Transportation and Climate Change Workshop

Monday, May 6th, 2019 from 12:00 – 3:00pm

1306 Concourse Drive, Ground Floor Conference Room, Suite 150

Purpose

To review current transportation trends, emissions forecasts, and discuss best practices to mitigate greenhouse gas emissions from the transportation sector.

Agenda

1. Welcome and Introductions	Colleen Turner
2. Lunch (live polls for webinar attendees)	
3. CTP/Planning Process	Heather Murphy
4. Leadership Welcome	Earl Lewis
5. Ignite Presentations	
a. Solar Effort	Laura Rogers
b. Resiliency	Elizabeth Habic
c. Commuter Connections	Gladys Hurwitz
d. Questions	
6. BREAK	
7. MDOT GGRA	Colleen Turner
8. MWG Recommendations	Colleen Turner
9. Wrap Up	Colleen Turner / Earl Lewis

Video Links:

- **Commuter Connections:** https://youtu.be/VecL9C6nYeU
- **2040 Maryland Transportation Plan**: https://youtu.be/UbM0hDKhDBk
- **MDOT P3: (not shared during webinar)** https://youtu.be/7x-UkqtjDDg

Other Key Links:

Maryland Commission on Climate Change:
https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Pages/index.aspx

Maryland Transportation Plan:
http://www.mdot.maryland.gov/newMDOT/Planning/Maryland_Transportation_Plan/Index.html

MDOT Annual Attainment Report on Transportation System Performance:
http://www.mdot.maryland.gov/newMDOT/Planning/Dashboard/Index

MDOT Consolidated Transportation Program (FY 2019 – 2024):
http://www.mdot.maryland.gov/newMDOT/Planning/CTP/Index.html

MDOT State Highway Administration Vulnerability Viewer:
https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=790fd3f2d6e2437db13c9e47dddba081

MDOT Solar Initiative:
http://www.mdot.maryland.gov/newMDOT/Planning/Environmental/Solar

Commuter Choice Maryland:
http://mdot.maryland.gov/newMDOT/Commuter/Commuting

In-Person Attendance:

- **10 MCCC members (or representatives)**
- **11 MWG members (or representatives)**
- **3 MDOT staff (leading Ignite presentations)**
- **Consultant team**

Webinar Attendance:

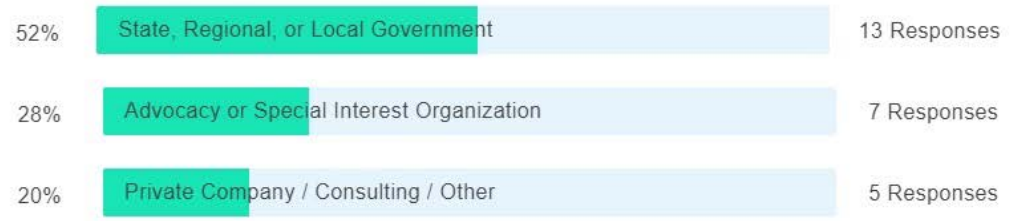
- **245 invitees who clicked registration link**
- **99 registered**
- **60 total attendees representing 36 unique organizations**
    - **Including 3 MCCC members (or representatives) and 1 MWG member**

Live Poll Responses:

1 of 5. Please select the type of agency or organization you represent

Multiple choice with single answer

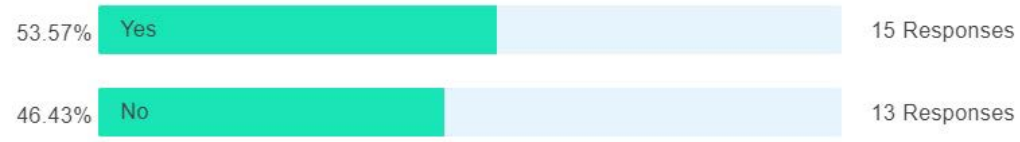
25 of 60 Attendees responded



2 of 5. Do you currently travel using a low-carbon transportation alternative (EV, Transit, Walk/Bicycle)?

Multiple choice with single answer

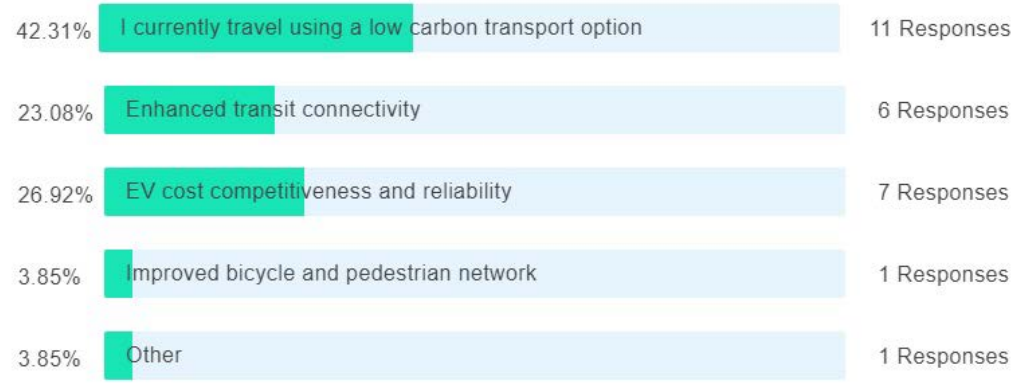
28 of 60 Attendees responded



3 of 5. What will it take for you to transition to low carbon transportation alternatives (EV, Transit, Walk/Bicycle)?

Multiple choice with single answer

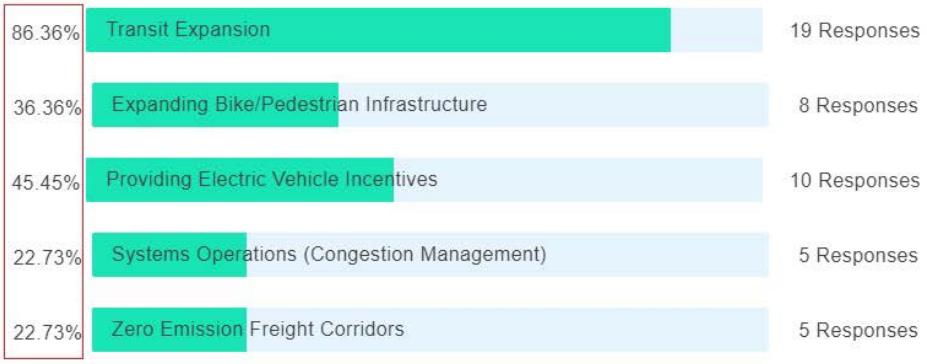
26 of 60 Attendees responded



4 of 5. From your perspective, what are the two most critical strategies for Maryland to reduce GHG emissions from transportation?

Multiple choice with multiple answers

22 of 60 Attendees responded



5 of 5. What does Maryland and MDOT need to do to deliver strategies that will help meet the 40 by 30 goal ?

Multiple choice with multiple answers

20 of 60 Attendees responded

MDOT Transportation and Climate Change Workshop

Colleen Turner – Mitigation Working Group Steering Committee
Assistant Director, Office of Planning and Capital Programming
Maryland Department of Transportation

MARYLAND DEPARTMENT OF TRANSPORTATION

THANK YOU!

We view this as a **unique opportunity** to share successes, challenges, realities, experience, and perspective on the role of **transportation in reducing Maryland GHG emissions**

Our goal is to share MDOT's process, requirements, and view of the future to build a collective understanding

We want to learn from you and understand your priorities and discuss how we can partner to help achieve our climate goals

Workshop Agenda

- Welcome and Introductions
- Lunch
- MDOT's Consolidated Transportation Program (CTP) and the Transportation Planning Process
- Ignite Session: Solar – Resiliency – Commuter Programs
- Break
- MDOT's Response to the Greenhouse Gas Reduction Act (GGRA)
- Wrap Up

Introductions

- Maryland Commission on Climate Change
- Mitigation Working Group
- State Agency Staff
- Workshop Support Staff

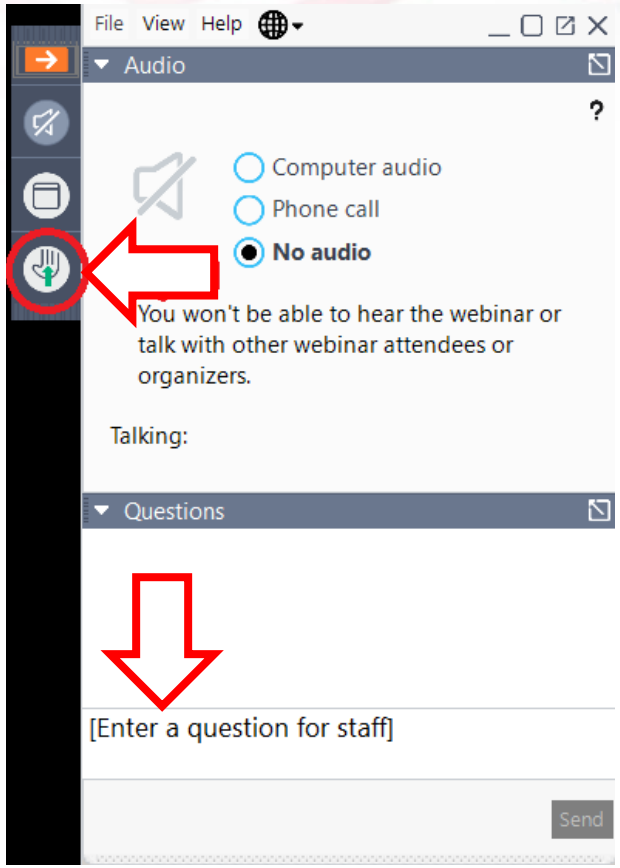
Meeting Logistics –

In Person Participants

1. This **workshop is being recorded** as a webinar and will be made available online.
2. Select **presentation materials** will be made available electronically.
3. We have set aside **time for questions and answers**. Most of this time will be allocated to the in-person participants.
4. We have set aside time **to interact with webinar participants** through live polls and addressing selected questions.
5. Everyone in the room – **please speak loudly and slowly**. We ask the background discussions are kept to a minimum.
6. **Lunch and refreshments are available.**

Meeting Logistics –
Webinar Participants

1. Webinar participants **are muted throughout the workshop**.
2. There are two videos during the workshop – if you wish to hear the audio, you will need to **turn on your speakers** (you will not hear audio over the phone connection).
3. There are **five simple live polls** during the workshop.
4. If you have a question during the workshop, **please enter your question through the webinar question window.** The question will only be seen by the webinar organizers.
5. Invited MCCC and MWG members who join the webinar will be **given the opportunity to speak**. Please click the "raise hand" option so we know who you are. If you would like to speak, let us know through the question box and we will un-mute you,



Webinar Live Polls and Lunch

State Report on Transportation Overview

MDOT's Transportation & Climate Change Workshop

Heather R. Murphy, Director
Office of Planning & Capital Programming
Maryland Department of Transportation

May 6, 2019

MARYLAND DEPARTMENT OF TRANSPORTATION

MISSION STATEMENT

"The Maryland Department of Transportation is a customer-driven leader that delivers safe, sustainable, intelligent, and exceptional transportation solutions in order to connect our customers to life's opportunities."

MARYLAND DEPARTMENT OF TRANSPORTATION

MDOT AT-A-Glance

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND PORT ADMINISTRATION

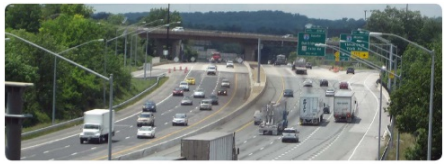
MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION

Maryland Transportation Authority

MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE ADMINISTRATION

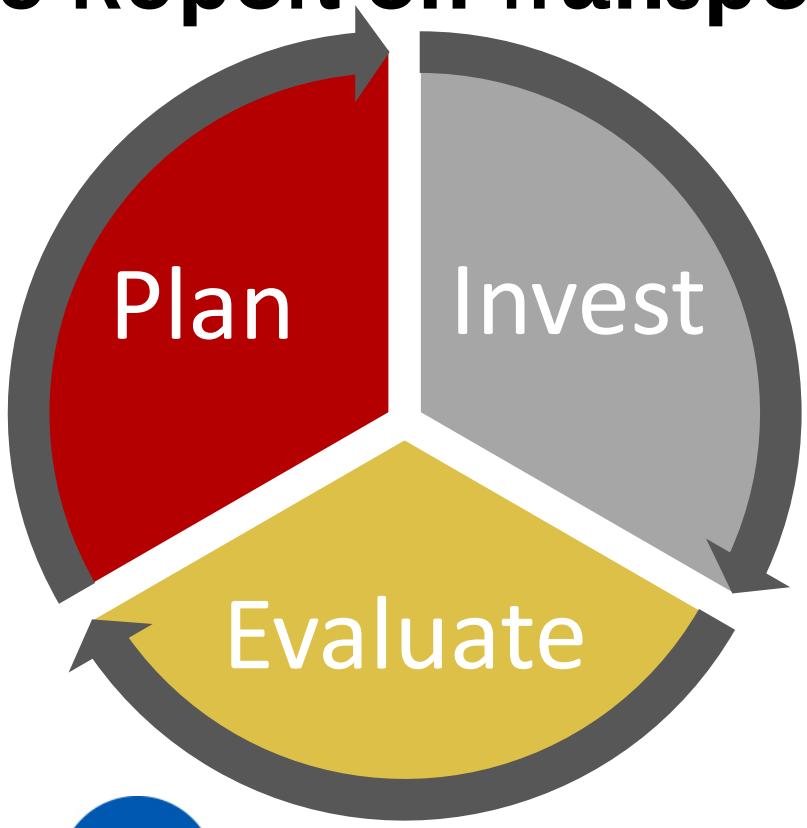
MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND AVIATION ADMINISTRATION



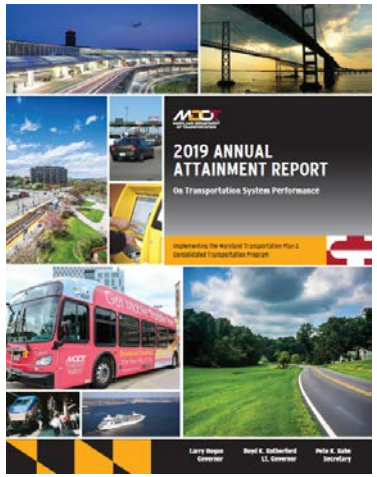
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

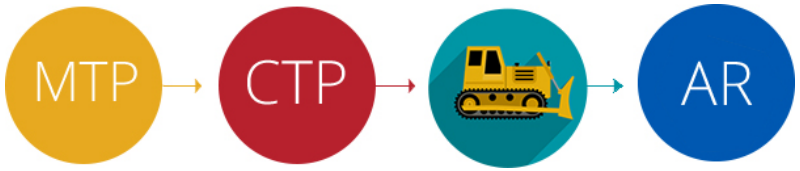
MARYLAND DEPARTMENT OF TRANSPORTATION

The State Report on Transportation



The State Report on Transportation is submitted annually to the Maryland General Assembly.





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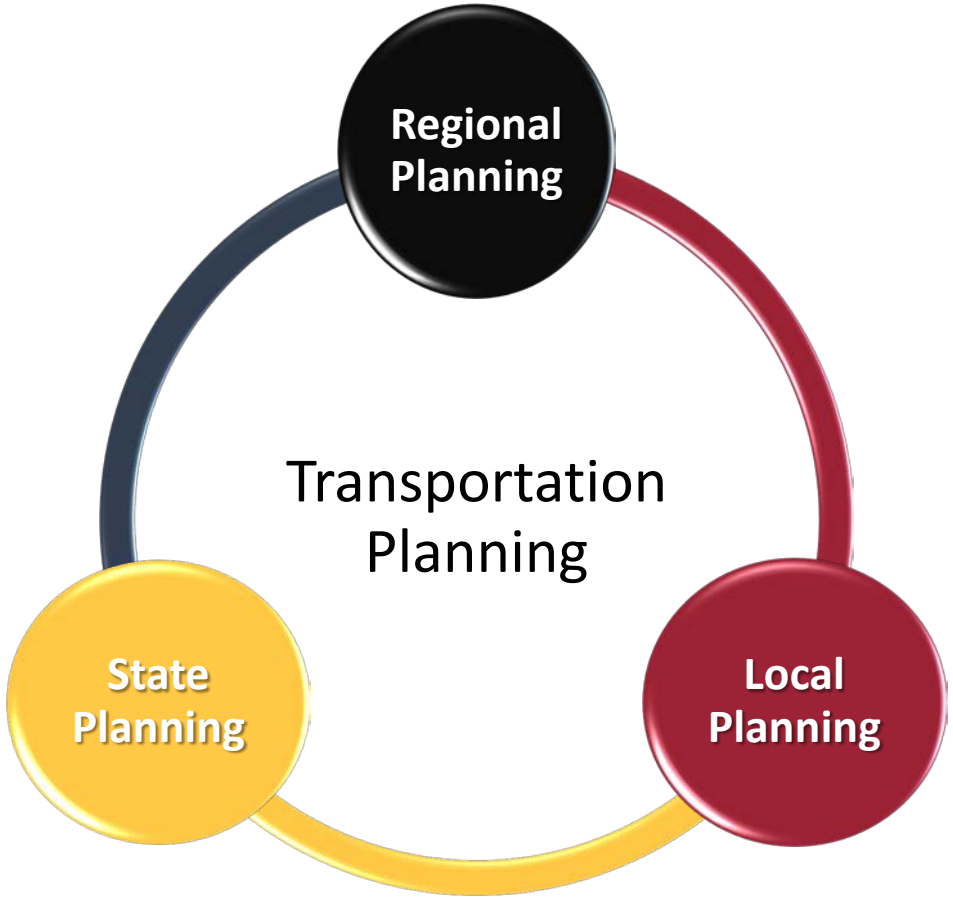
Transportation Planning Process



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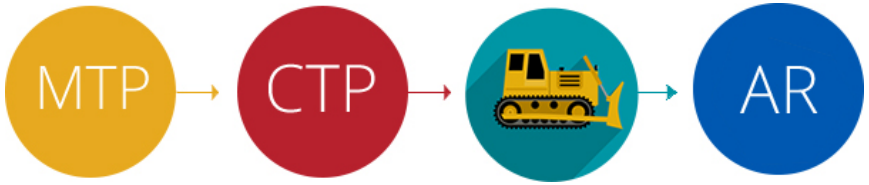
The Maryland Transportation Plan (MTP)

- The Maryland Transportation Plan (MTP) is revised every 5 years through a public participation process to address current and future challenges;

- The MTP establishes a ***20-year vision for multi-modal transportation in Maryland*** that ***outlines the State's transportation policies and priorities*** and ***helps guide Statewide investment decisions*** for all methods of transportation.

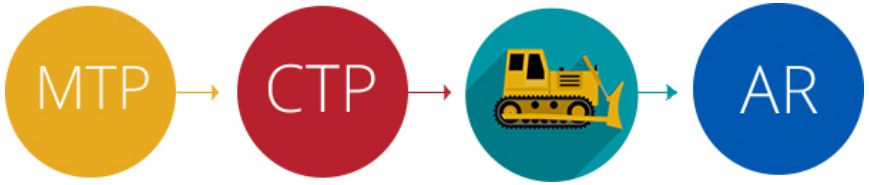


MARYLAND DEPARTMENT OF TRANSPORTATION

The Maryland Transportation Plan (MTP)

- The MTP is submitted annually to the Maryland General Assembly as part of **the State Report on Transportation**, along with the Consolidated Transportation Program (CTP) and Attainment Report on Transportation Performance.

- January 16, 2019 – We submitted the Final Plan with State Report on Transportation.



Maryland Bicycle and Pedestrian Master Plan

The Bicycle and Pedestrian Master Plan establishes a ***20-year vision to support cycling and walking*** as modes of transportation in Maryland.

The Plan ***provides guidance and investment strategies to support cycling and walking***, both on-road and off-road, as part of Maryland's multimodal transportation network. Last updated in 2014.

MARYLAND DEPARTMENT OF TRANSPORTATION

Maryland Bicycle and Pedestrian Master Plan

- Updated every 5 years, in close coordination with the MTP.
- Establishes a 20-year vision to support cycling and walking as modes of transportation in Maryland.
- Provides guidance and investment strategies to support cycling and walking, both on-road and off-road, as part of Maryland's multimodal transportation network.
- Also was completed in January 2019.

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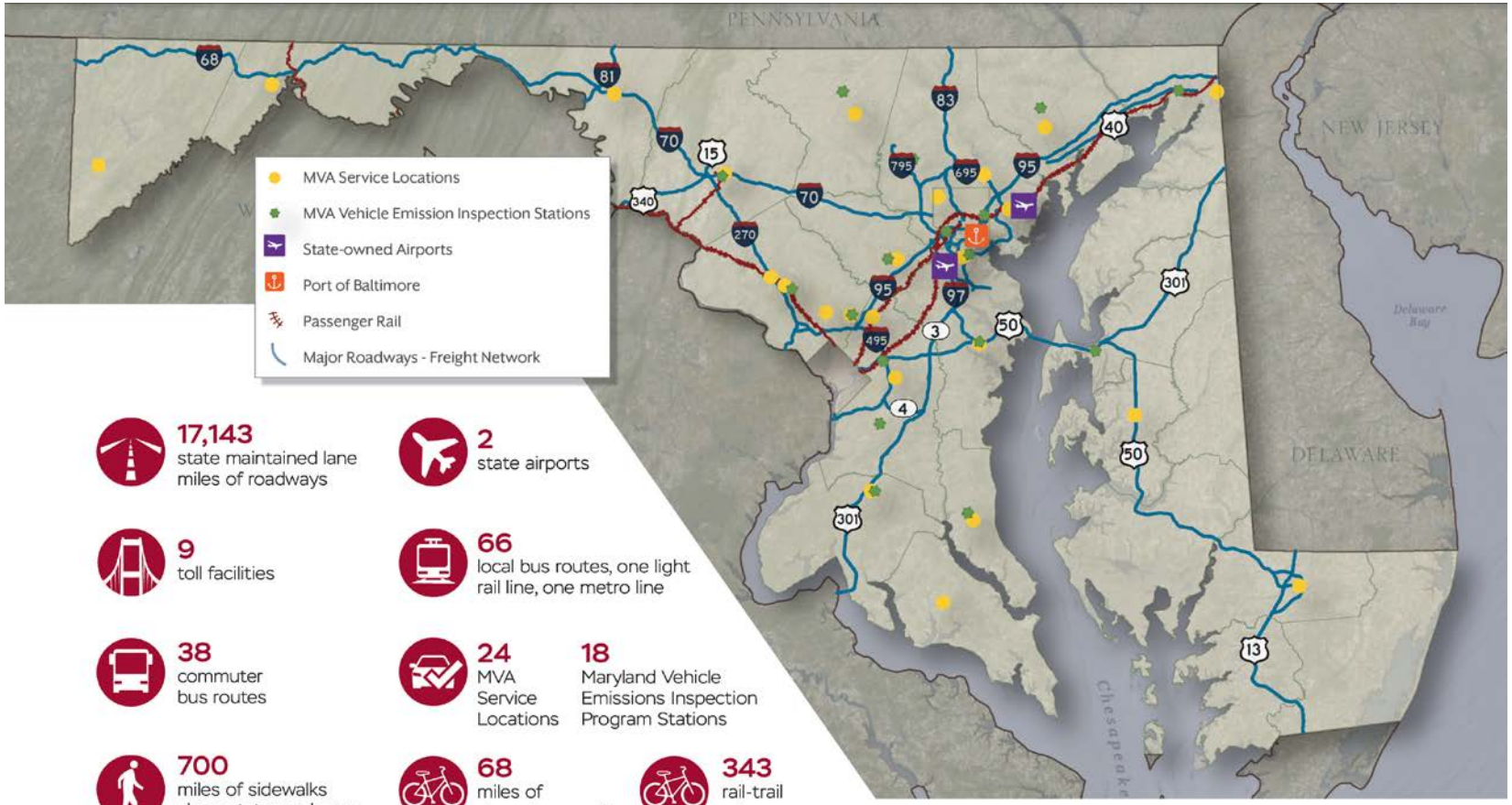
Maryland's Major Statewide Transportation System



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).

MARYLAND DEPARTMENT OF TRANSPORTATION

Maryland's Transportation Trends

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.

PORT OF BALTIMORE FOREIGN CARGO TONNAGE
31.8M (2016 CY) ▼3.0% (2010-2016)

POPULATION
6.0M (2016 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)

MVA TRANSACTIONS
11.1M (2016 FY) ▲0.8% (2010-2016)

ELECTRIC VEHICLE REGISTRATIONS
6,788 (2016 CY) ▲1014.6% (2012-2016)

ANNUAL VEHICLE MILES TRAVELED (VMT)
58.9B (2016 CY) ▲4.9% (2010-2016)

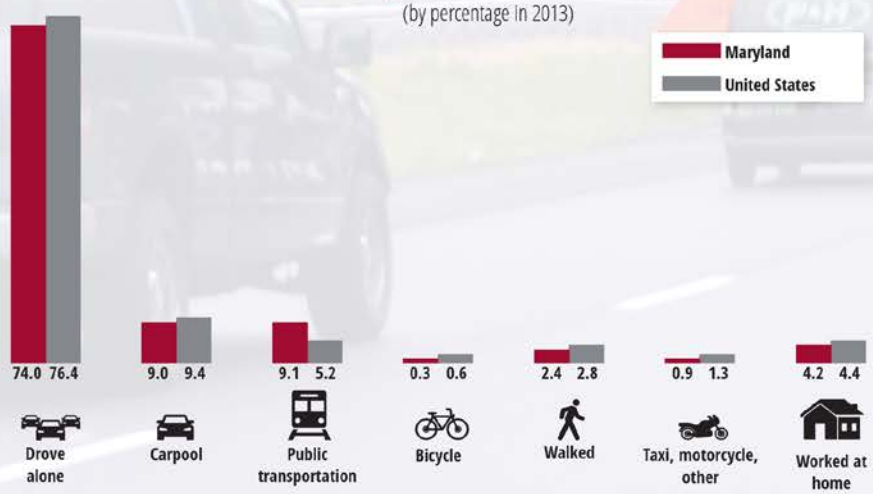
ANNUAL VMT PER CAPITA
9,802 (2016 FY) ▲0.9% (2010-2016)

ANNUAL TRANSIT RIDERSHIP
260.8M (2016 FY) ▼8.6% (2010-2016)

AIR CARRIER EMPLANEMENTS
25.1M (2016 CY) ▲14.6% (2010-2016)

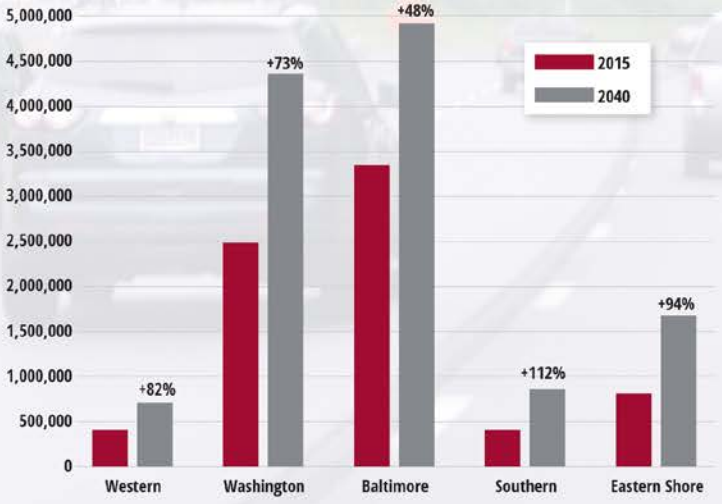
How Marylanders Get to Work

(by percentage in 2013)



Source: State Transportation Statistics, 2015, prepared by the US Department of Transportation Bureau of Transportation Statistics

Vehicle Hours of Travel (by Region)



Source: Maryland Department of Transportation State Highway Administration, MSTM V1.1

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Maryland's Transportation Challenges & Opportunities

Safety & Congestion

Security

Shared Mobility Economy

Aging Infrastructure

E-Commerce

Aging Population

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Maryland's Transportation Challenges & Opportunities

Climate Impacts

Electric Vehicles

Millennial Generation

Connected and Automated Vehicles

Support for Distressed Economic Regions

Development Patterns

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Maryland's Five Regions

Maryland is the 9th smallest state and contains a remarkable degree of geographic diversity. Each region has its own character, distinct needs, and associated transportation system.

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Goals, Objectives, and Performance Measures

<u>What helped shape the development of 2040 MTP goals & objectives?</u>

- MDOT conducted external surveys for Maryland residents to provide input on transportation needs and priorities.
- Coordinated with MDOT staff on key transportation priorities.
- MDOT's missions statement, existing plans, and programs all contributed to the 2040 MTP.

MARYLAND DEPARTMENT OF TRANSPORTATION

MTP Goals

- We now have seven goals.
- Each goal has objectives.
- Each goal/objective has performance measures outlined for the annual Attainment Report (AR).
- The Governor's AR Advisory Committee advised MDOT on the selection of the performance measures and how well these measures and supporting data align with the goals of the MTP.

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2040 MTP Implementation & Strategies

- MDOT has identified a set of strategies for implementing goals and objectives established in the 2040 MTP.
- Strategy development was informed by MDOT strategic plans and business plans as well as input from the public outreach.
- Putting these strategies in action will help assure progress toward performance targets identifies in the annual Attainment Report (AR).

2040 MTP Implementation & Strategies

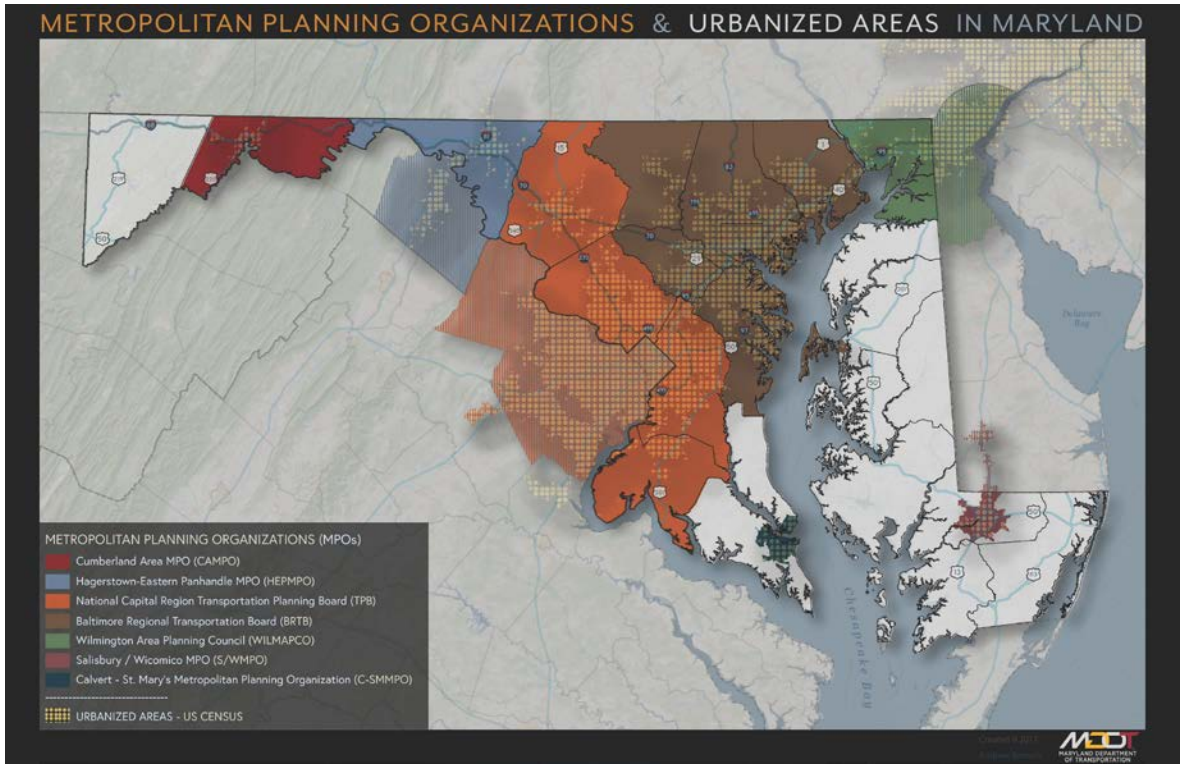
- Some strategies are statewide; however MDOT recognizes that the State's regions are diverse and places high importance on customizing strategies to fit each region's unique needs and special context as shown in the region maps.

- *For the State and each region, a list of **illustrative** projects are identified. These illustrative projects outline a list of projects we hope to pursue over the 20-year timeframe of the Plan and not a financial commitment.*

MARYLAND DEPARTMENT OF TRANSPORTATION

Regional Planning Process

- 7 MPOs in Maryland, 5 of which include other states.
- Develop regional plans and programs that consider all modes of transportation and support metropolitan community and economic development goals.
- Continuing, Cooperative and Comprehensive Consultative Process.



Local Planning Process

County Priority Letters

- Represent each County's internal ranking of State projects deemed most important based on local need and local input.
- Should include information on project consistency with State and local plans, as well as how the projects address the MTP or State transportation goals.
- Involve requests for a wide variety of project funding such as transit improvements and highway reconstruction.
- Counties have the opportunity to develop a Priority Letter every year, typically in the spring before the draft CTP is developed.

State Funding

- The source of a majority of "State" funding for transportation needs in Maryland is the Transportation Trust Fund (TTF) comprised of:
  - Federal-aid, vehicle titling tax, motor fuel tax, motor vehicle registration and fees, operating revenues, bond sales, and corporate income tax.
  - TTF is separate from the State's General Fund.
  - Constitutional amendment in 2014 to create a "lock-box" on the TTF for transportation funding.

State Funding

- TTF allows MDOT to direct resources to priority projects statewide and strategically allocate State funding to maximize federal funding.
- TTF allows transportation projects to be programmed based on when the funding is needed and available.
- MDTA is a separate toll revenue bonding capacity for those projects.

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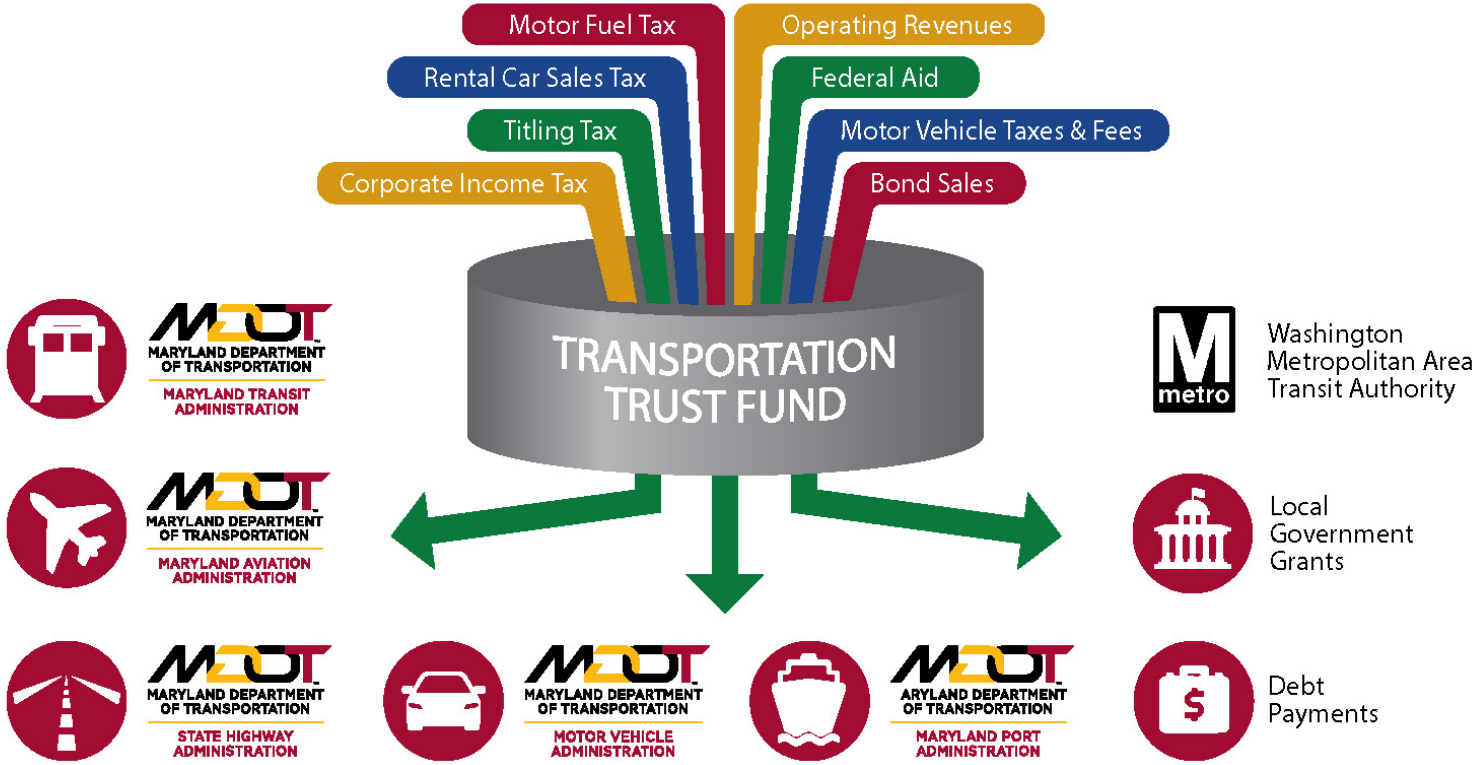
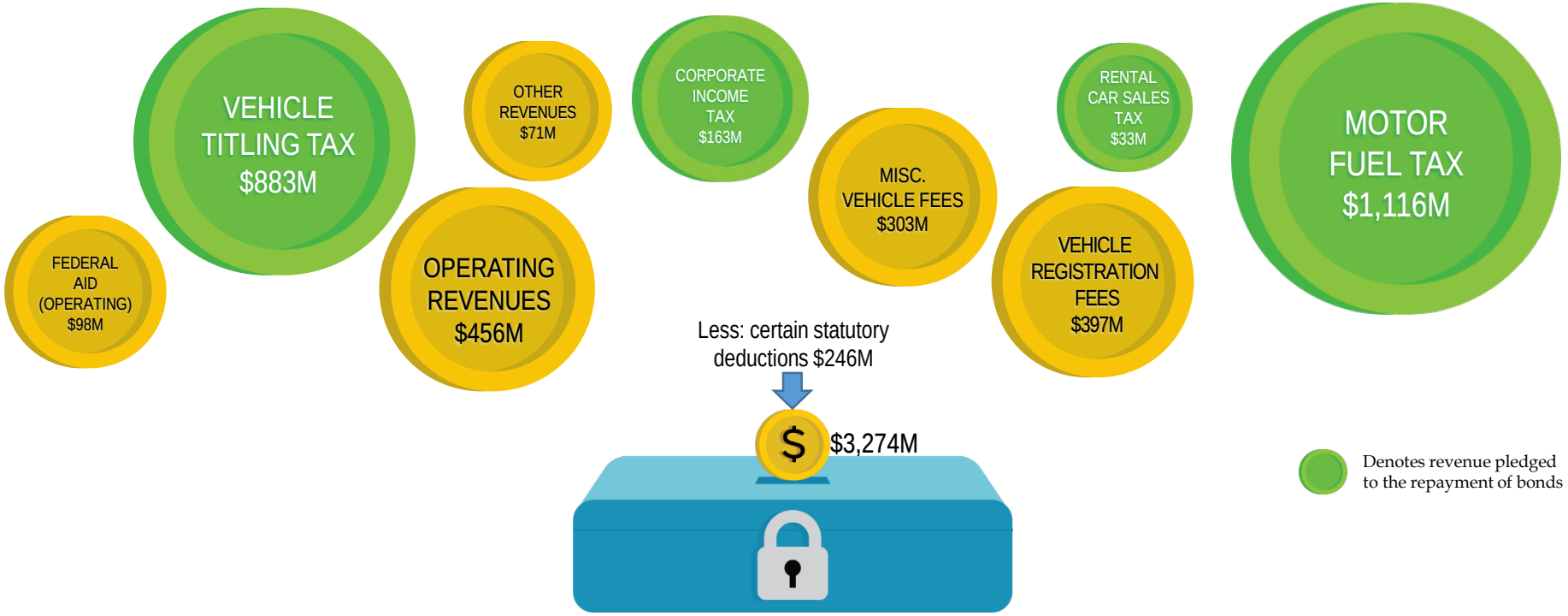
How the Trust Fund Works



MARYLAND DEPARTMENT OF TRANSPORTATION

Sources of Transportation Funds (FY 2019)



Transportation Trust Fund Constitutional Lock Box (2014)

State Funding

Consolidated Transportation Program

- MDOT's fiscally constrained 6-year capital budget for all State major and minor transportation projects.
- For a State project to be implemented, it must appear in the State CTP.
- MDOT works with residents, businesses, local jurisdictions, and local and state elected officials to include projects into the CTP that preserve investments, enhance transportation services, and improve accessibility throughout the State.

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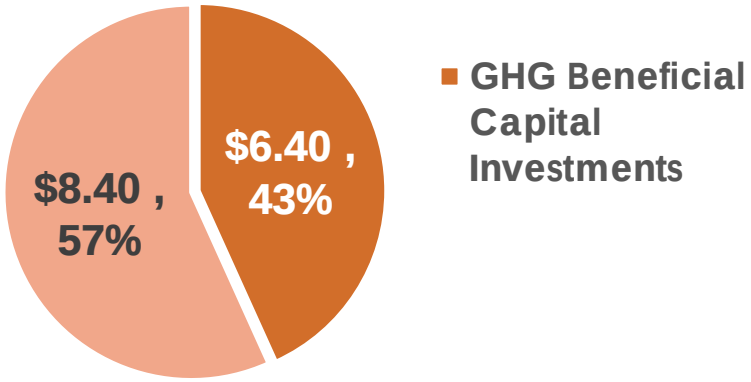
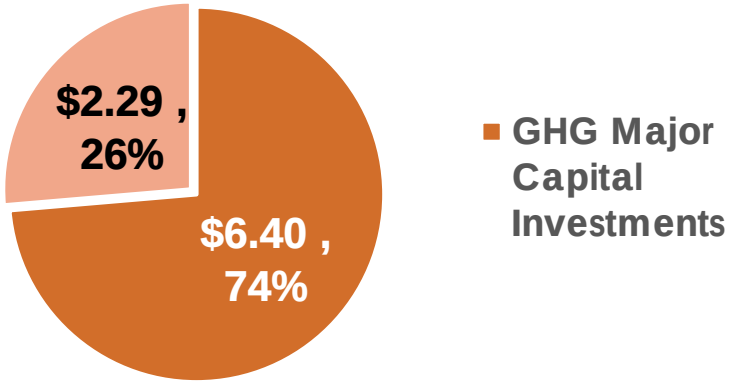
2018-2023 CTP
GHG Emissions Mitigating Investments

- **MDOT estimates that 43 percent (approximately $6.4 billion) of the total $14.8 billion six-year CTP (FY 2018 – 2023)…** is associated with investments that could reduce GHG emissions by 2020 and beyond



Total funding for major capital programming is roughly $8.7 billion, and MDOT is investing nearly three quarters of that funding… in projects that are expected to result in GHG emissions reductions



State Funding

Consolidated Transportation Program

- Each year, in the fall, the Secretary of Transportation visits each of the 23 counties and Baltimore City to present the draft CTP at the annual Tour meetings to local elected officials & citizens throughout Maryland.

- These meetings by law occur between September 15 and November 15 each year.

State Funding

Consolidated Transportation Program

- Projects enter the CTP through the County Priority Letter process or through Statewide priorities, including system preservation and safety, by the proposing entity/jurisdiction.

- Projects are selected by a strategic decision-making process using established priorities and criteria to prioritize programs and projects.

- Once a project has been added to the CTP, it remains in the CTP until it is completed (or removed).

Federal Funding

- In December 2015, the U.S. Congress enacted federal surface transportation authorizing legislation, the FAST Act, which provides transportation infrastructure investments through FFY 2020. Discussion has started on developing a new authorization to continue past FFY 2020.

- The federal Highway Trust Fund does not have enough revenue to support all of the State's needs; therefore, we rely on many opportunities to leverage State investments and ensure projects meet State needs, goals, and priorities.

Federal Funding

- The majority of currently authorized federal funding is being applied toward projects already committed to in the CTP.
- MDOT's six year capital program assumes receipt of federal funds at about existing levels.
- Discretionary grants can provide some funding for specific projects above the "base" formula level of funding (e.g., BUILD and INFRA).

Program Priorities

Customer-focused program priorities from the MTP shape when and if a project or program is funded, and include funding to:

- Facilitate economic opportunity in Maryland
- Provide a safe and secure transportation experience
- Be a good steward of our environment
- Provide exceptional customer service
- Provide an efficient, well-connected transportation experience

Program Priorities

Customer-focused program priorities from the MTP shape when and if a project or program is funded, and include funding to:

- Deliver transportation solutions and services of great value
- Communicate effectively with our customers
- Be a good neighbor
- Be fair and reasonable to our partners
- Use resources wisely

Project/Program Selection Criteria

- Meets all federal and other legal mandates (e.g. TMDL compliance, Positive Train Control (PTC), Federal Aviation Administration (FAA) regulations to maintain airport permits, etc.)
- Supports the MDOT's mission, program priorities, and MTP goals
- Supports State plans and objectives

Project/Program Selection Criteria

- Meets all federal match requirements to maximize federal revenue sources

- Chapter 30 scoring of Construction Projects.

  - The law requires that all projects over $5M across all phases (CO or D&E) that are transit or highway capacity need to be scored to be considered for funding.

Project/Program Selection Criteria

- Supports existing project commitments and upholds intergovernmental agreements
- Is the single top priority within a local priority letter
- Is consistent with local plans
- Is included in the regional Metropolitan Planning Organization (MPO) long-range plan (if the project is located within an MPO boundary)

Evaluating Performance

- Federal legislation requires the U.S. DOT, in consultation with state, MPOs, and other stakeholders, work to establish national performance measures related to:
  - Pavement conditions, interstate performance, bridge conditions, fatalities and serious injuries, traffic congestion, on-road mobile source emissions, and freight movements on the interstate, etc.

Evaluating Performance

- In 2000, the Maryland General Assembly passed a bill requiring MDOT to develop an Annual Attainment Report (AR) on the Transportation System that:
  - Reports on progress toward achieving goals and objectives of the MTP
  - Establishes indicators and
  - Sets performance targets

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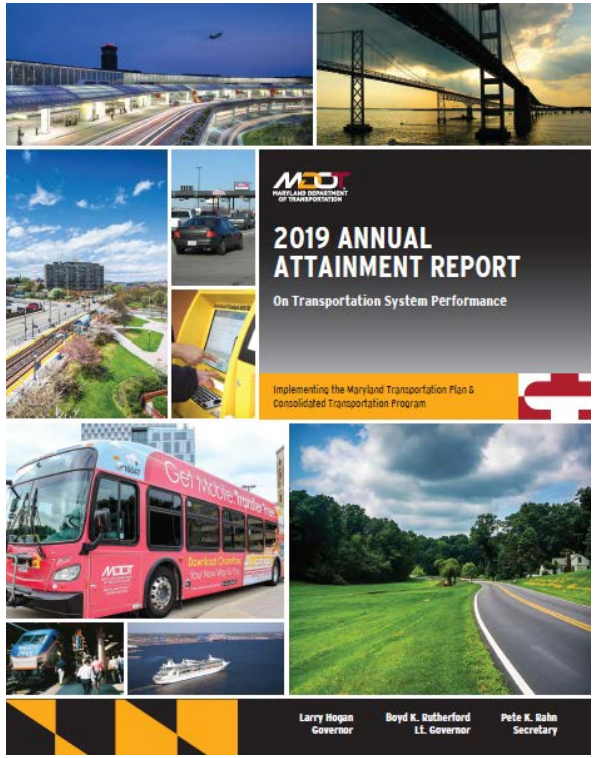
What is in the Attainment Report (AR)?

- The Attainment Report (AR) provides an **overview of the Maryland transportation system, system investment, mobility and accessibility**.
- Through the AR, MDOT assesses progress toward achieving its overarching strategic goals and objectives by aligning performance measures and data with each MTP goal area and objective.
- Submitted in January, 2019 as part of the State Report on Transportation.



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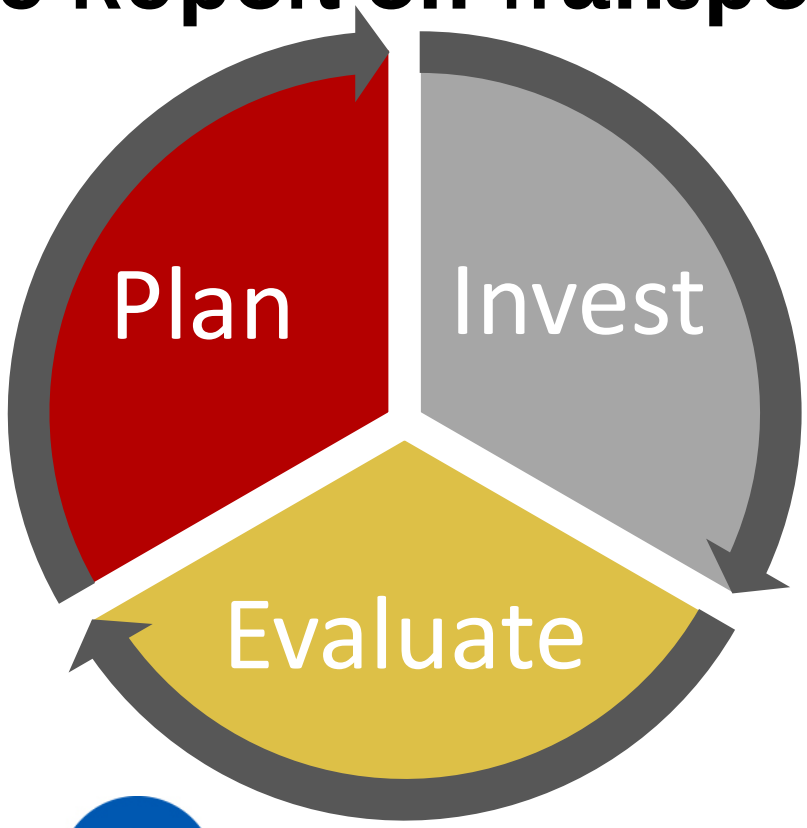
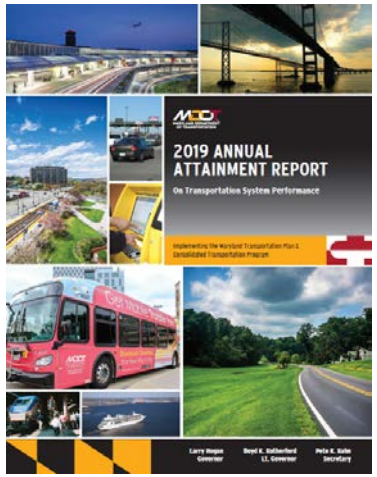
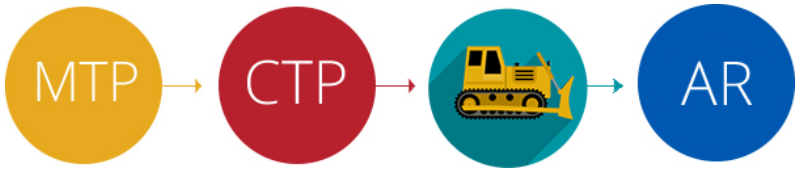
The State Report on Transportation



The State Report on Transportation is submitted annually to the Maryland General Assembly.





MARYLAND DEPARTMENT OF TRANSPORTATION

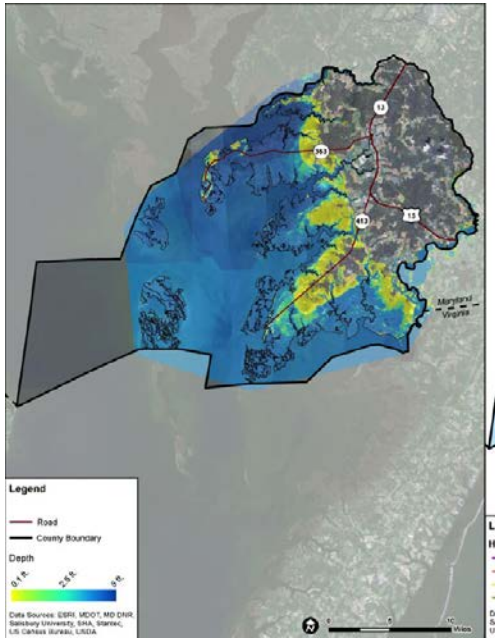
Thank you!

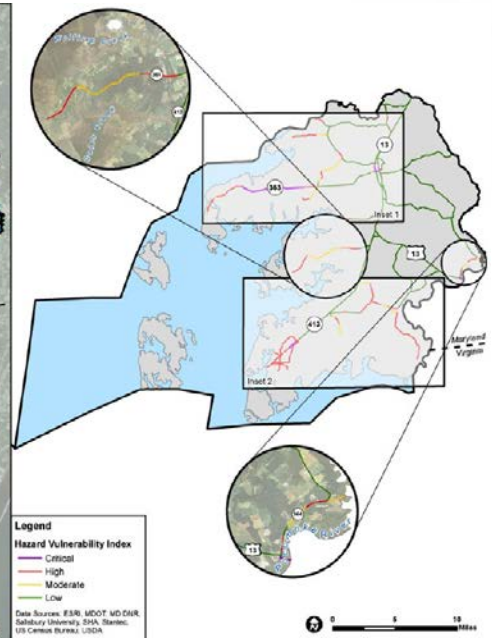
Heather R. Murphy
Director
410-865-1275
hmurphy@mdot.Maryland.gov

MDOT Leadership Welcome

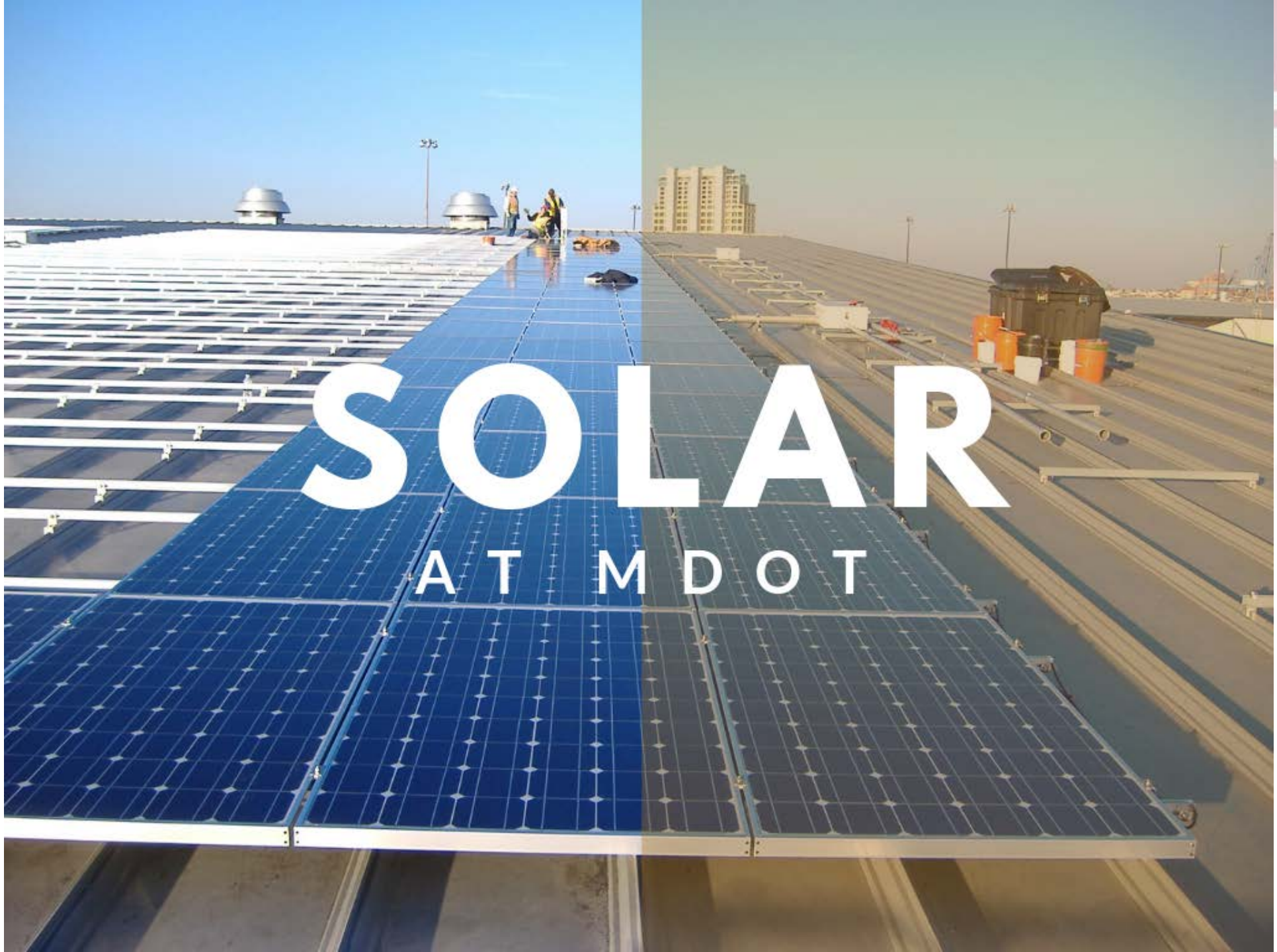
R. Earl Lewis Jr. – Deputy Secretary
Policy, Planning and Enterprise Services
Maryland Department of Transportation

Ignite Presentations





CommuterChoice
Maryland



SOLAR

AT MDOT

WHY

VISION

HOW

CONTACT

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MDOT
Highway Resiliency

Elizabeth Habic
Office of Planning and Preliminary Engineering
May 6, 2019

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Overview

Maryland:

- *Atlantic Ocean and Chesapeake Bay*
- *7,719 miles of shoreline*
- *Coastal in the East and Appalachian Mountains in the West*
- *Ranked 42nd in Area (12,407 sq. mi)*
- *Ranked 19th in Population (6,006,401)*
- *Average annual temperature 55.1°F*
  - *Summer average 80°F*
  - *Winter average 20°F*
- *Increases in temperature, precipitation intensity/frequency, and sea level change*

MDOT SHA Resilience Pilot Studies

2014 – Climate Change Adaptation Plan with Detailed Vulnerability Assessment

- Methodology for Vulnerability Assessments (both linear and bridges)
- Analysis of Risk using the Hazard Vulnerability Index

2019 – Integrating Extreme Weather and Climate Risk into MDOT SHA Asset Management and Planning

- Indicator evaluation
- Statewide bridge vulnerability assessment
- Asset Management application

Regulations and Legislation

Asset Management Rules 23 CFR Parts 515 & 667

State DOTs must develop risk-based asset management plans accounting for risks from climate change and extreme weather

Review for repeatedly damaged facilities due to emergency events

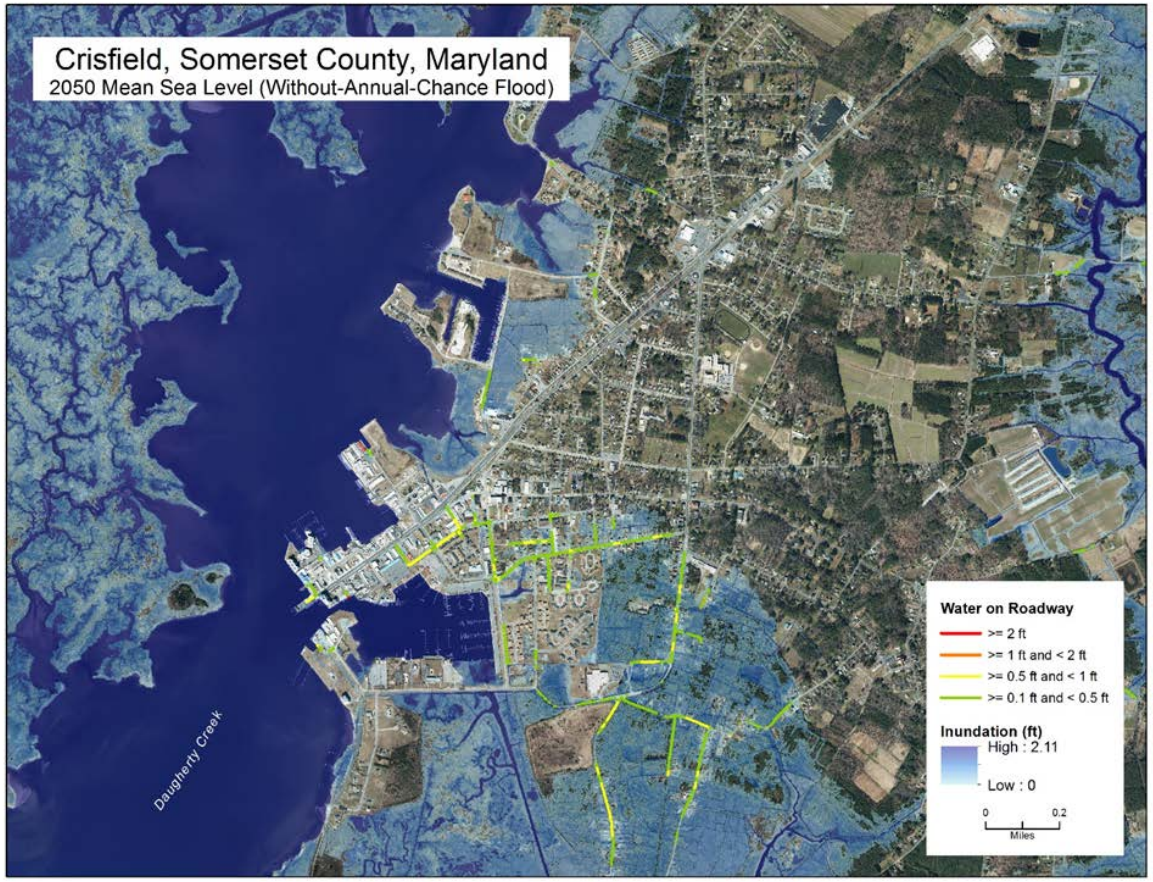
Maryland CoastSmart Legislation

HB 0615

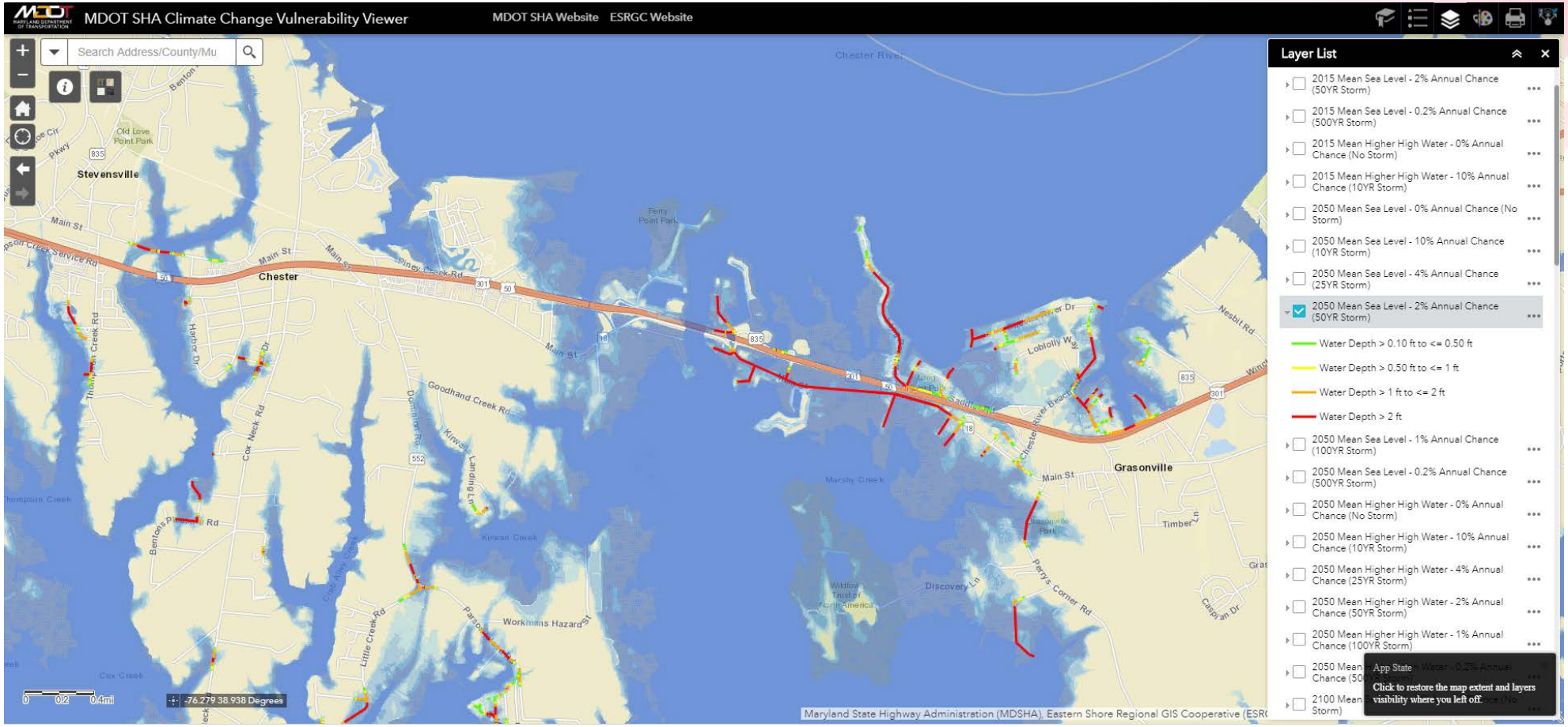
- Requires 2-3 ft. freeboard for buildings in flood hazard area
- Guidance developed for buildings

SB1006/HB1456

- Requires higher freeboard and includes highway facilities
- Guidance to be developed



Climate Change Vulnerability Viewer



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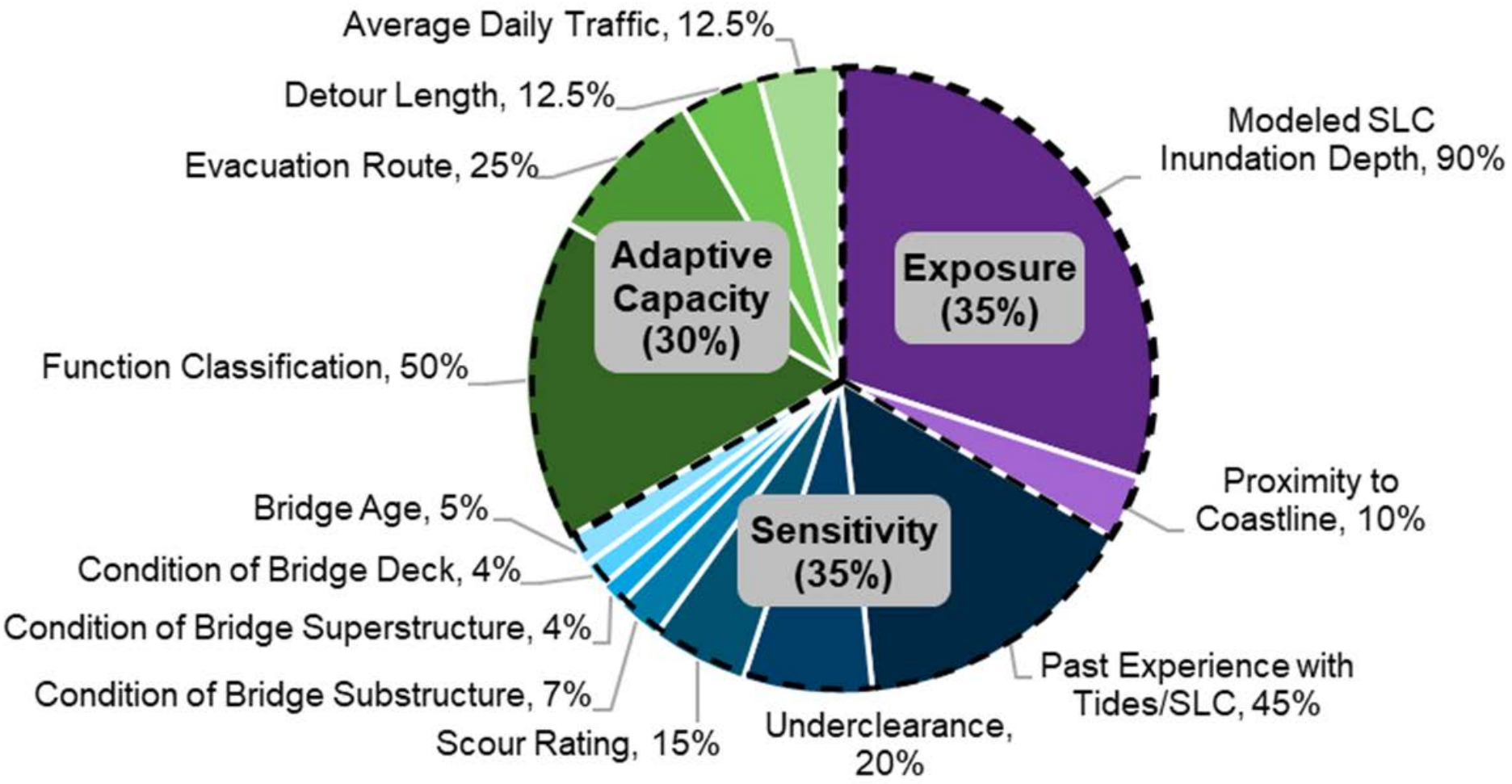
Crisfield Maryland

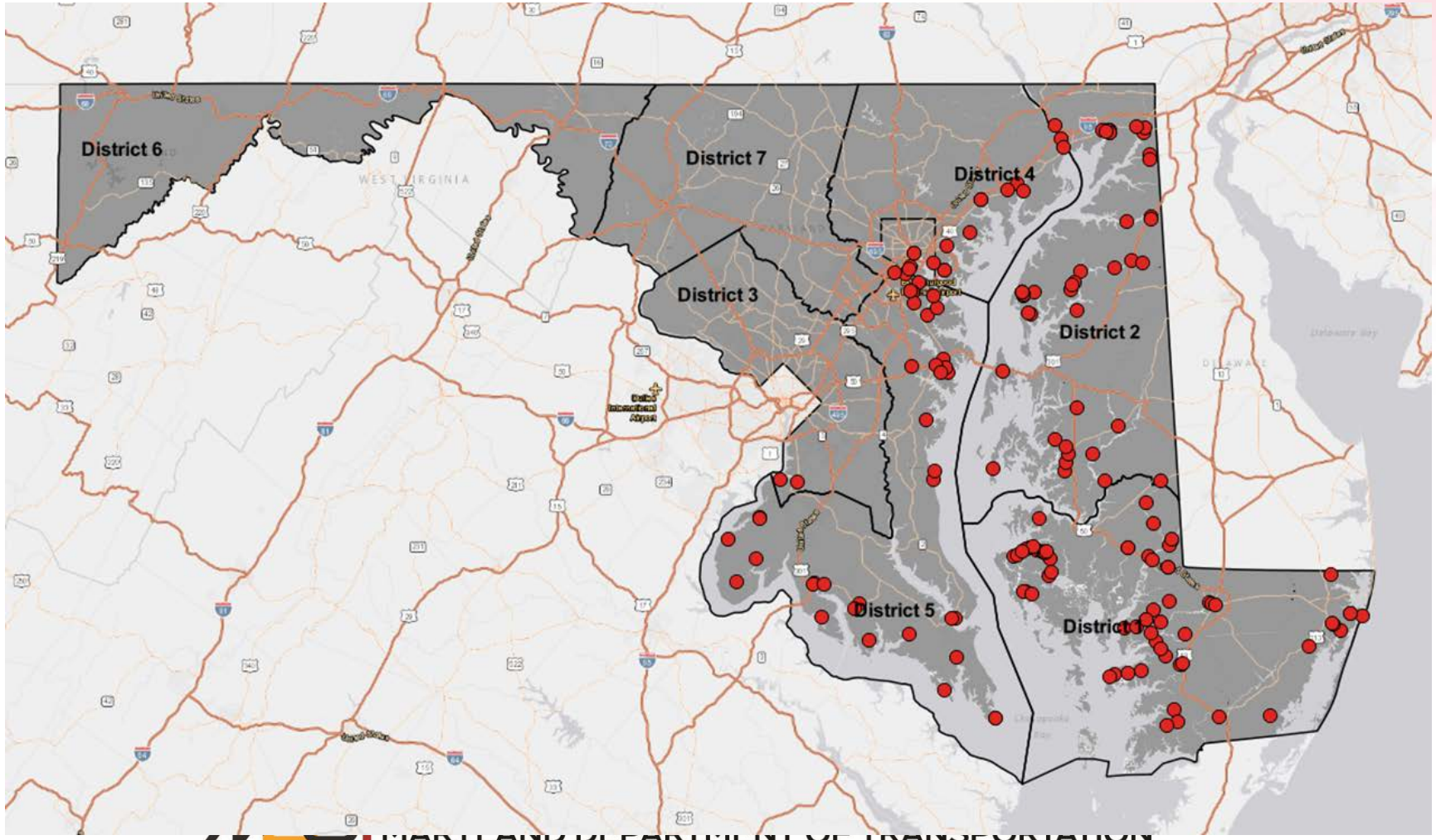
City of Crisfield Facebook Page (https://www.facebook.com/pages/City-of-Crisfield)
Tony Laird drone footage

MDOT SHA Climate Change Vulnerability Viewer

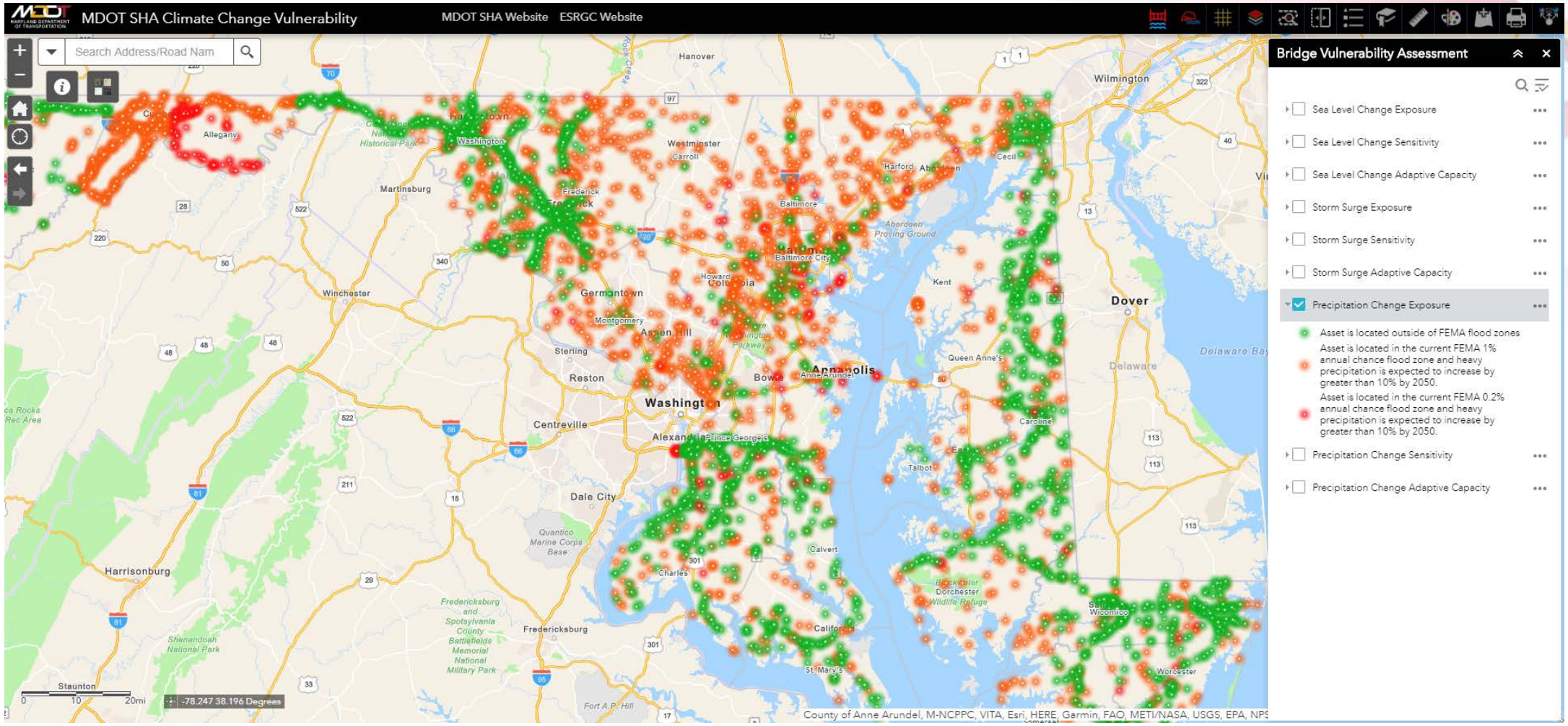
Vulnerability Assessment Scoring Tool
Bridge Vulnerability to Sea Level Change



Bridge Vulnerability to Storm Surge - VAST≥3



Bridge Exposure to Precipitation



MARYLAND DEPARTMENT OF TRANSPORTATION

CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

Commuter Choice Maryland

Amazon

What is Commuter Choice Maryland?

- COMMUTER CHOICE MARYLAND promotes alternative options to driving alone to work such as public transportation, ridesharing, vanpooling walking, biking, teleworking, walking, biking, teleworking, and flexible work schedules.

- Help reduce congestion, conserve energy, protect the environment and facilitate economic opportunity

MARYLAND DEPARTMENT OF TRANSPORTATION

MISSION STATEMENT

"The Maryland Department of Transportation is a customer-driven leader that delivers safe, sustainable, intelligent, and exceptional transportation solutions in order to connect our customers to life's opportunities."

CommuterChoice Maryland

Program Services

- For Employers
  - Provide ongoing assistance to participating employers in implementing commuter benefits programs and in reporting for the Maryland Commuter Tax Credit
  - Deliver webinars and targeted materials and communications that provide assistance with implementing a commuter benefits program
  - Provide up-to-date information on commuter benefit options and the Maryland Commuter Tax Credit
  - Provide marketing materials and information on employee commute options
- For Commuters
  - Provide online and printed resources on transportation options
  - Promote the use of Guaranteed Ride Home (where applicable)
  - Conduct select outreach to commuters at events to increase their knowledge and comfort-level with using transportation options

What's in it for you when you claim the Maryland Commuter Tax Credit?

Employers may claim a tax credit for 50 percent of the eligible costs of providing commuter benefits up to a maximum of $100.00 per participating employee per month.

The tax credit can be taken against the state personal income tax, corporate income tax or the insurance premium tax.

Photo Credit: mindbodygreen.com

CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

What's in it for you when you claim the Federal Tax Credit?

- In 2019, up to $265 per month can be taken out of employee paychecks pre-tax or directly subsidized by the employer to pay for transit or vanpool expenses.

Photo Credit: mindbodygreen.com

CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

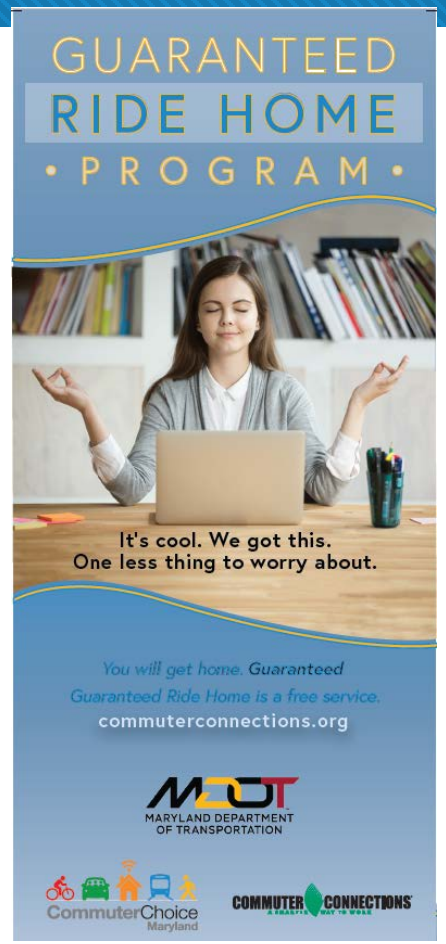
Guaranteed Ride Home (GRH)

What is GRH?

Registered Commuters can qualify for up to four free ride home a year if they carpool, vanpool, take transit, bike or walk to work at twice a week.

What qualifies for free ride?

Event of personal or family illness, emergency, or unscheduled overtime.



Where can I get more information?

Visit:

CommuterChoiceMaryland.com

CommuterConnections.org

CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

What are Benefits of Participation?

- Environmental Benefits
- Congestion Relief
- Save money & Improve your bottom line
- Retain and Attract top talent
- Stress Free Commute= Happy Employee

Webinar: Get in the Know of the Business Benefits of Bike Friendly Workplaces

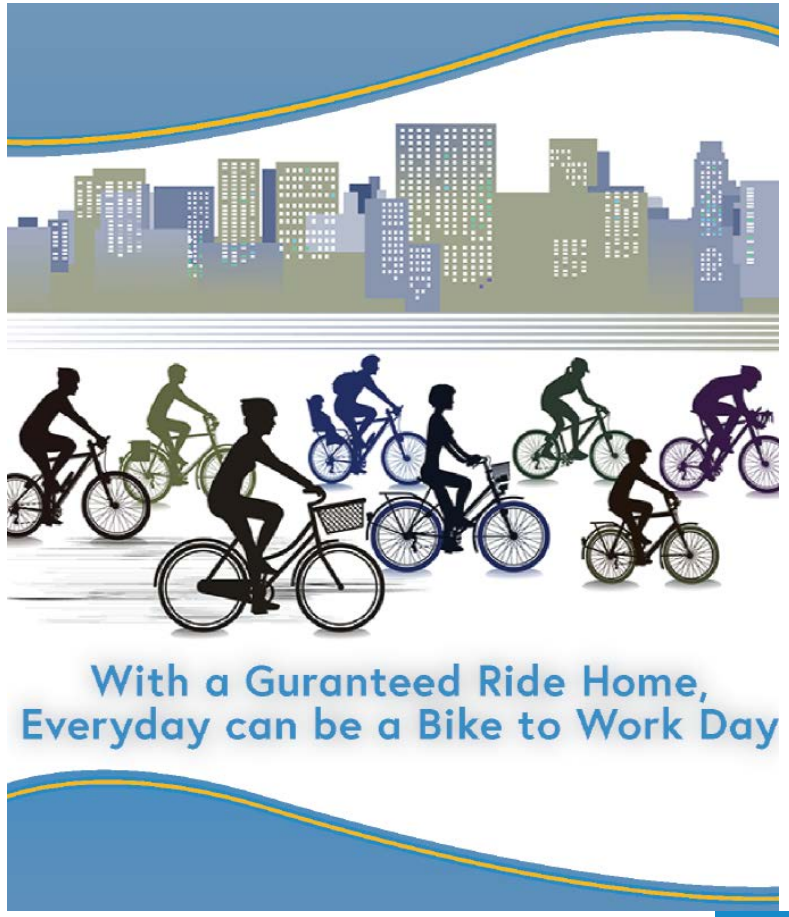
<u>Date & Time:</u>

May 22, 2019

from 11:00 AM- 12:00 PM

<u>Register At:</u>

CommuterChoiceMaryland.com



CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

We Are Always Here to Help!

Commuter Choice Maryland

410-865-1100

commuterchoice@Mdot.Maryland.gov

CommuterChoiceMaryland.com

Employer Video: https://youtu.be/ruDzLipJK-Y

Commuter Video: https://youtu.be/VecL9C6nYeU

CommuterChoice Maryland

MARYLAND DEPARTMENT OF TRANSPORTATION

The Role of Transportation in Reducing Maryland's GHG Emissions

Colleen Turner – Assistant Director, Office of Planning and Capital Programming
Maryland Department of Transportation
May 6, 2019

MARYLAND DEPARTMENT OF TRANSPORTATION

Presentation Outline

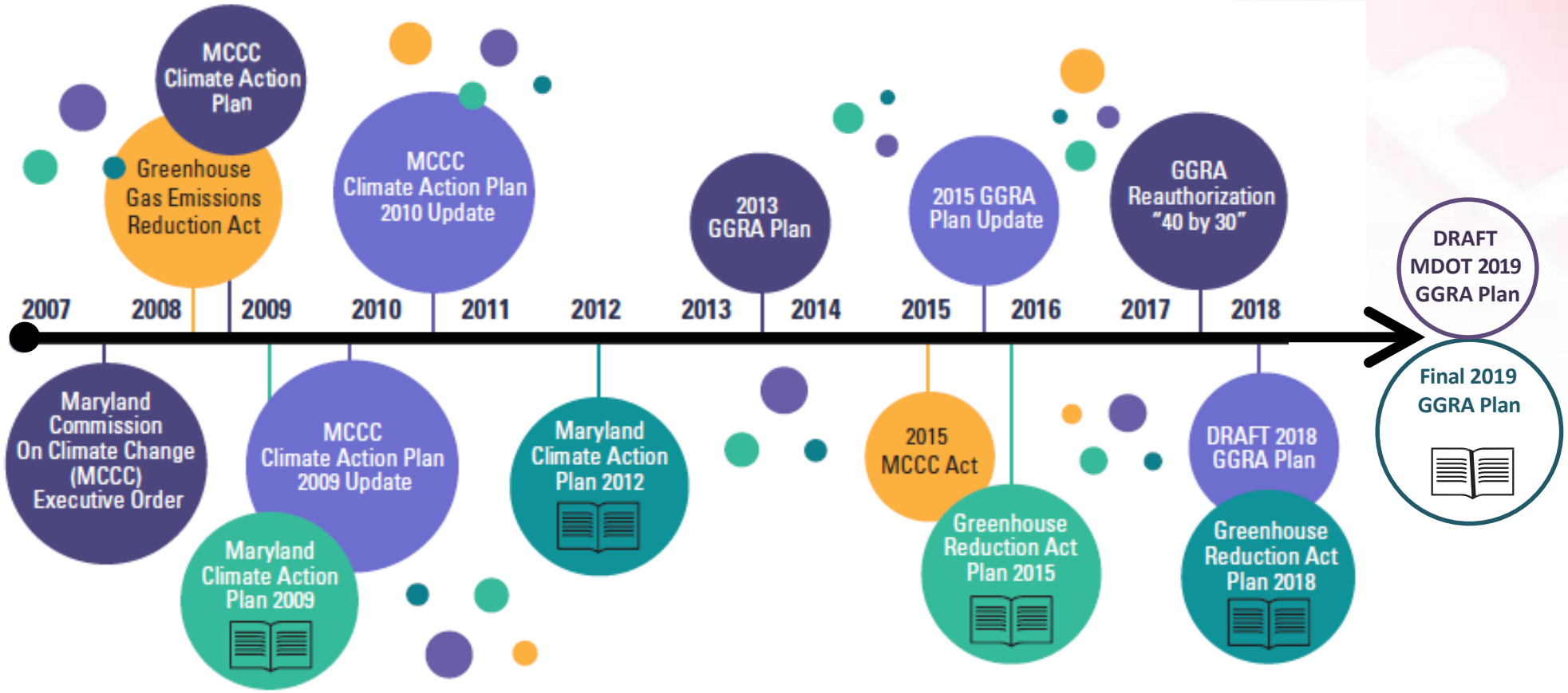
- **MDOT's GGRA Story**
  What we have accomplished since 2008
- **Transportation and Climate Change 101**
  The fundamentals for reducing GHG emissions from transportation
- **Trends – Opportunities and Challenges**
  How transportation is changing and will change through 2030 and beyond
- **The 2030 Picture**
  What can the transportation sector achieve and how much will it cost
- **Next Steps**
  Our focus in 2019 and how can you help

MDOT's GGRA Story

Our commitment to GHG mitigation and climate change adaptation and recent success stories

MDOT's GGRA Story

Coordinated planning and analysis for over 10 years

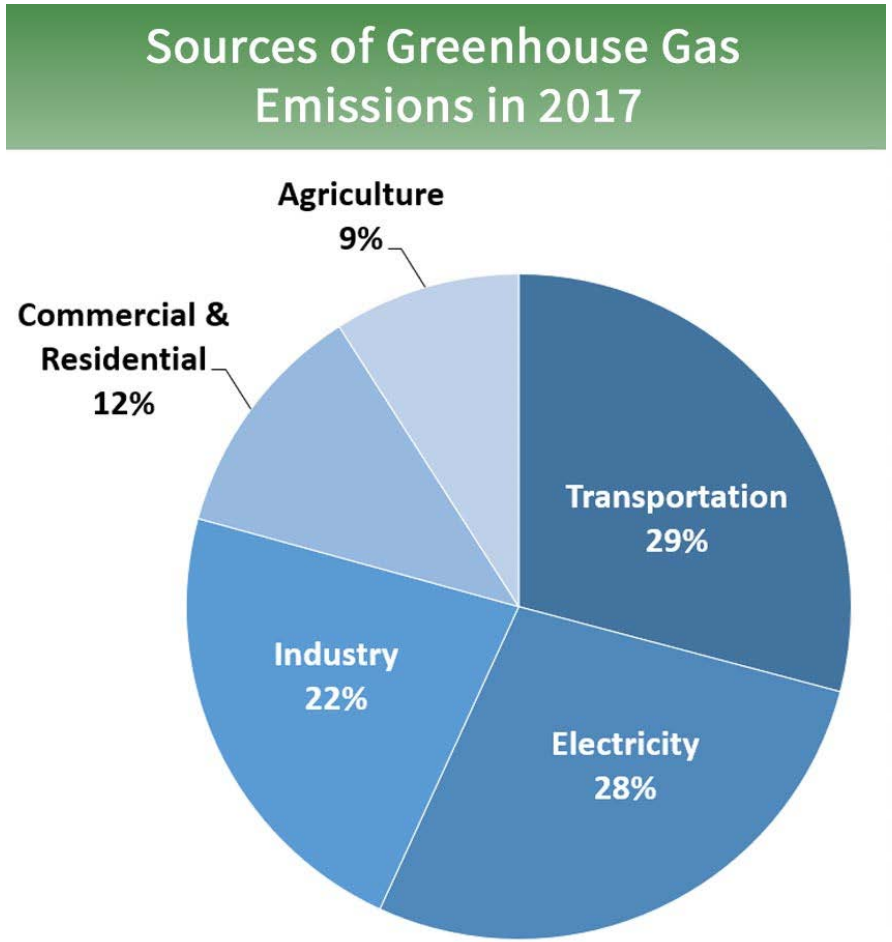


Transportation and Climate Change 101

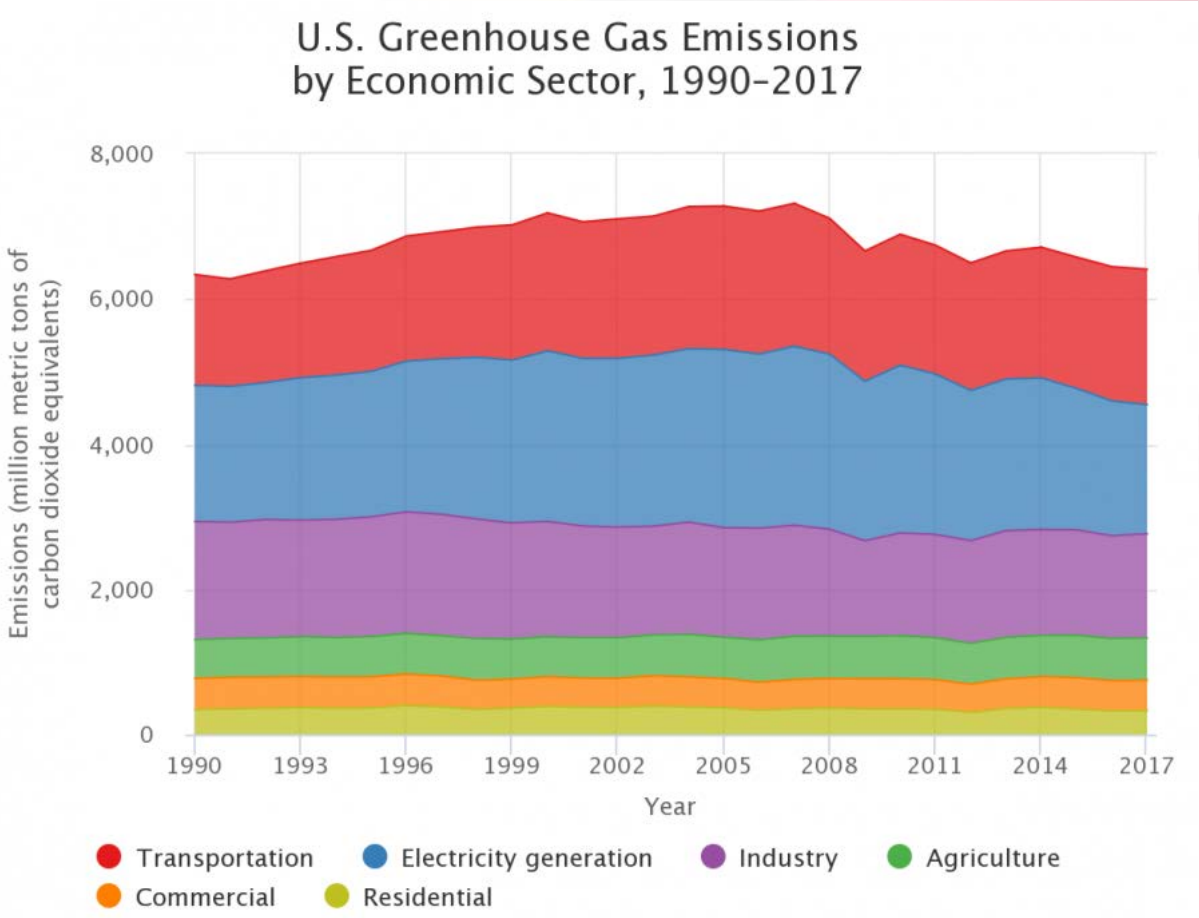
The basics of MDOT's approach to mitigating GHG emissions

GHG Emissions by Sector

Transportation's share increasing relative to other sectors



U.S. Environmental Protection Agency (2019). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017

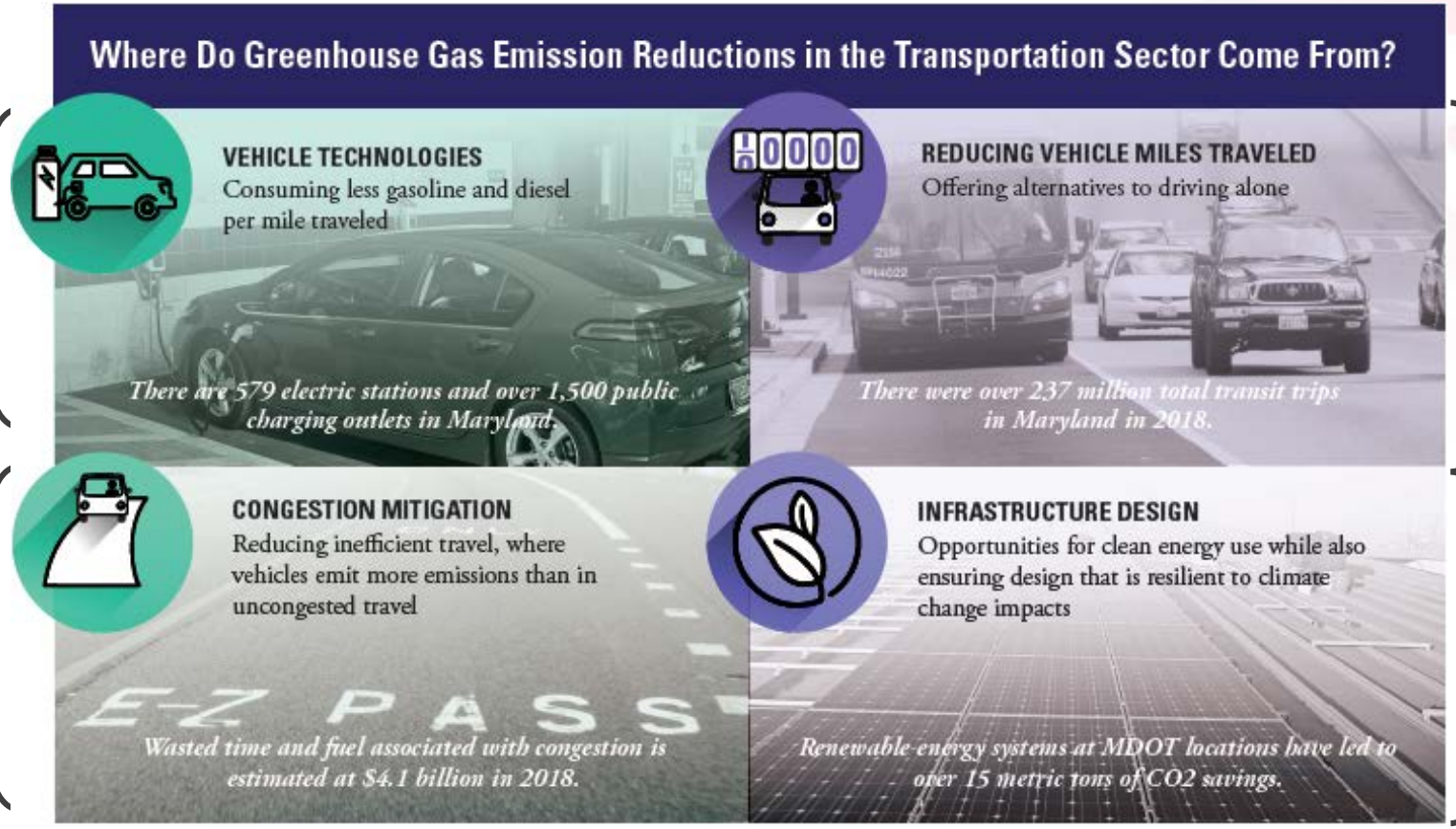


Source: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017.
https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

MDOT's Approach to Reduce GHG Emissions

New vehicle technologies could reduce GHG emissions by 34% through 2030

Vehicle operating at 25 mph emits 25% more than one operating at 50 mph



As the fleet becomes more efficient, VMT strategies are less effective at reducing GHGs

Solar systems on MDOT properties reduce energy use

Trends – Opportunities and Challenges

Economic, technology, development, and demographic trends create both challenges and opportunities for reducing GHG emissions from transportation

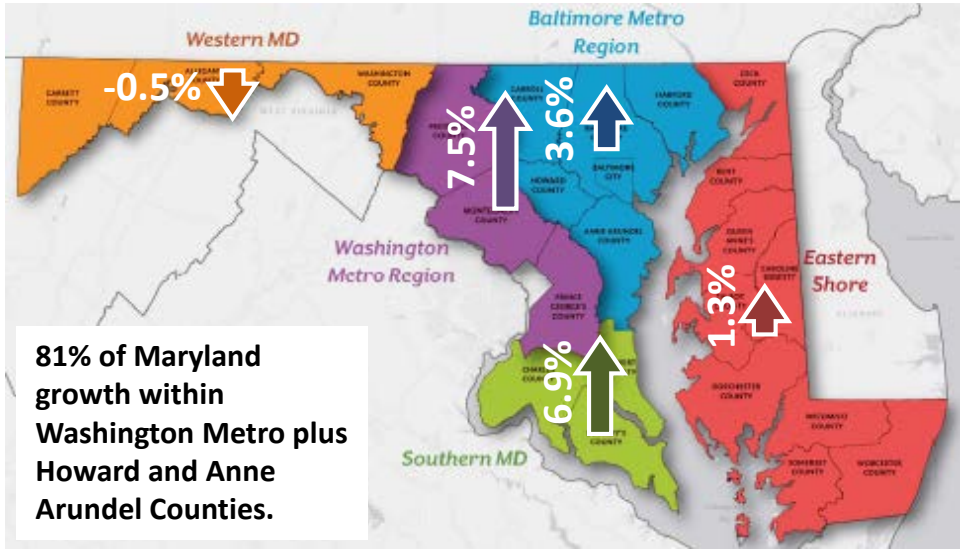
The Maryland Context

Travel demand follows economic trends

6.05 million people

#19 in US by population #5 in density

2010 to 2017 Growth = 4.8%

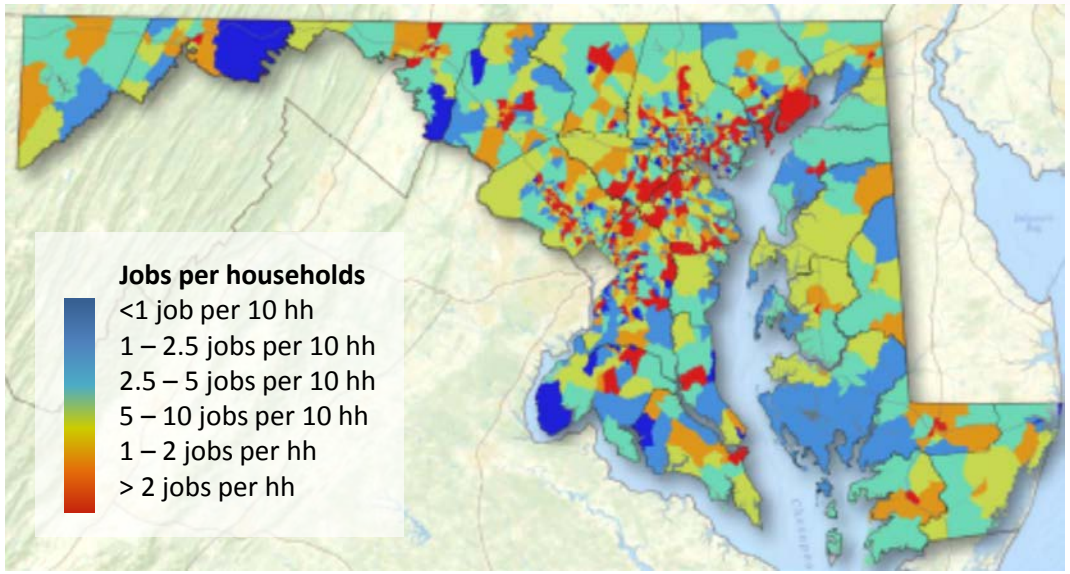


3.23 million civilian jobs in 2018 **5%** growth since 2010

Maryland's Gross State Product increased from $242.3 billion in 2000 to $329.1 billion in 2015.

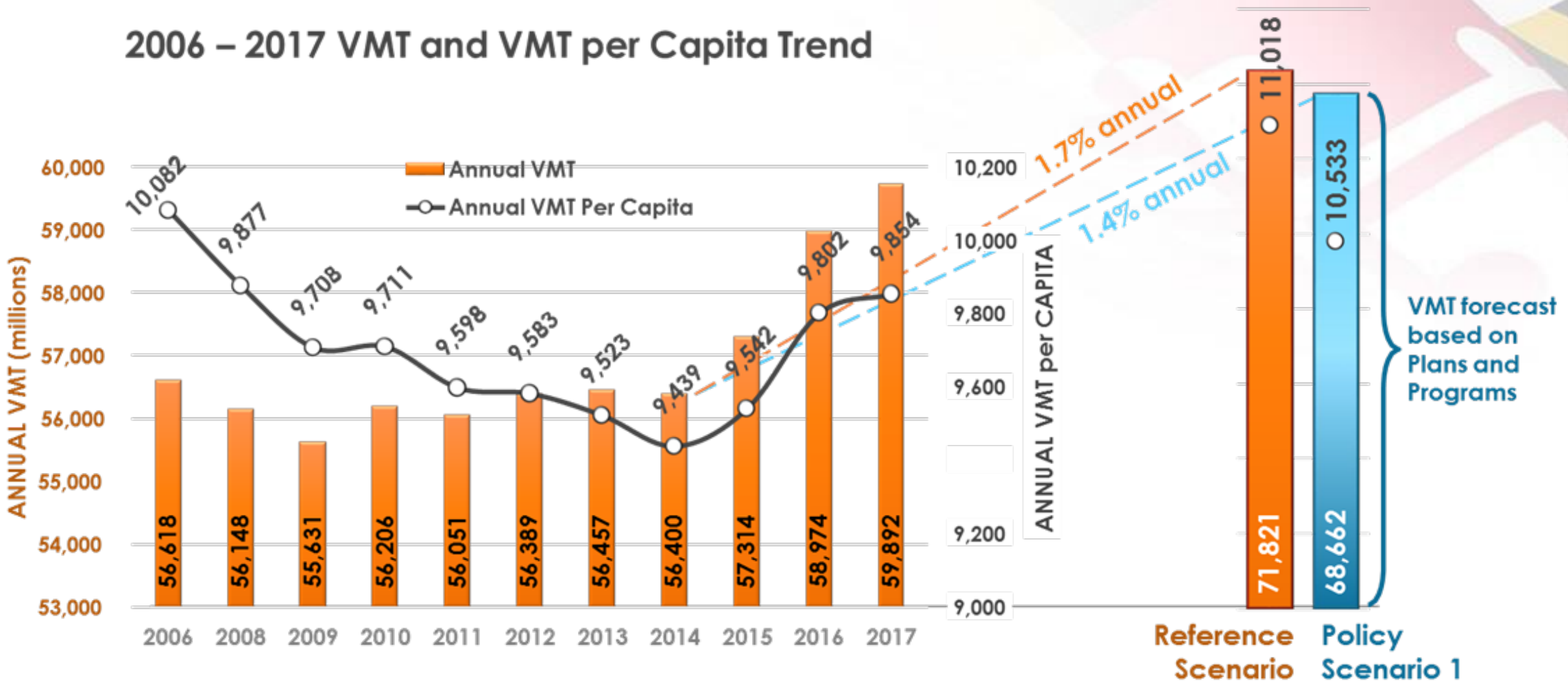
Labor force participation rate has stayed between 65% and 70% since 2007. It currently stands at 68.4%, 5% above the national average.

Maryland Jobs and Households



Economic Growth and Travel Demand

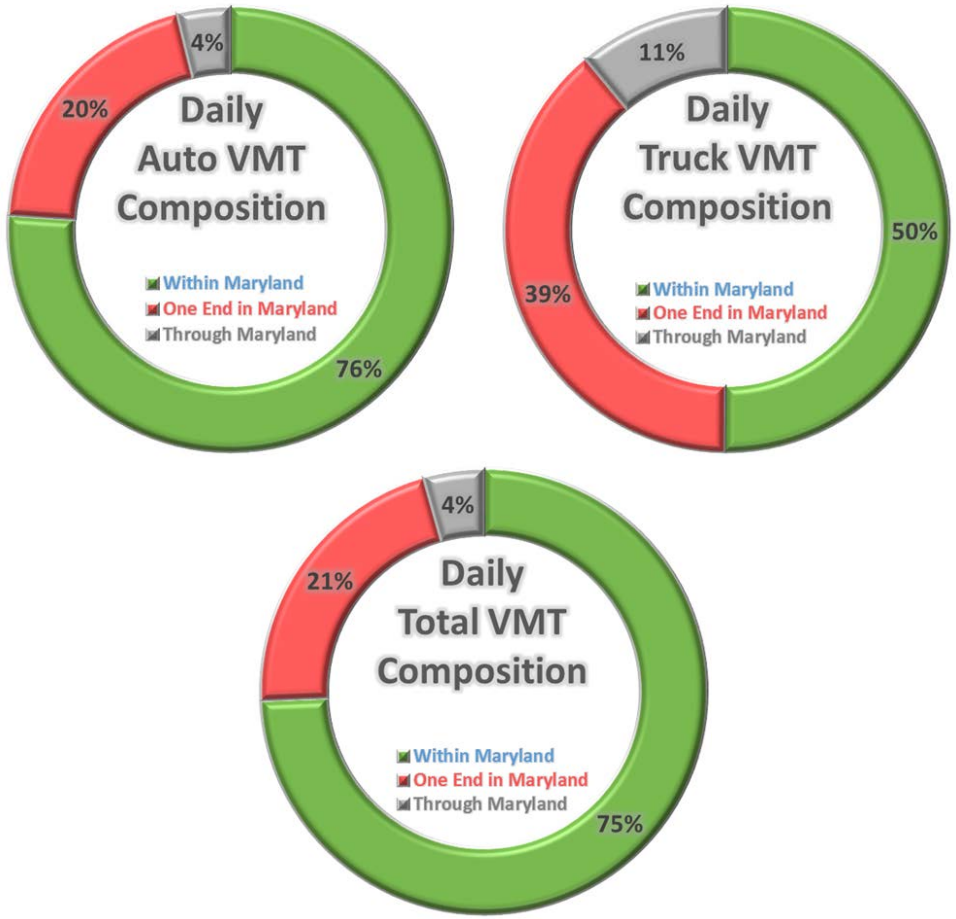
Strong Economies Require Mobility



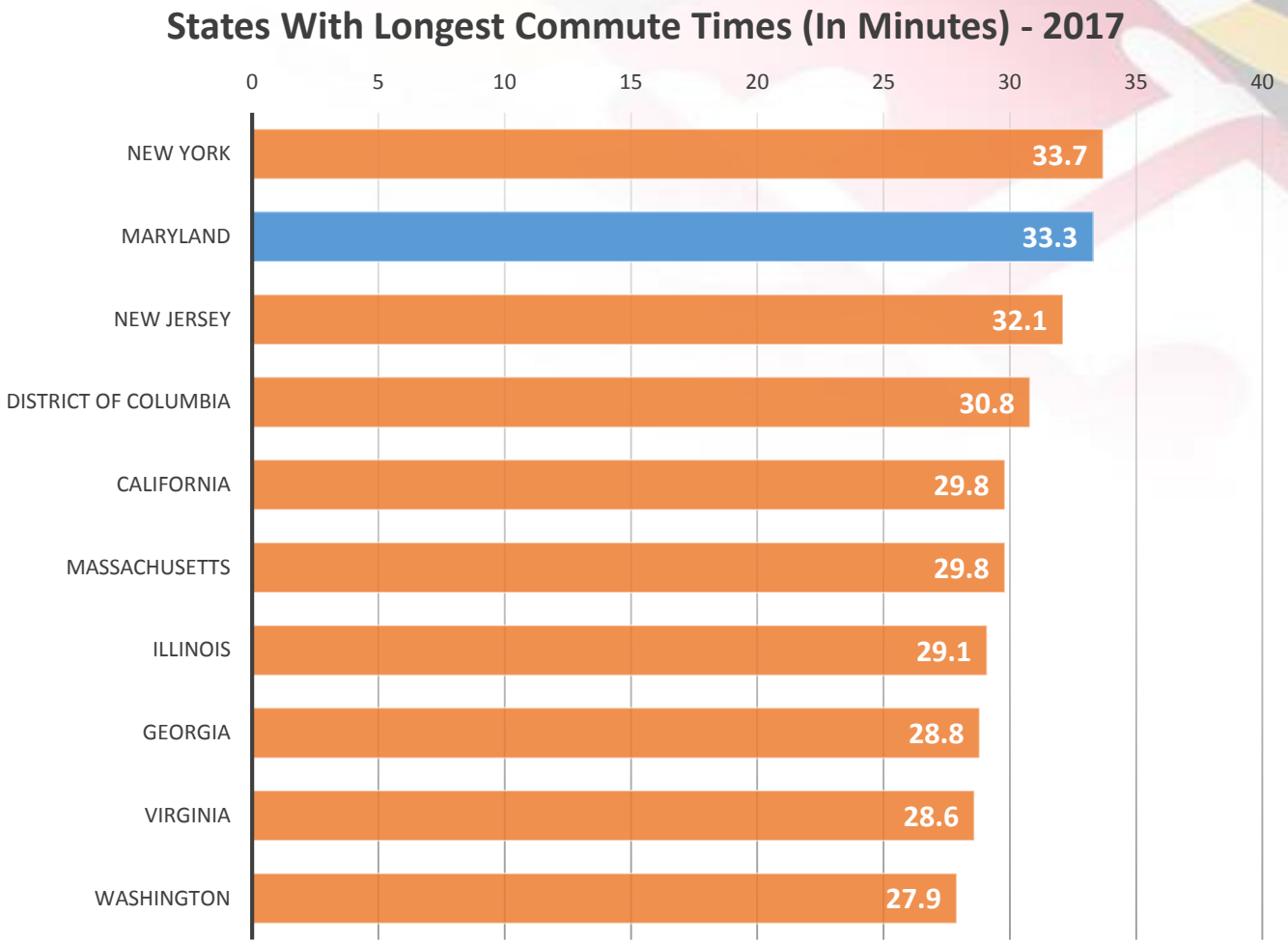
MARYLAND DEPARTMENT OF TRANSPORTATION

VMT in Maryland

Our Economy and Location Bring Unique Challenges



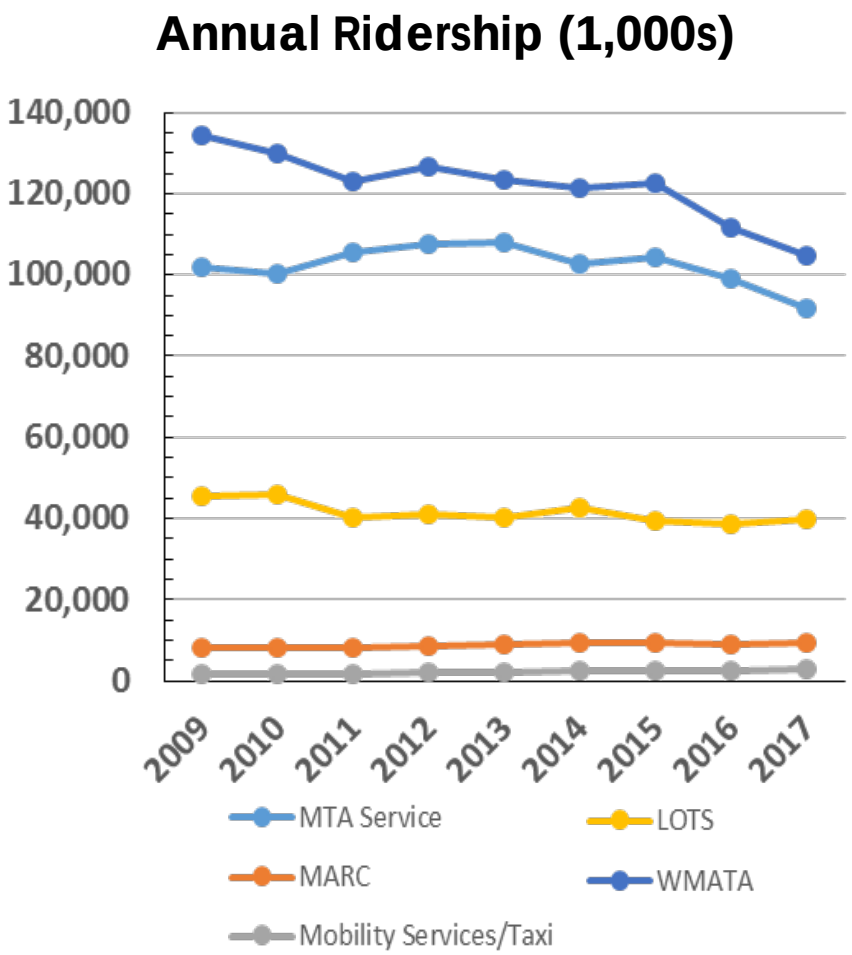
Source – SHA Maryland Statewide Travel Model (2015)



Source – U.S. Census American Community Survey Estimates (2017)

The Role of Public Transportation

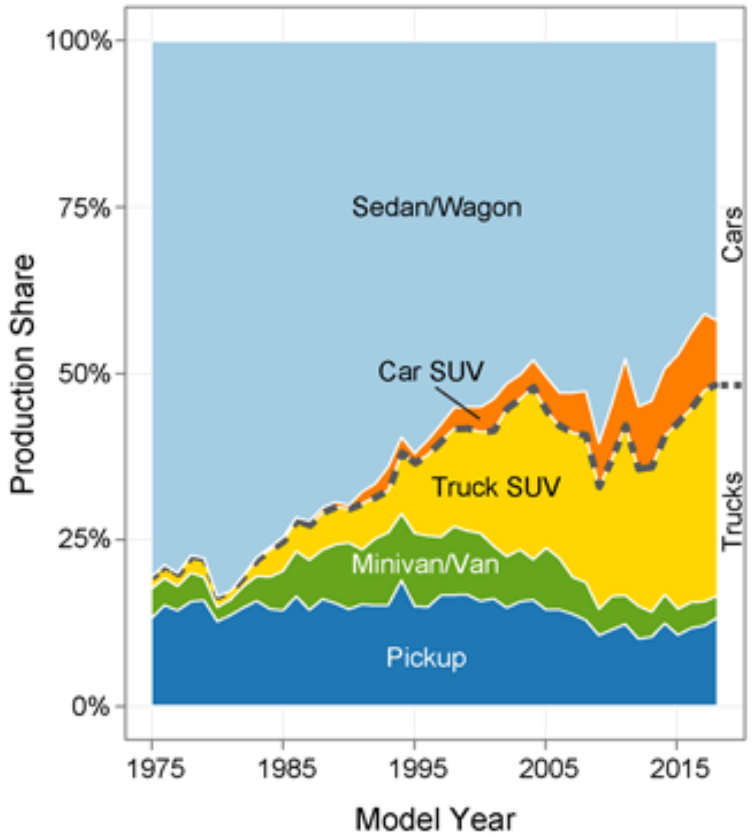
Realities and Opportunities to Reducing GHG Emissions

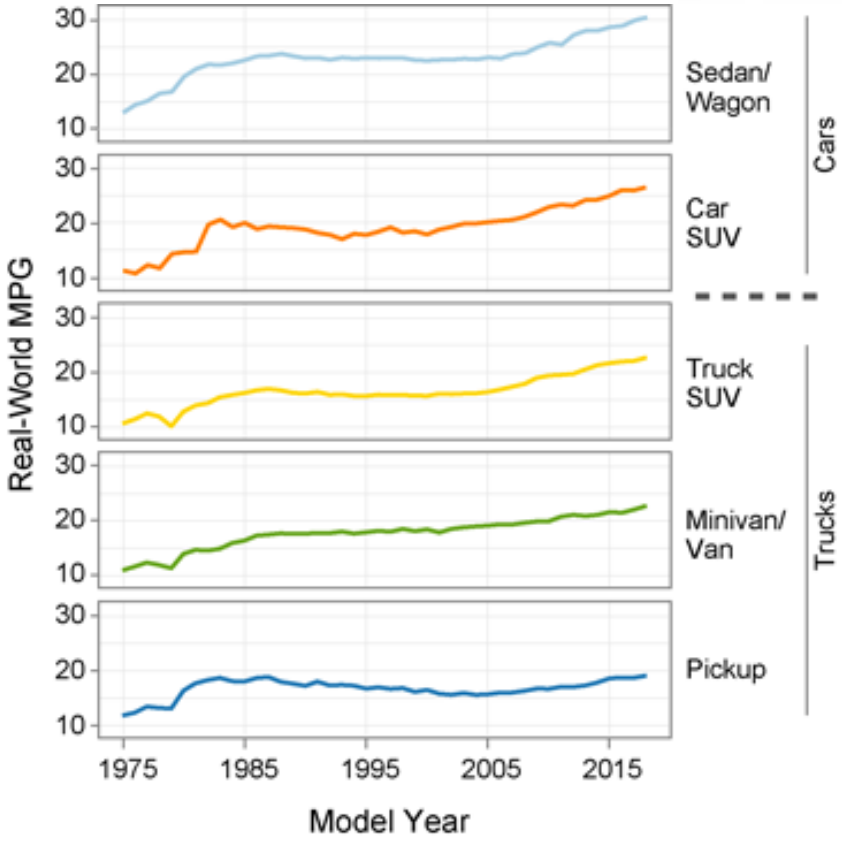


- **Average annual growth rate in MTA service revenue vehicle miles from 2006 to 2017 was 3.1%**, while ridership declined over that same period.
- **MD is #5 in transit commute mode share (9%)** behind only IL, MA, NJ, NY
- Over the last 10 years, the share of the capital budget committed to MTA and WMATA has **steadily increased from 29.6% in 2006 to 33.1% in 2016**
- The percent of transit customers within bike or walk distance of fixed route transit **has increased from 49% in 2010 to over 53% in 2018**
- Transit operating cost per revenue mile continues to increase, with a **25% increase in cost since 2013**

Consumer Preference

Increasing share of SUVs, vans, and pickups all with lower average real world MPG, represent over 60% of the MY 2018 market

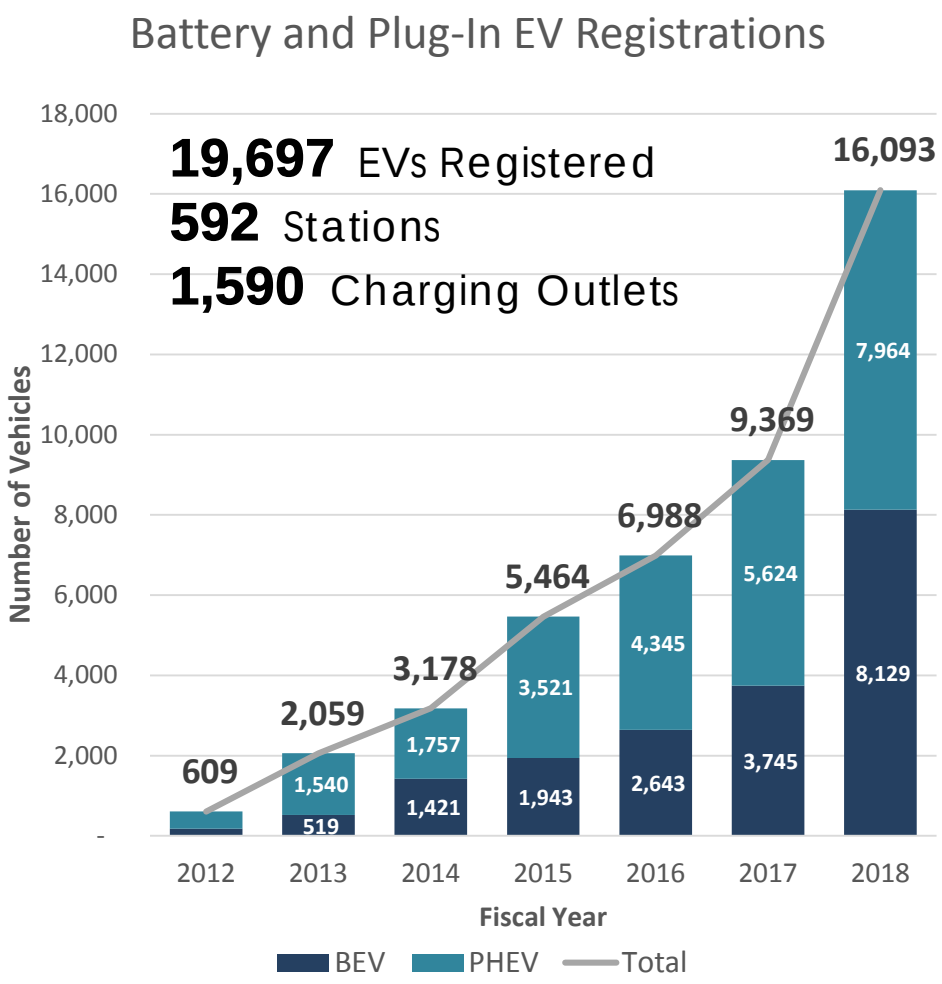


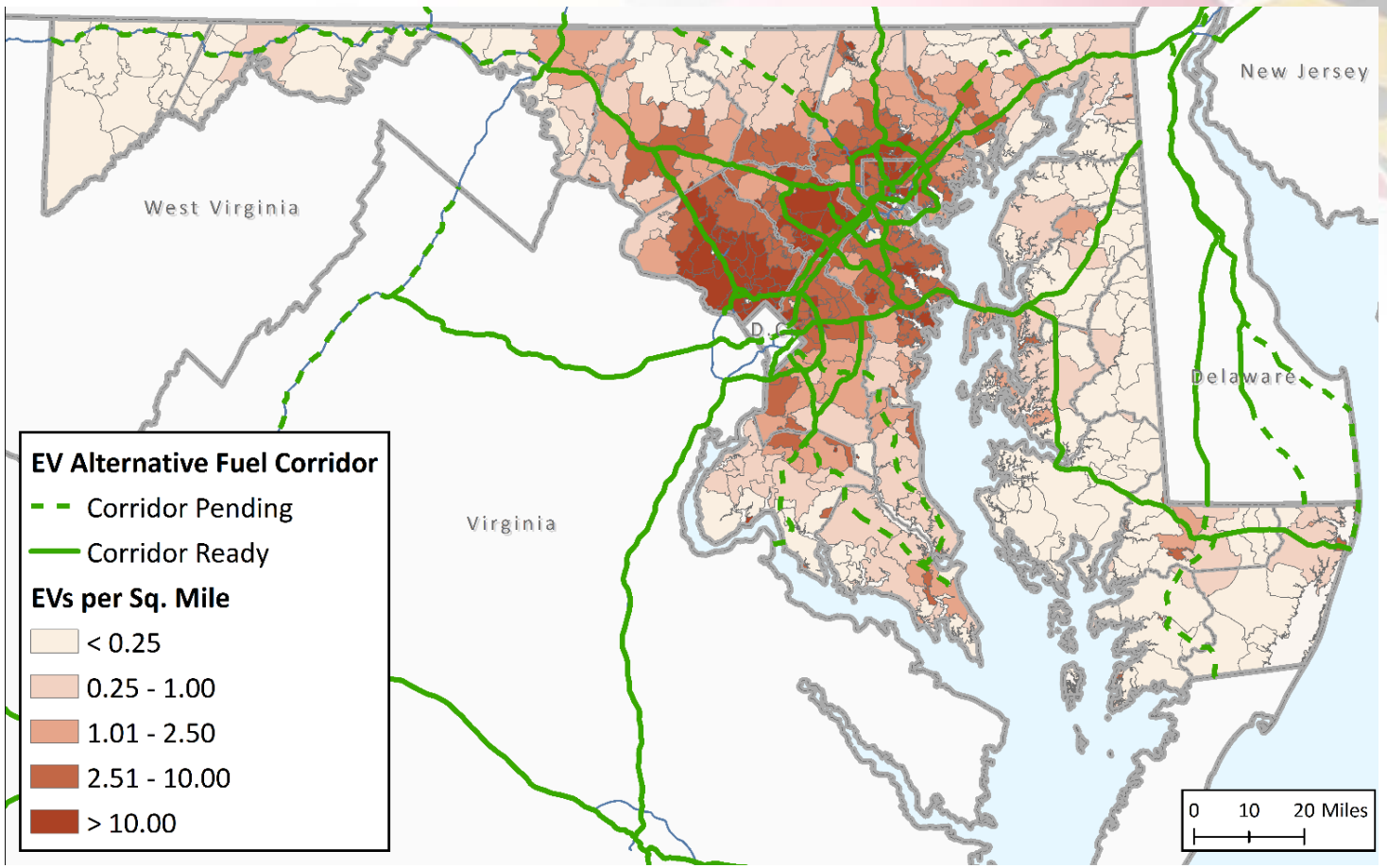


While the share and diversity of new, efficient technologies are increasing, some benefits are being offset by the market shift away from cars

Source: US EPA Automotive Trends Report

Electric Vehicles





Highway Congestion

Inefficiencies in Transportation Increase GHG Emissions

- **Over 86 million annual hours of delay** on the MDOT highway network translating to over **$4.1 billion in wasted time and fuel**
- **19% of freeway VMT and 29% of arterial VMT** operate in congested conditions during the PM peak hour

MDOT SHA's CHART incident management program saved motorists $1.465 billion in user costs and helped reduce delays by 38.6 million vehicle hours in CY 2017.

MDTA's electronic toll transactions increased from 79% of all transactions in 2015 to 83% in 2018.

MDOT SHA is developing Transportation Systems Management and Operations (TSMO) solutions that provide active traffic management and integrated corridor management capabilities

Washington Area Traffic Relief Plan

The largest initiative in the Traffic Relief Plan will evaluate transformative solutions to address congestion on I-270 and I-495.

- **Top 5 highest volume** highway sections in Maryland are within program area
- Today, on average, severe congestion lasts for **7 hours each day on I-270 and 10 hours each day on I-495**
- Many sections experience speeds **less than 15 mph under existing conditions** and traffic is expected to deteriorate

Congestion Benefits

- All alternatives are projected to **reduce delay by 20% or more** compared to the No Build condition
- **Equates to projected daily fuel savings of about 19,000 gallons**

Alternatives	Delay Reduction vs. No Build	
	AM Peak	PM Peak
2040 No Build	0%	0%
Alternative 5	20%	22%
Alternative 8	24%	33%
Alternative 9	34%	33%
Alternative 10	35%	35%
Alternative 13B	27%	22%
Alternative 13C	26%	35%

**Source: VISSIM Simulation Model. Values reflect delay in all lanes (GP & HOT/ETL) in the year 2040, and also include interchange ramps and junctions.*

Legend

- > 30% decrease in average delay
- 20% - 25% decrease in average delay
- 25% - 30% decrease in average delay
- < 20% decrease in average delay

Source: MDOT Workshop Spring 2019 Presentation

The New Mobility Future

The opportunities from CAVs, new modes, and drones

Connected and automated vehicles (CAVs) are likely to transform personal and freight travel

New fuels, vehicle ownership models, and modes of transportation are emerging and reshaping choices and preference, fueled by private sector innovation

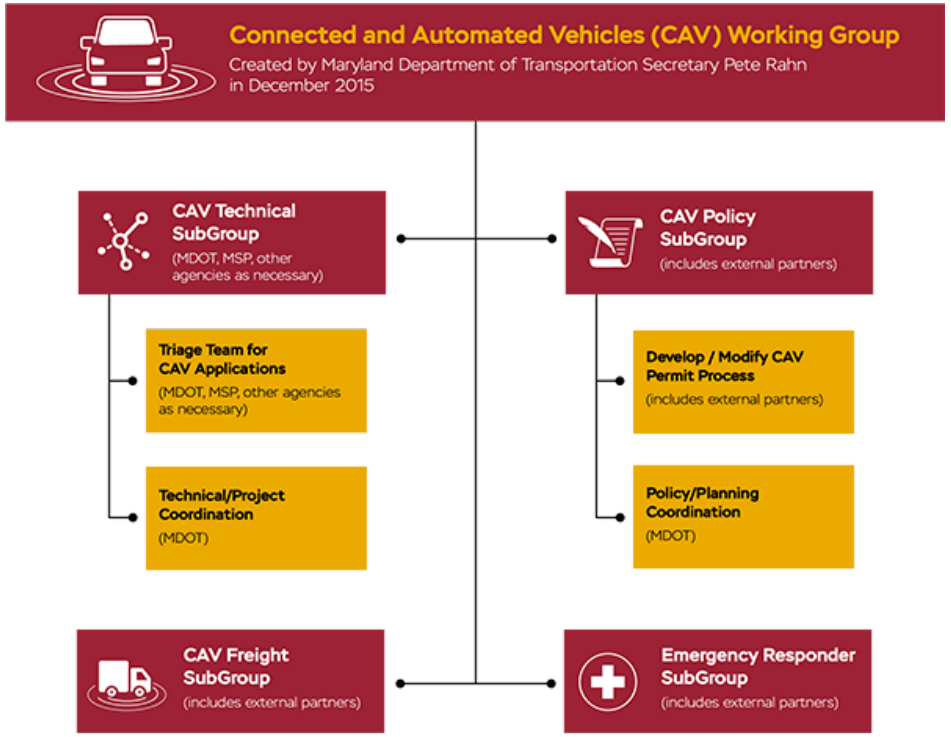
Image Source: Shared Mobility News
https://www.sharedmobility.news/

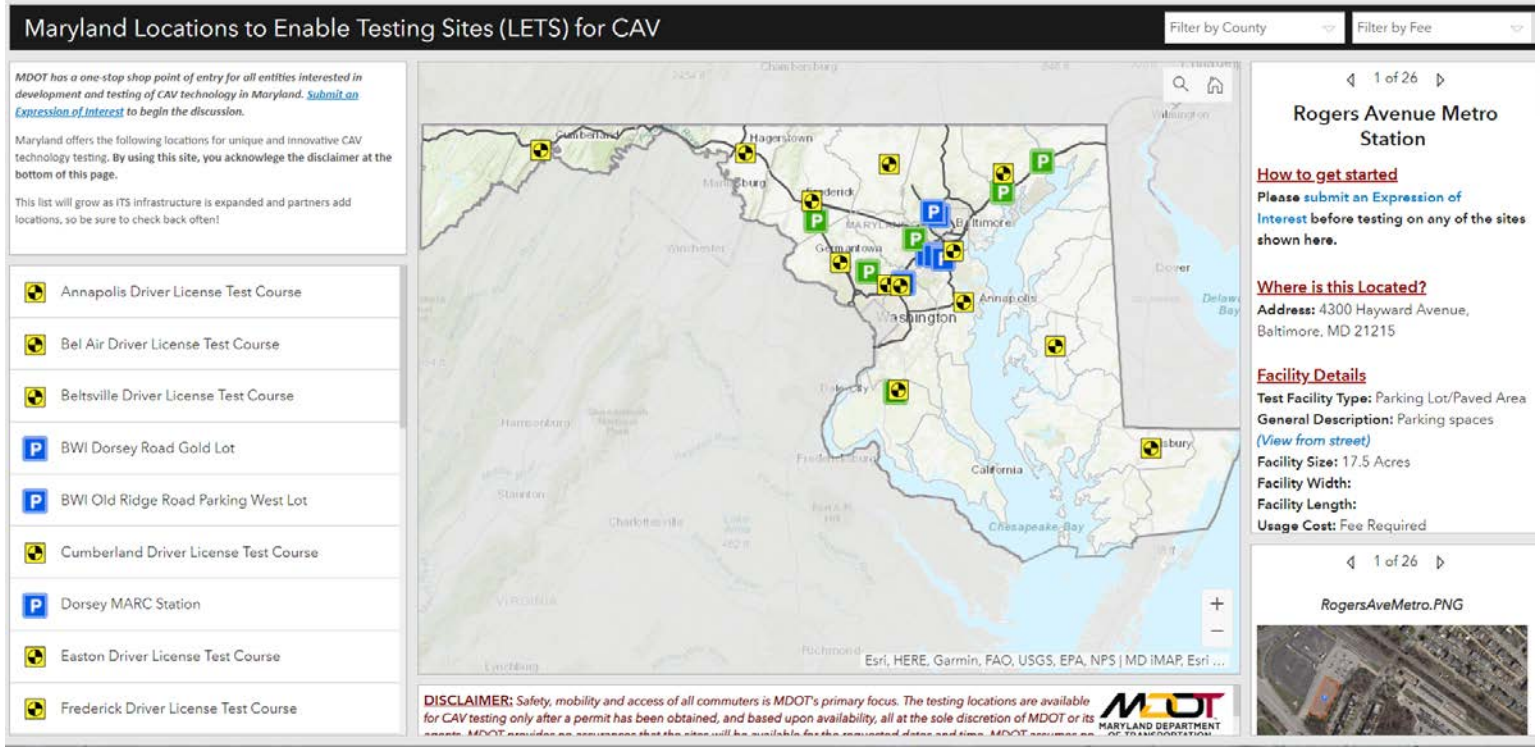
Unmanned aerial vehicles are a promising tool for transportation system management, package delivery, and even people movement

What Are We Doing?

MDOT Actions Positioning Maryland as a Leader

- Key role as facilitator, policymaker, and regulator.
- MDOT CAV Strategic Plan
- Maryland Locations to Enable Testing Sites (LETS) for CAV



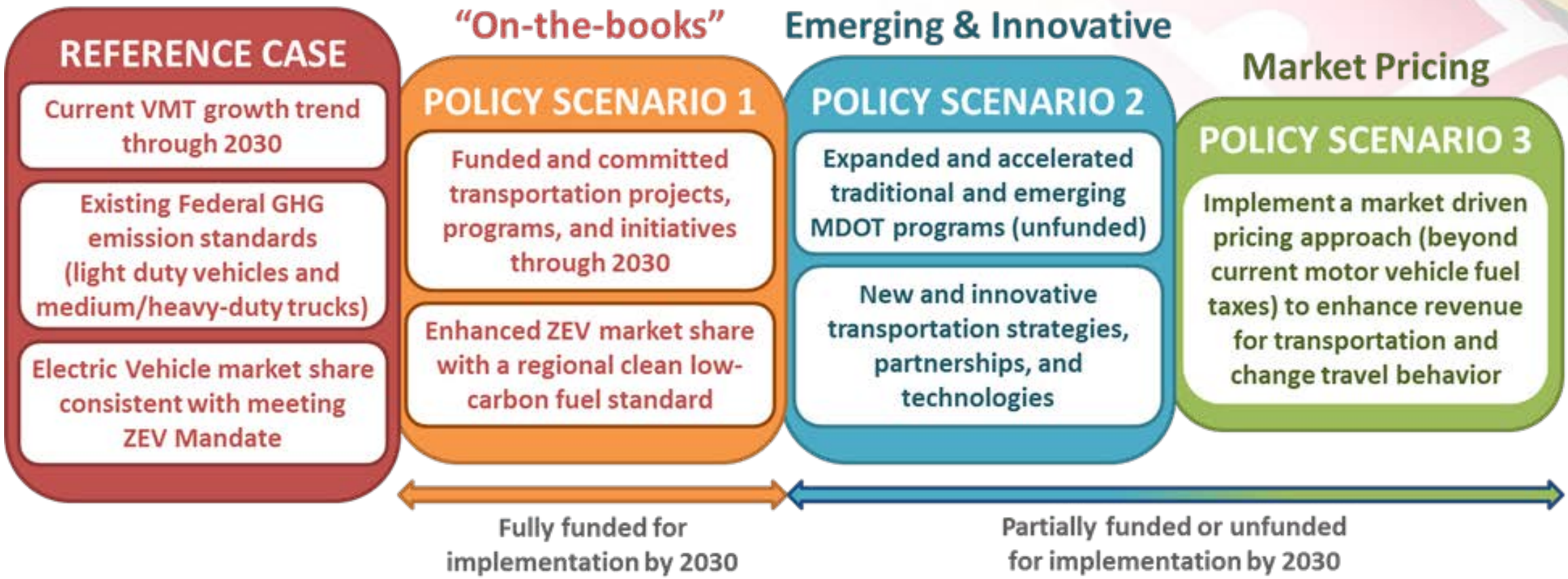


The 2030 Picture

Where will current trends takes us through 2030, and if the best-case outcomes are achieved, how far could we reduce emissions from transportation

The MDOT Scenario Process

The Careful and Evidence Driven Approach to 2030

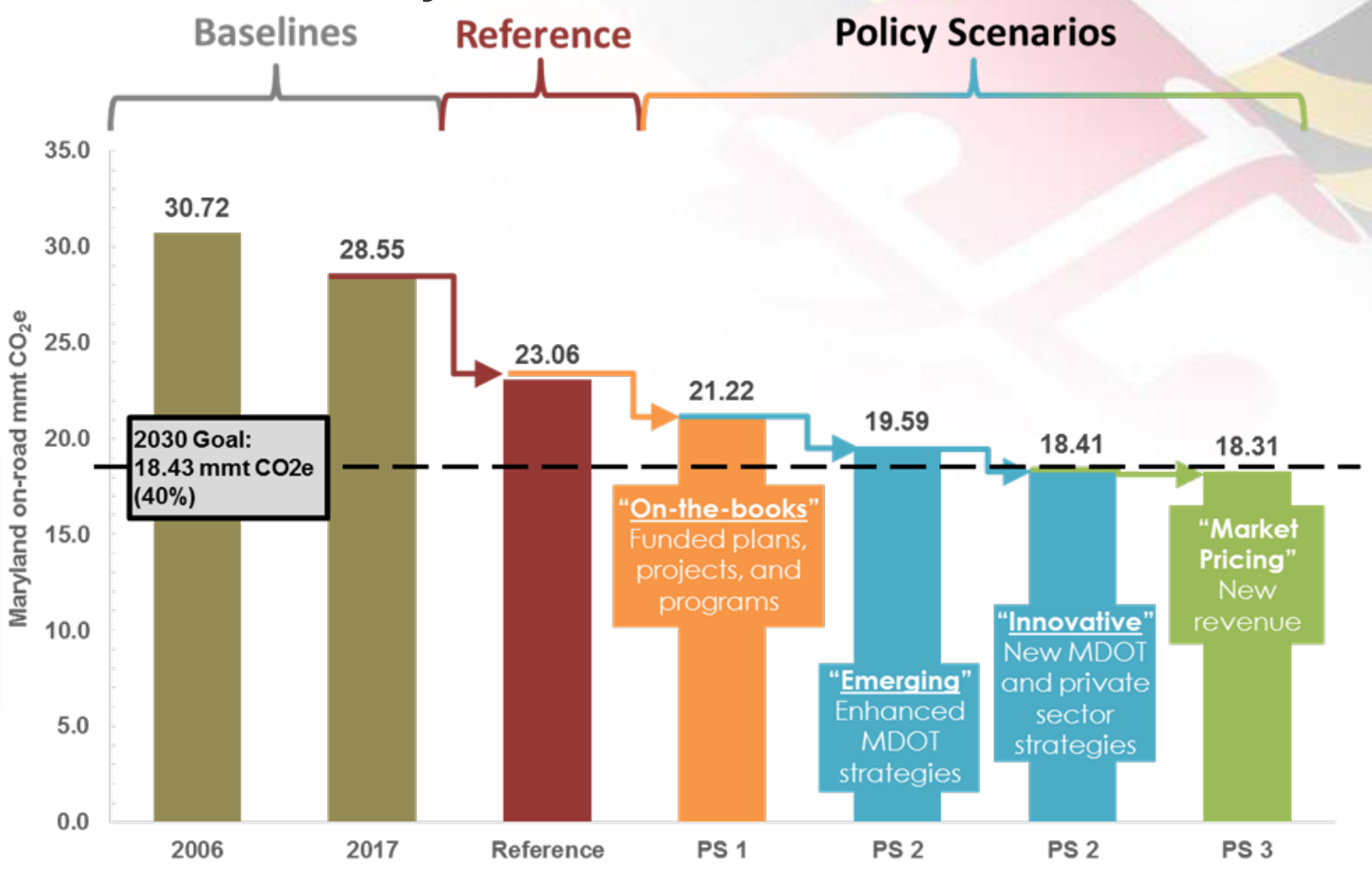


Policy Scenario Results

Can Transportation Make it to 40 by 30

Funded plans, projects, and programs **plus** meeting Federal standards and ZEV Mandate goals...

Approaches a 31% CO2e reduction from 2006 by 2030

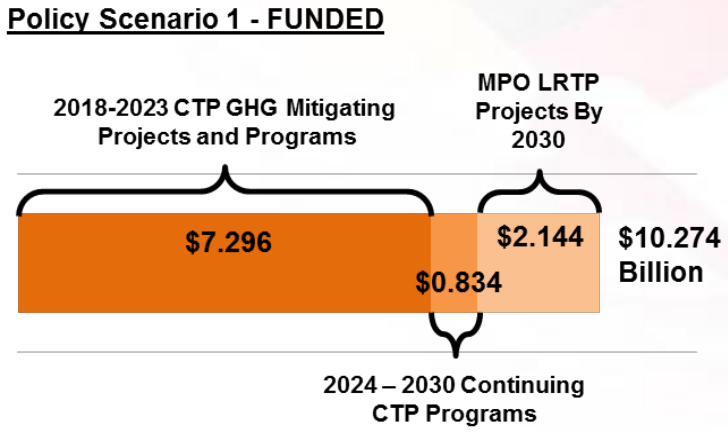


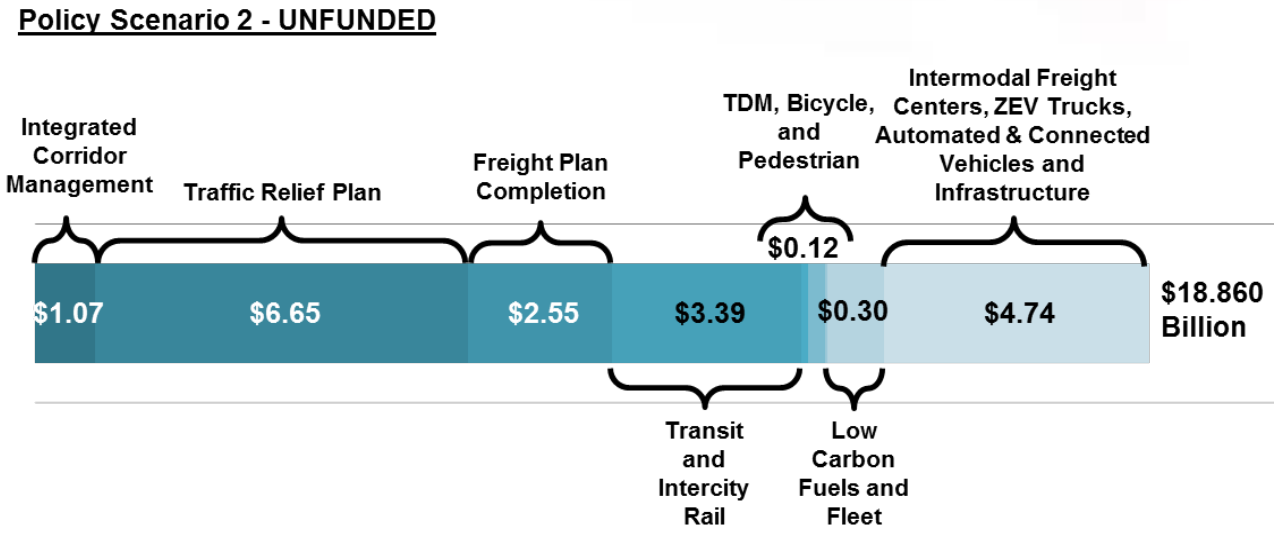
Costs and Cost Effectiveness

Our Funding Need and the GHG Return on Investment

- **Estimated $10.2 billion programmed or planned toward GHG supportive projects through 2030**

- **Up to $18 billion more needed** to implement suite of emerging and innovative strategies through 2030





What Would It Take?

Realities and What We Can and Can't Control

Challenges

- Financial
- Technological
- Policy
- Resource / Regulatory Feasibility

Uncertainties

- Economic shifts
- Travel and energy costs
- Disruptive changes in travel choices induced by technology or public behavior

Robust and resilient strategies

Capitalize on technology and new partnerships

Establish policy and programs that foster innovation

Co-benefits and Economic Impacts

Environmental Co-benefits

Public Health

Equity

Economic Vitality

Next Steps

The 2019 Plan, A Look Toward 2050, and How You Can Continue to Help

Focus Areas for 2019

- 2019 GGRA Plan and MDOT Report Publication
- EVIC
  - Strategic Planning
  - Enhanced Communications
- Transportation Climate Initiative
- Continued participation in MCCC
- VW Settlement Implementation

Success Stories

- MDOT SHA improved **93.9 directional miles for bicycle access** in FY 2017 and another **62.5 miles** in FY 2018
- MDOT MAA procured **20 60' articulated Shuttle Buses** powered by **Clean Natural Gas (CNG)** for service between the BWI Marshall Airport terminal and the Consolidated Rental Car Facility
- MDOT MPA **reduced emissions by 19% between 2012 and 2016** while at the same time **increasing cargo throughput by 10%**
- MDOT MPA **continues to replace more than 173 dray tucks** through USEPA's DERA grant and helped Canton Railroad install **idle-reduction technology in six switcher locomotives**
- MDOT SHA's **CHART** reached a milestone of **one million responses** (since 1995) - Saved motorists **$1.465 billion in user costs** and helped reduce delays by **38.6 million vehicle hours** in **CY 2017**
- FY 2018–FY 2023 CTP set aside **$3.310 billion for transit projects** that will increase transit reliability and contribute to emissions reductions
- In FY 2018, approximately **29,000 jobs** were supported in Maryland by MDOT, an increase of more than **3,400 jobs over FY 2017**

QUESTIONS?

Colleen Turner, Assistant Director, OPCP
Maryland Department of Transportation
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410-865-2773