MDOT STATE AGENCY REPORT SUMMARY AND MCCC RECOMMENDATIONS

Presentation to the Mitigation Working Group, MCCC

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2017 STATE AGENCY REPORT

- Introduction
  - MDOT's Role [MWG, ARWG, STWG, ECO]
  - Status Summary
  - Highlighted 2017 Accomplishments
  - Actions and Recommendations
- Impacts of Climate Change/Climate Adaptation
- Status Report on GHG Reduction Efforts
  - Transportation Technologies
  - Public Transportation
  - Pricing
  - Bike and Pedestrian Initiatives

- Program Description/Objectives
- Implementation Activity
- Enhancement Opportunities
- Funding
- Challenges
- Estimated GHG Reductions

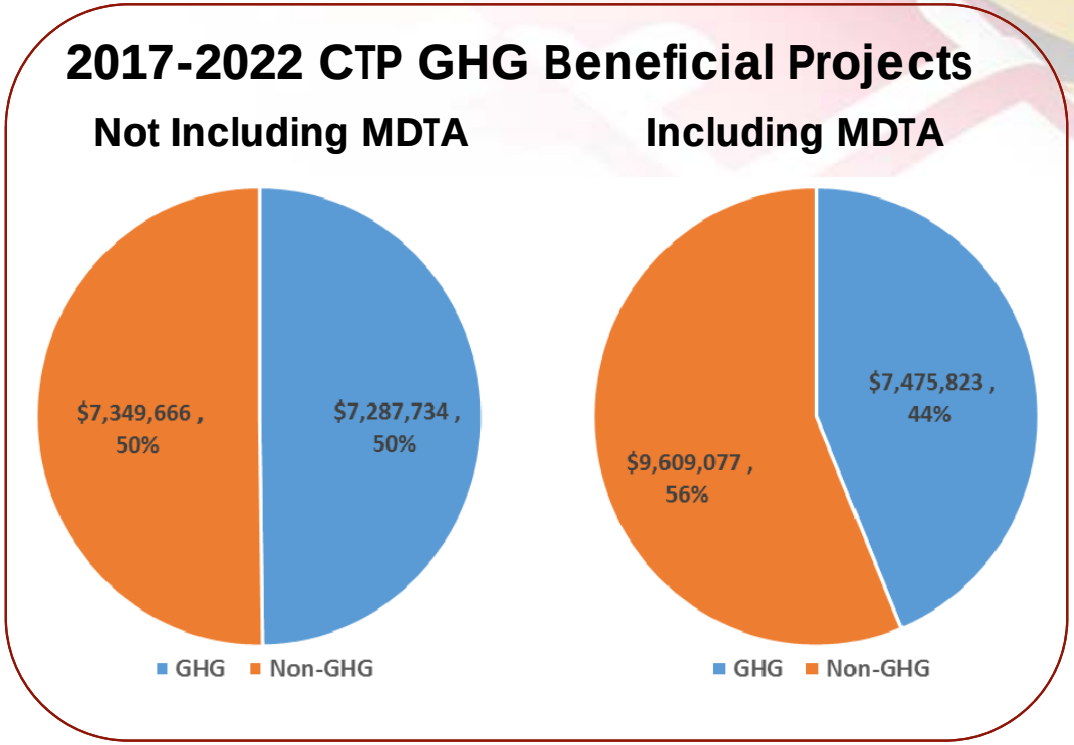
MDOT APPROACH TO GHG REDUCTION
TRENDS / CHALLENGES

- Communication **technology advances** – EVs, A/CV, & Smart Mobility
- **Economic recovery**, **low/stable fuel costs**, **VMT growth**
- Federal Funding **flexibility increasing**, total funding **remains the same**
- **Changing generational preferences** on transportation and development
- **Economics and logistics shifts** due to technology

These factors require MDOT to advance more complex and multimodal projects, deliver improvements ultra-efficiently with more partners, rely more on system optimization, and use emerging technologies

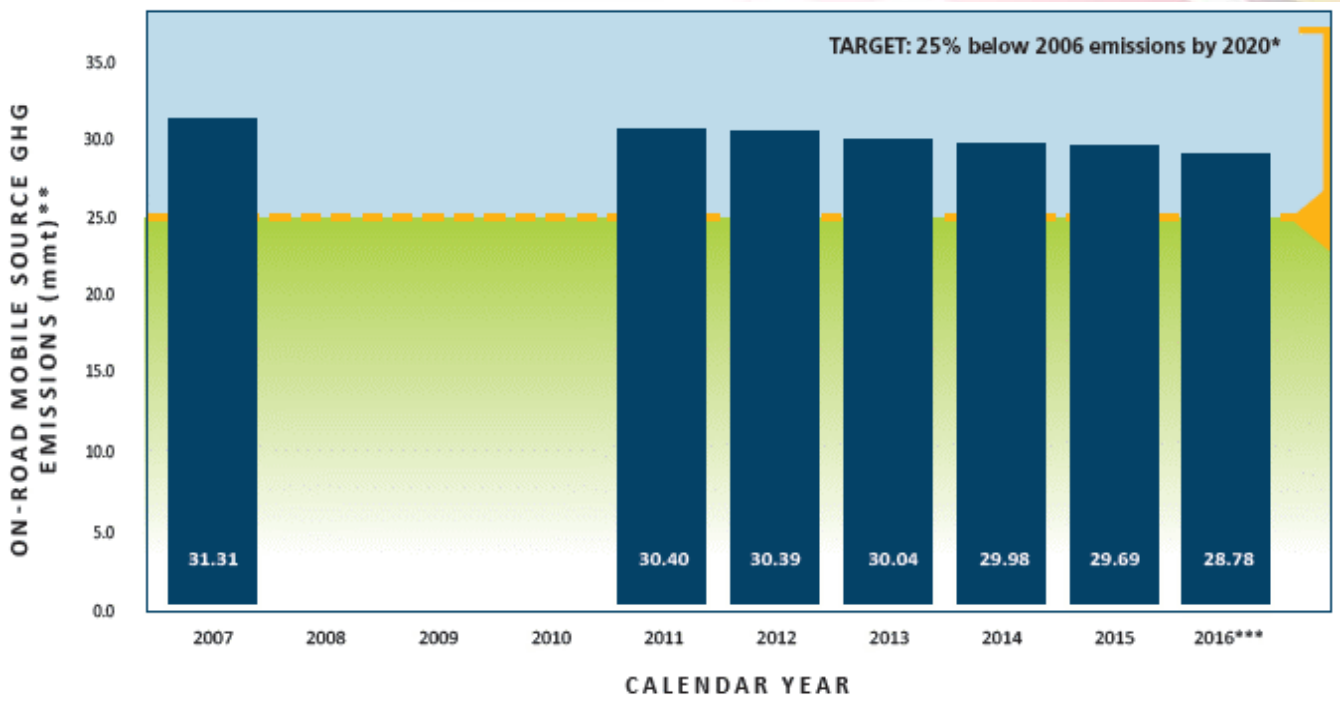
CONSOLIDATED TRANSPORTATION PLAN
GHG-BENEFICIAL INVESTMENTS

- GHG beneficial investments:
  - **Avoid** travel activity (single occupant vehicle travel)
  - **Shift** to lower energy intensity modes of travel
  - **Improve** travel efficiency, vehicle efficiency and technology
- GHG Beneficial: **50%** (~$7.287 billion) of MDOT's $14.637 billion six-year capital program
- Including MDTA (different funding sources), total share is **44%**
- $6.019 billion (**41%**) for system preservation



ANNUAL GHG EMISSIONS

On-road transportation GHG emissions continue to decrease as the efficiency of the on-road vehicle fleet improves even as VMT growth continued in 2015 (1.4% increase) and 2016 (0.8%)



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ANNUAL GHG EMISSIONS: PROGRESS

- Measuring Progress (approximate results)
  - Total on-road emissions: **8% decrease since 2006**
  - On-road emissions per capita: **14% decrease since 2006**
  - On-road emissions per mile traveled: **9% decrease since 2006**

  Relative to:

  - VMT: **1.5% increase since 2006**
  - Population: **7% increase since 2006**

CLIMATE CHANGE ADAPTATION AND RESILIENCE

- Development of vulnerability assessments and resiliency plans
  - **SHA** – Completed a coastal vulnerability assessment, integrating into asset management and project planning
  - **MDTA** – Developing vulnerability assessment framework to identify adaptation measures
  - **MPA** – Completed Vulnerability Plan in 2016 and examining results for developing adaptation measures.
  - **MPA** - Coast Smart best management practices (BMPs) incorporated into design engineering for new terminals, structures and dredged material management
  - **MAA** – Participated in Coast Smart Construction Guidance. Martin State Airport, Airport Layout Plan (ALPs) Sea Level Rise (SLR) overlay for future planning

HIGHLIGHTED ACCOMPLISHMENTS
PERFORMANCE TRACKING

- **Annual Attainment Report** – Statewide report on transportation system performance and strategies for improvement
- **MDOT Excellerator** – Summarizes tangible agency performance results on a quarterly basis to inform ongoing business decisions

GHG Emission Indicators

- **VMT**
- **Transit ridership / transit service reliability**
- **Roadway congestion**
- **Traffic safety**
- **Quality of the bike and pedestrian system**
- **Agency fuel consumption**
- **% of tolls collected by cash**
- **Highway travel reliability**
- **Average highway incident duration**
- **MDOT fleet miles per gallon**
- **Conventional energy use**
- **Renewable energy generation**

HIGHLIGHTED ACCOMPLISHMENTS
LEADING BY EXAMPLE

- Renewable Energy Facilities RFP Master Services Agreement – Model Initiative

Solar and Wind Technologies - Lifetime Totals (as of June 2017)				
	Capacity (kw)	Generation (kWh)	CO2 (lb)	Install Date
MAA	505	3,390,000	10,234,544	Sep-11
MDTA		131,716	186,231	Apr-13
MPA (Cruise Terminal)	249.6	1,370,000	4,151,540	Aug-12
MPA (Shed 10)	505.44	2,310,000	6,970,462	Aug-12
MTA	535.39	3,050,000	9,222,403	Feb-12
SHA (Wind)	2.4	5,579	7,887	2009
Total:	1,797.73	10,257,294	30,773,067	

HIGHLIGHTED ACCOMPLISHMENTS
STRATEGIC GOODS MOVEMENT PLAN

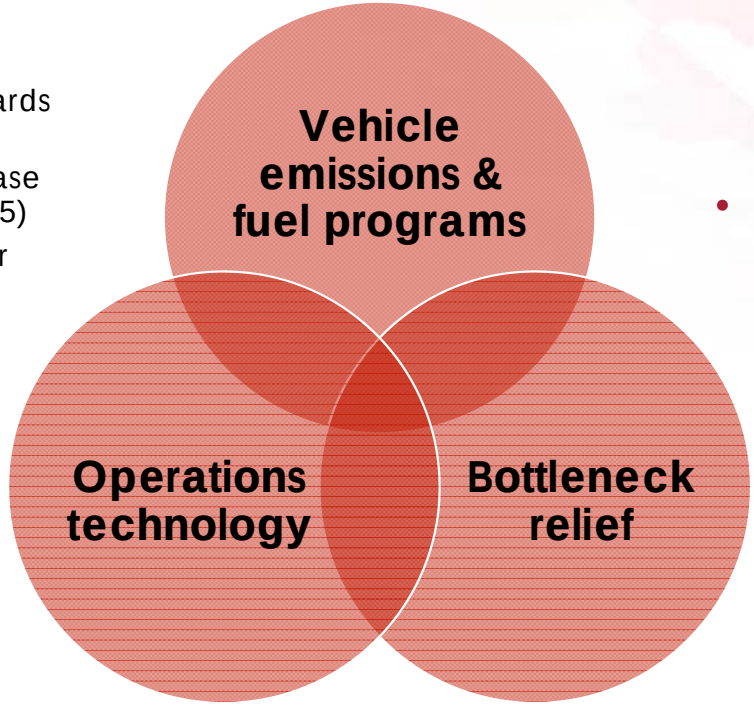
- Multimodal framework that identifies strategies to address:
  - Freight mobility
  - Future freight infrastructure needs
  - Improvements to advance Maryland's economy
- Approach consistent with new Federal funding programs in the FAST Act
- Heavy-duty vehicles:
  - 7.2 percent of the total on-road VMT = 17 percent of total on-road emissions
- Strategies proposed to advance future opportunities include:
  - Reducing freight bottlenecks
  - Enhancing Port operation and throughput
  - Improving freight infrastructure to improve reliability

HIGHLIGHTED ACCOMPLISHMENTS

Adaptation & Resilience	**SHA Statewide Coastal Vulnerability Assessment** to inform planning, programming and design and **MTA Vulnerability Plan** supports development of adaptation measures and resiliency planning
Transportation Technologies	MDOTs leadership of the Electric Vehicle Infrastructure Council (EVIC) continues to promote EVs and the installation of EVSE. Total registered battery-electric and plug-in hybrid electric vehicles **approaching 10,000 vehicles in 2017**
	SHAs **CHART program** ensures the efficient management of incidents, traveler information, and other on-road infrastructure technologies that reduce delay and GHG emissions (**est. 70,000 metric tons of GHG in 2016**)
Public Transportation	Successful start-up of **BaltimoreLink** in results in a more efficient and accessible system, including an estimated **32% increase in the population within ¼ mile of transit service**
	Supported by two TIGER Grant awards from US DOT, MTA is working with Baltimore City to deliver the **North Avenue Rising** project and Montgomery County to deliver the **US 29 Bus Rapid Transit** project by 2022
	Groundbreaking for the Purple Line in August 2017
Transportation Pricing	MDOT and MTA continue to expand transportation emission reduction and monitoring (TERM) programs (estimated **nearly 700 million VMT reduced annually**)
	MDTA continues to update the technical capabilities and efficient operations of toll facilities, including eventual shift to **all-electronic tolling**
Bicycle and Pedestrian	Since its inception in 2012, the **Bikeways Program has awarded $16 million to 130 local bicycle** projects including bike share, recreational trails program, and transportation alternatives program

TRANSPORTATION TECHNOLOGIES

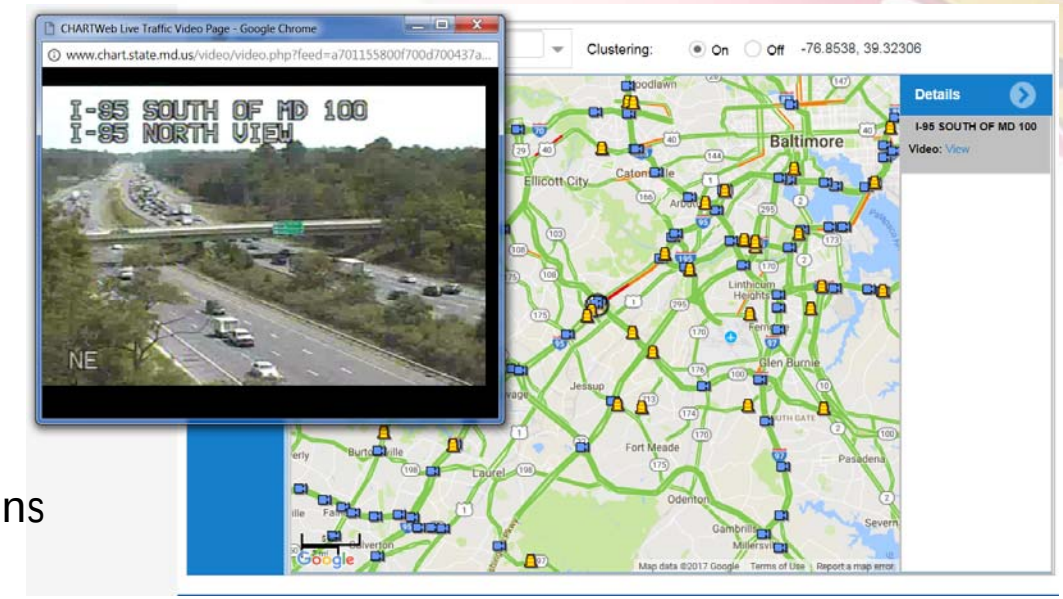
- **Vehicle emissions and fuel programs**
  - Maryland Clean Car Program
  - Corporate Average Fuel Economy Standards (CAFE) for model years 2008-2011
  - The National Fuel Economy Program – Phase 1 (2012 to 2016), and Phase 2 (2017 to 2025)
  - Medium/Heavy-duty vehicle standards for model years 2014 to 2018 medium and heavy-duty vehicles
  - Federal Renewable Fuels and Tier 3 Fuel Standards
- **Operations technology**
  - SHA CHART Program
  - Signalization and corridor management
  - Bus communications/AVL



- **Bottleneck relief**
  - Strategic roadway capacity/ operational improvements
  - Rail capacity/double-stack
  - Port access and operations

COORDINATED HIGHWAY ACTION RESPONSE TEAM (CHART)

- **Five major components**
  - Traffic and Roadway Monitoring
  - Incident Management
  - "511" - Traveler's Information
  - System Integration
  - Traffic Management
- **2016 Annual Benefits**
  - Delay – 43.5 million vehicle hours
  - Fuel Consumption - 8.2 million gallons
  - GHG Emissions – 75,000 metric tons
  - Cost Savings – $1.5 billion to users



- **$105.6 million for operations & expansion in the 2017-2022 CTP**

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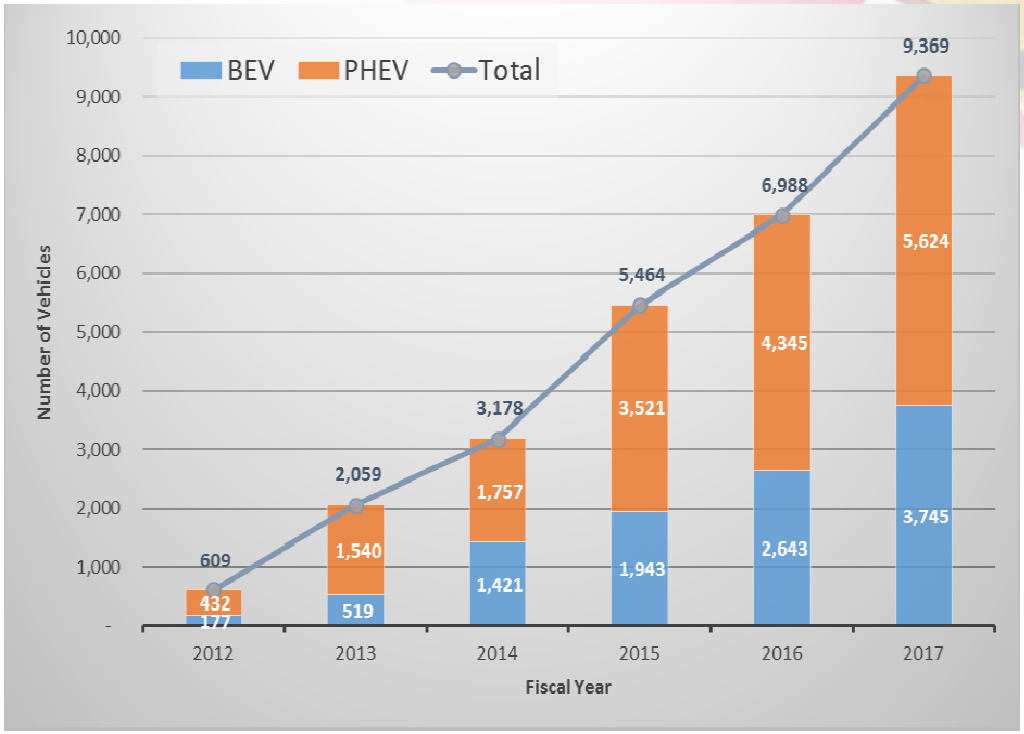
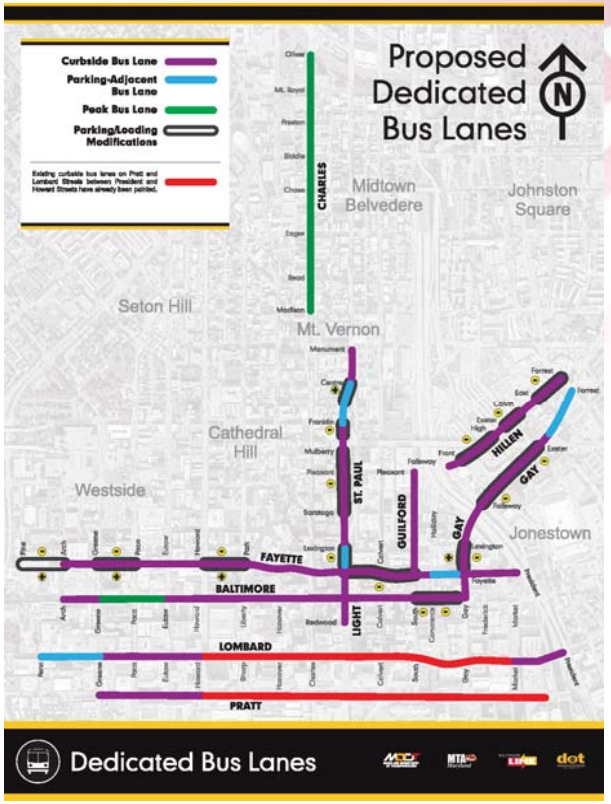
ALTERNATIVE FUEL & ELECTRIC VEHICLES

- Designation of alternative fuel / electric vehicle corridors under the FAST Act
  - **I-95, US 50, I-270 and I-70/I-68**
- Maryland EV Excise Tax Incentive renewed during the 2016 Legislative Session
- Tracking charging infrastructure relative to electric vehicle density



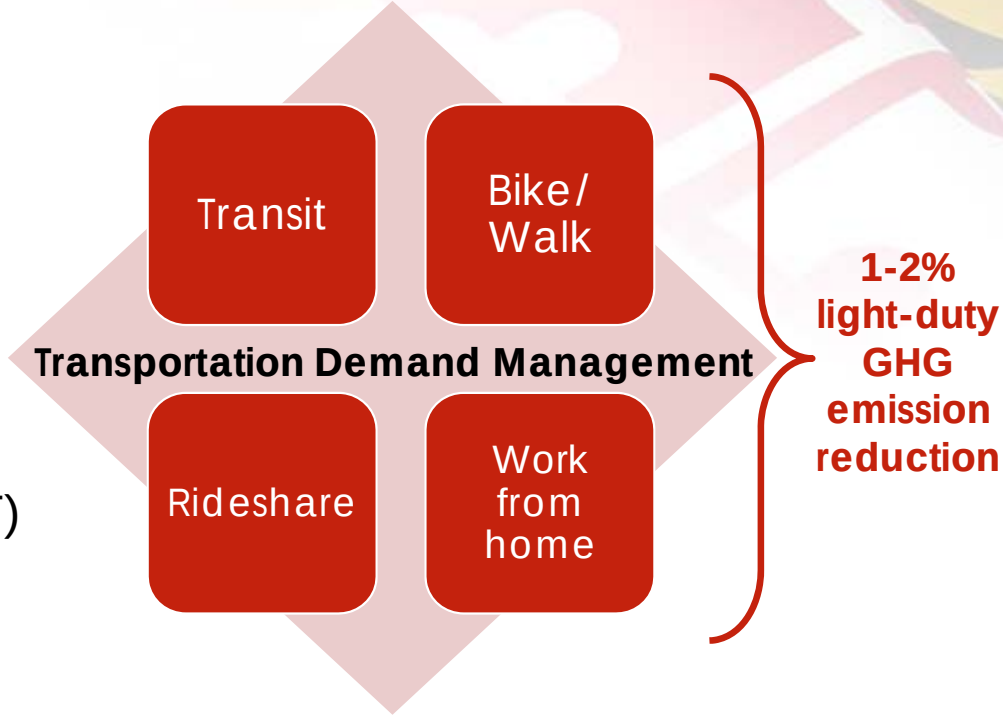
INTERCITY AND PUBLIC TRANSPORTATION

- Since 2013
  - **VMT increased by 2%**
  - **Transit ridership decreased by 6%**
- $3.574 billion in the 2017-2022 CTP
- Additional $358 million to be spent on intercity passenger service
- Notable Projects:
  - BaltimoreLink
  - Purple Line
  - North Avenue Rising
  - US 29 Bus Rapid Transit
  - MARC Growth & Investment



PRICING

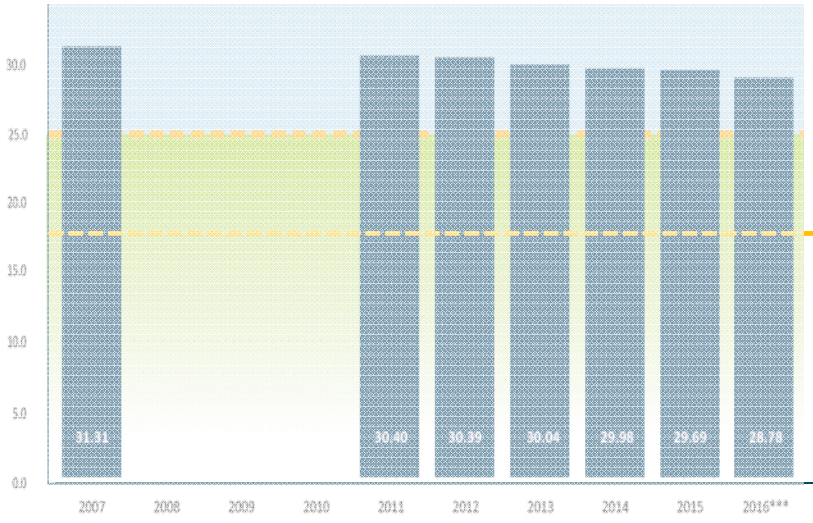
- Transportation Demand Management
  - Commuter Choice Maryland and Commuter Connections
  - Outreach and education
  - Commuter incentives / subsidies
  - Telework partnerships
  - Vanpools
- Ongoing improvements to tolling systems to facilitate complete conversion to all-electronic tolling (AET)
- MDOT monitoring user-based alternative revenue mechanisms and other emerging road pricing technologies

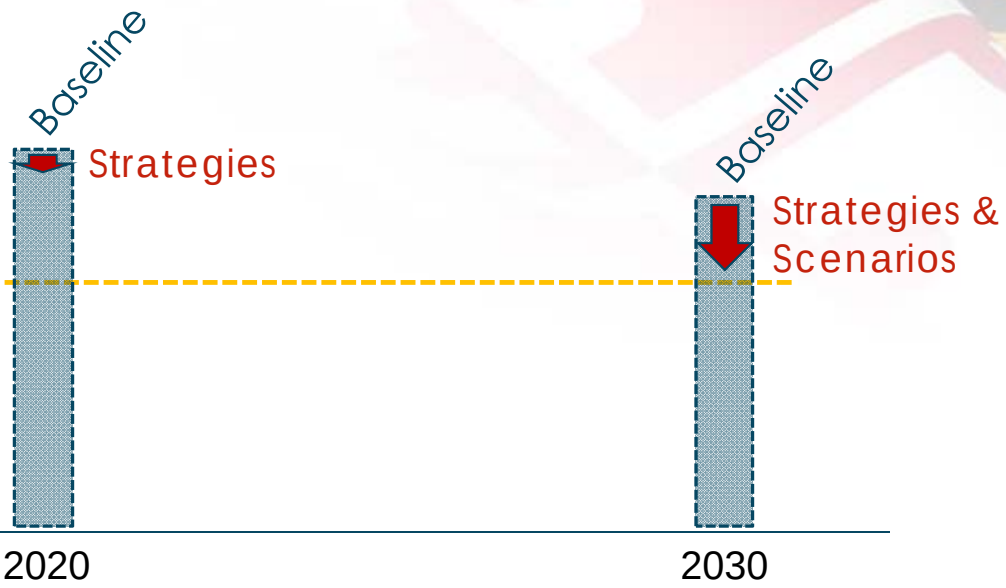


BIKE AND PEDESTRIAN INITIATIVES

- Bicycle and pedestrian trips accounted for 2.9% of commuter trips in 2016
- Ongoing programs include:
  - Maryland Bike Share Program
  - ADA Retrofit Program
  - Sidewalk Retrofit Program
  - Bicycle Retrofit Program
  - Recreational Trails Program
  - Safe Routes to School
  - Urban Reconstruction Program
  - Transportation Alternatives (TA) Program
- SHA policy and design standards – 88.3 new miles of bike lanes in FY 17

PLANNING FOR 2030





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2017 MDOT RECOMMENDATIONS

- Strategy estimation process enrichment including estimating the synergies of different strategy bundles
- Considerations for cross-sectoral consistency in assumptions, particularly regarding land use and development
- Continued evaluation of best available state-wide inputs to emission modeling processes including areas not covered by MPO travel models
- Estimation of strategy co-benefits including social equity, public health, and other environmental benefits

MCCC RECOMMENDATIONS

- **Proposed MWG Recommendation # 3a**: ***Accelerating the deployment of zero emissions vehicles (ZEVs)*** by
  - Developing policies to employ Maryland's public utilities in the State's efforts to rapidly and equitably expand EV infrastructure in Maryland;

- **MDOT Response**: ***Electric Vehicle Infrastructure Council (EVIC) and Public Service Commission (PSC) currently working on this effort***
  - BGE and Pepco are members of EVIC
  - Public Conference 44 (PC44) to address this comment

- **Proposed Change:** Monitoring the development of policies to employ Maryland's public utilities in the State's efforts to rapidly and equitably expand EV infrastructure in Maryland;

MCCC RECOMMENDATIONS

- **Proposed MWG Recommendation # 3b**: ***Accelerating the deployment of zero emissions vehicles (ZEVs)*** by
  - Requiring that MDOT and DBM establish state fleet procurement and EV charging station installation targets and procedures to ensure that no less than 5 percent of the State's light duty motor vehicle fleet is comprised of ZEVs by 2018, and 20 percent by 2020, and 50% by 2030
- **MDOT Response**: ***MDOT, MDE, MEA, and DGS tackling this through EVIC. Challenges include***
  - Companies bidding on procurement have include no, or limited, EV options.
  - EVs are more expensive, and therefore less attractive, to State Agencies operating on limited budgets.
  - Limitations on timing of replacement of fleet vehicles.
- **Proposed Change:** Recommending that MDOT, MDE, MEA, and DGS review state fleet procurement procedures and practices and provide direction on EV procurement and EV charging station installation guidance and targets by October 2018.

MCCC RECOMMENDATIONS

- **Proposed MWG Recommendation # 3c**: ***Accelerating the deployment of zero emissions vehicles (ZEVs)*** by
  - Supporting the rapid deployment of ZEV school and transit buses in Maryland

- **MDOT Response:** It should be noted that the State has no control over the school bus fleet and can only provide recommendations to local decision makers.

- **Proposed Change:** Researching the costs and benefits of supporting the rapid deployment of ZEV school and transit buses in Maryland. The analyses should include:
  - Capital, maintenance, and operating cost comparisons,
  - Research into the viability of various ZEV technologies, and
  - Emissions benefits summaries.

MCCC RECOMMENDATIONS

- **Proposed MWG Recommendation # 4**: ***Increasing average daily state-wide public transportation ridership by three percent (3%) or more per year through 2035***, by expanding public transportation investments, including giving priority to the electrification of public transit and school buses and to projects that integrate transportation and more sustainable land use planning, like the Corridor Cities Transit (CCT), Red Line, Purple Line and MARC Line initiatives

- **MDOT Response: 3% ridership increase goal is not realistic unless considered relative to the additional resources required for service enhancement and expansion, plus the complementary land use policies and other strategies required to further promote transit use**

- **Proposed Change:** Remove recommendation.

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MCCC RECOMMENDATIONS

Facts related to transit ridership in Maryland:

- Average annual growth rate in MTA service revenue vehicle miles from 2006 to 2016 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** (American Communities Survey)
- 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**
- **MTA ridership has averaged 1.2% growth per year since 2006**. The highest growth years were 2008 and 2009 (4%), in those two years, VMT decrease averaged 1%
- Assuming 2015 and 2016 is a fair economic picture through 2020, **VMT increased 2.1% and transit ridership decreased 2.8%.**

- Transit is one of many strategies to help mitigate GHG emissions
- Smart and Shared Mobility strategies are already replacing traditional transit in some markets
- Transit capacity investments yield a low cost per ton CO_2e reduced compared to other strategies

QUESTIONS?

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