This crossing is vital to the nation's security and to the quality of life of thousands of Marylanders who depend on this bridge daily for work, business, and recreation.

- MDOT SHA will continue to progress on updates to MD 4 from MD 2 to MD 235 including the replacement of the Thomas Johnson Bridge.

- MDOT SHA will widen MD 2/4 to six lanes from north of Streakley Road/Hospital Road to south of MD 765A in Prince Frederick.

- MDOT SHA will upgrade MD 5 from MD 471 to MD 246 including the bridge over the Saint Mary's River.
The Washington Metro Region has a radial highway system and an extensive and heavily used commuter rail, subway, and bus transit network. Portions of this region are well suited to active transportation modes. The transportation network in the region connects Maryland to Washington, D.C., and Virginia.

Over the next 20 years...

- MDOT MTA will complete the Purple Line transitway which will provide faster and more reliable transportation between residential and major employment areas, enhance access to existing radial Metrorail lines, increase capacity of congested roadways, support economic development consistent with local master plans, and reduce environmental impacts.

- MDOT SHA will complete the I-270 innovative congestion management project, which will include implementation of innovative congestion management (ICM) tools to reduce congestion on I-270, including the east I-270 and west I-270 spurs.

- MDOT will complete the I-495 & I-270 Public-Private Partnership (P3) Project which includes managed lane improvements for over 70 miles of interstate in Maryland including:
  - I-495 (Capital Beltway) between the American Legion Bridge and the Woodrow Wilson bridge.
  - I-270 (Dwight D. Eisenhower Memorial Highway) between I-495 and I-70, including the east and west I-270 spurs.

- MDOT SHA will continue the pedestrian, safety, and operational upgrades to US 1 from College Avenue to I-495/I-95.

- MDOT will address truck parking shortages statewide, including at the I-70 eastbound and westbound Welcome areas and at the I-70 eastbound truck rest area in Frederick County.
## Maintain a High Standard and Modernize Maryland’s Multimodal Transportation System

### Objectives

| Preserve and maintain State-owned or funded roadways, bridges, public transit, rail, bicycle and pedestrian facilities, ports, airports and other facilities in a state of good repair. | Strategically modernize infrastructure through new and innovative technology, enhanced partnerships, design standards, and practices to facilitate the movement of people and goods. | Use asset management to optimize public investment and ensure the sustainability of transportation infrastructure. |

### Strategies

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<td>Invest in MDOT roadways to maintain pavement quality.</td>
<td>Implement Connected and Automated (CAV) pilots and support CAV testing through partnerships to build experience and attract partner investment in Maryland.</td>
<td>Provide real-time variable-control of speed, lane movement, and traveler information (for drivers and transit users) and conduct centralized data collection and analysis of the transportation system.</td>
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<td>Invest in MDOT bridges to improve structurally deficient bridges and preserve existing bridges to prevent them from becoming structurally deficient.</td>
<td>Implement robust telecommunications infrastructure, enhanced road markings and signage to provide foundational needs of a CAV program.</td>
<td>Invest in the National Highway System in accordance with the 10-year projections for bridges and pavement as identified in the Transportation Asset Management Plan.</td>
</tr>
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<td>Study the effects of truck size and weight for permitted and non-permitted loads on safety, infrastructure, and the economy.</td>
<td>Implement an internal and external outreach program related to CAV and continue involvement in national CAV activities and through the MDOT CAV Working Group.</td>
<td>Incentivize the demand for clean low-carbon fuels and the development of infrastructure to provide for increased availability/accessibility of alternative fuels and plug-in locations for electric vehicles.</td>
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<tr>
<td>Invest in MARC to overhaul and replace the rolling stock and introduce new diesel electric locomotives in order to extend the useful life of the MARC system.</td>
<td>Complete retrofits of existing facilities to achieve full ADA compliance of existing facilities and encourage the use of ADA best practices to the maximum extent reasonable within the constraints of a specific project or program.</td>
<td>Upgrade the existing fare collection system for BaltimoreLink, Metro Subway Link, and Light RailLink and introduce mobile ticketing service for MARC and Commuter Bus.</td>
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<td>Maintain the State’s aviation facilities and runways in a state of good repair to support the vitality of aviation statewide.</td>
<td>Incorporate new American Association of State Highway and Transportation Officials (AASHTO) design standards and framework including an explicit purpose and need for projects, implementation of new context classification system, multimodal considerations, design flexibility, and performance-based design.</td>
<td>Promote electric vehicle infrastructure around the State.</td>
</tr>
<tr>
<td>Maintain the navigation channel depth and width to allow safe, two-way traffic to and from the Port of Baltimore.</td>
<td>Update state guidelines for bicycle and pedestrian infrastructure and establish a multimodal process to ensure innovative treatments and techniques are regularly vetted for inclusion.</td>
<td>Assess opportunities for implementing truck platooning.</td>
</tr>
<tr>
<td>Develop tools and guidance to ensure effective and efficient enhancement and maintenance of bicycle and pedestrian infrastructure.</td>
<td>Continue to improve our transportation infrastructure using the most current design guidelines and applicable technology enhancements.</td>
<td>Assess opportunities for implementing new and innovative public transit options through innovative financing and partnerships.</td>
</tr>
<tr>
<td>Maintain, rehabilitate, and improve State-owned rail assets as identified in the MDOT Freight Lines Strategic Plan.</td>
<td></td>
<td>Assess MDOT properties for reuse potential and to optimize use of all parcel holdings.</td>
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Transportation System to Enhance the Customer Experience

**Objectives**

- Increase the efficiency of transportation services through the implementation of advanced technologies and operational methods.
- Enhance customer satisfaction with transportation through improvements and adjustments to customer service and communication.
- Minimize travel delays and improve predictability of transportation.
- Expand the use of all modes of transportation to meet travel demands.

**Strategies**

- Expand and modernize the rail network to improve service and accessibility.
- Develop education and outreach tools to engage with the traveling public and ensure they are informed about transportation options.
- Enhance passenger呗的旅行体验，通过改进服务流程和使用新的技术工具，提高乘客满意度。
- Improve the tracking and responsiveness of transportation systems to address peak hour congestion and improve travel times.

**Local Levels**

- Ensure regional and state-level decision-making is aligned with the strategic goals of the transportation system.
- Develop new tools and use emerging technologies to improve transportation services.
## Provide Better Transportation Choices and Connections

### Objectives

| Enhance, through statewide, regional and local coordination, transportation networks to improve mobility and accessibility. | Increase and enhance **multimodal connections** to improve movement of **people and goods** within and between activity centers. | Inform and educate customers on transportation options and benefits. |

### Strategies

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<th>Coordinate infrastructure improvements to facilitate multimodal connectivity and access.</th>
<th>Expand commuter transportation options, including commuter bus, car/vanpooling, park-and-ride facilities, cycling, walking, and transit, as well as promoting opportunities for teleworking, and alternative or flexible work hours to help reduce congestion along key routes.</th>
<th>Work with the University Systems to improve walk and bike access to and within their campuses.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support MARC improvements and improve access to stations in accordance with the MARC Cornerstone Plan.</td>
<td>Expand inland transportation capabilities at the Port of Baltimore.</td>
<td>Promote innovative public involvement strategies for projects such as use of social media and text message surveys to expand outreach and engagement.</td>
</tr>
<tr>
<td>Invest in improvements to transit to provide better access to BWI Marshall Airport.</td>
<td>Improve landside and freight rail access to the Port of Baltimore, including implementation of an Intermodal Container Transfer Facility in the vicinity of the Port.</td>
<td>Educate local leaders and elected officials on the benefits of other transportation options and opportunities for support through Commuter Choice Maryland.</td>
</tr>
<tr>
<td>Develop new tools to facilitate project development, prioritization, and implementation, and to ensure effective use of state and federal discretionary programs.</td>
<td>Strategically invest to improve connectivity and comfort of pedestrian and bicycle networks within and between jurisdictions and for both on and off-road facilities.</td>
<td>Provide outreach on Commuter Choice Maryland travel options through targeted media campaigns, brochures, and websites to promote bicycling, walking, carpooling, teleworking, and transit.</td>
</tr>
<tr>
<td>Coordinate activities across MDOT and with regional and local agencies to incentivize changing travel behavior.</td>
<td></td>
<td>Strengthen employer commuter incentive programs by increasing marketing and financial/and or tax based incentives for employers, schools, and universities to encourage walking, biking, public transportation usage, carpooling, and teleworking.</td>
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<tr>
<td>Invest in improvements to provide choices and connections between rural and urban areas.</td>
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</table>
Implementation

Congestion in Maryland Through Strategic System Expansion

Facilitate Economic Opportunity and Reduce

Strategies

- Expand air cargo facilities at BWI Marshall Airport
- Strengthen corridors through improved operational manage, peak hour congestion on roadways
- Cooperative, and integrate transit as part of the strategies to improve transportation investment
- Evaluate managed lanes, including high occupancy vehicle (HOV) lanes, congestion pricing, and related

Strategies

Plan
- Develop a data-supported system and modeling for MDOT
- Operational improvements, key regional bottlenecks
- Identify locations where installed volume may exceed capacity on key freight corridors
- Access to markets, the effects of congestion on centers
- Recruit and retain workforce, prevent and attract

Objectives

- Multimodal transportation system
- Strategic improvements to reduce congestion along the state
- Strategic investment in expansion and operational improvements in existing and planned
- Improve the movement of goods within and through
- Pursue capital improvements to the transportation system that will improve access to jobs, food, and leisure

Support state efforts to improve the attractiveness of Maryland for the traveling public and to promote activity-based tourism.

- Engage Maryland’s well-positioned role in global supply chains
- Use the economic model to assess productivity
- Reduce transportation costs
- Target infrastructure and incentive programs
- Training and project coordination
- Develop a data-supported system for performance

Enable Maryland is well positioned to attract new industries that emphasize transportation, among others.
<table>
<thead>
<tr>
<th>STRATEGIES</th>
<th>OBJECTIVES</th>
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<tbody>
<tr>
<td>Implement initiatives to reduce greenhouse gases and improve air quality.</td>
<td>Ensure Environmental Protection and Sensitivity</td>
</tr>
<tr>
<td>Promote renewable energy portfolio through solar, wind, and other clean energy sources.</td>
<td>Develop a comprehensive Environmental Management System.</td>
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<tr>
<td>Continue to support investments and partnerships with electric vehicle companies to promote use of electric vehicles and improve air quality.</td>
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<tr>
<td>Continue to increase the renewable energy portfolio through solar, wind, and other clean energy sources.</td>
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<tr>
<td>Develop pricing strategies to encourage smarter commuting options.</td>
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<tr>
<td>Promote and incentivize fuel-efficient vehicles and alternative fuels.</td>
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<tr>
<td>Provide incentives to increase purchase of fuel-efficient vehicles.</td>
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<tr>
<td>Install electric vehicle charging devices at parking lots along the Purple Line, Light Rail Link, MARC, and commuter bus systems.</td>
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Acknowledgements

The Maryland Department of Transportation would like to acknowledge the MDOT staff, planning partners, local, state, and regional government representatives, Federal Highway Division Office, Federal Transit Administration, and its customers who have helped to shape the 2040 Maryland Transportation Plan. The Maryland Department of Transportation would like to especially thank the members of the Attainment Report Advisory Committee (ARAC), who have worked closely with the Maryland Department of Transportation to update the annual Attainment Report and transportation performance measures. This effort will ensure that Maryland is advancing the right strategies to effectively implement the goals.

2019 ARAC Members

<table>
<thead>
<tr>
<th>Required Representation</th>
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<th>Representative Title</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Maryland Business Community</td>
<td>Christine Ross</td>
<td>President/CEO</td>
<td>Maryland Chamber of Commerce</td>
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<tr>
<td>Disabled Citizens Community</td>
<td>Janice Jackson</td>
<td>Commissioner</td>
<td>Maryland Commission on Disabilities</td>
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<tr>
<td>Rural Interests</td>
<td>Geoff Turner</td>
<td>President/CEO</td>
<td>Choptank Transport</td>
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<tr>
<td>Auto Users Group</td>
<td>Regina Cooper Averella</td>
<td>Public &amp; Gov't Affairs Manager</td>
<td>American Automobile Association (AAA)</td>
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<tr>
<td>Transit Users Group</td>
<td>Steve Chan</td>
<td>Chairman</td>
<td>MARC Riders Advisory Council</td>
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<tr>
<td>Goods Movement Industry</td>
<td>Louis Campion</td>
<td>President/CEO</td>
<td>Maryland Motor Truck Association (MMTA)</td>
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<tr>
<td>National Expert: Transportation Demand</td>
<td>Nicholas William Ramfors</td>
<td>Director, Transportation Operations Programs</td>
<td>Metropolitan Washington Council of Governments</td>
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<tr>
<td>Management</td>
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<tr>
<td>National Expert: Pedestrian/Bike Transportation</td>
<td>Jennifer L. Toole, AICP, ASLA</td>
<td>President</td>
<td>Toole Design Group</td>
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<td>National Expert: Transportation Performance Management</td>
<td>Matthew H. Hardy, Ph.D.</td>
<td>Program Director for Planning and Policy</td>
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</tr>
<tr>
<td>Environmental Advocacy Organization</td>
<td>Joel Dunn</td>
<td>President/CEO</td>
<td>The Chesapeake Conservancy</td>
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<td>Maryland Department of Planning</td>
<td>Pat Keller</td>
<td>Assistant Secretary for Planning Services</td>
<td>Maryland Department of Planning</td>
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<tr>
<td>Maryland Association of Counties</td>
<td>Keith Hall, AICP</td>
<td>Chief, Long Range and Transportation Planning</td>
<td>Salisbury/Wicomico Counties</td>
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<td></td>
<td>Alex Rawls</td>
<td>Long-Range Planner</td>
<td>Harford County Planning &amp; Zoning</td>
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<tr>
<td>Maryland Municipal League</td>
<td>Jim Beauchamp</td>
<td>Town Council Vice President</td>
<td>Town of Centreville</td>
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<td></td>
<td>Tim Davis</td>
<td>Transportation Planner</td>
<td>City of Frederick</td>
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