Baltimore Regional Transportation Board

CONFORMITY DETERMINATION OF THE 2022-2025 TRANSPORTATION IMPROVEMENT PROGRAM AND *MAXIMIZE 2045* - APPENDICES

Prepared by the Baltimore Regional Transportation Board

Appendix A: Conformity Requirement Checklist

Section of 40 CFR Part 93	*Requirement*	*BRTB's Response*
§93.110	Is the conformity determination based upon the latest planning assumptions?	Yes
	(a) Is the conformity determination, with respect to all other applicable criteria in §93.111-§93.119, based upon the most recent planning assumptions in force at the time of the conformity determination?	(a) Yes. The conformity determination uses the most current planning assumptions in force and approved by the BRTB at the time of the determination. Vehicle fleet characteristics used reflect 2017 vehicle registration data for the Baltimore region.
	(b) Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other designated agency? Is the conformity determination based upon the latest assumptions about current and future background concentrations?	(b) Yes. This conformity determination utilizes the most recent demographic and employment data; it uses Round 9A socioeconomic forecasts endorsed by the BRTB in July 2020. The travel demand model was validated to a 2012 base year.
	(c) Are any changes in the transit operating policies (including fares and service levels) and assumed transit ridership discussed in the determination?	(c) Yes. All existing and proposed transit systems and service for the planning horizons have been included in the conformity analysis.
	(d) The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.	(d) See above. In addition, the Maryland Transportation Authority has indicated that there are no plans to increase road or bridge tolls in the future.
	(e) The conformity determination must use the latest existing information regarding the effectiveness of the transportation control measures (TCMs) and other implementation plan measures that have already been implemented.	(e) Currently, there are no adopted TCMs in the corresponding SIPs.
	(f) Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by §93.105.	(f) Key assumptions are specified and other supporting documents are included in this conformity determination document, which is available to the public and the Interagency Consultation Group.

Appendix A: Conformity Requirement Checklist

Section of 40 CFR Part 93	*Requirement*	*BRTB's Response*
§93.111	Is the conformity determination based upon the latest emissions model?	Yes. EPA's latest emissions model, Motor Vehicle Emissions Simulator (MOVES) 2014a was used for this conformity determination. EPA's announcement of the MOVES3 emissions model for SIPs and transportation conformity analyses in states other than California was effective January 7, 2021. This announcement started a two-year transportation conformity grace period that ends on January 9, 2023. After this date, MOVES3 will need to be used as the latest EPA emissions model in both regional emissions analyses and in hot-spot analysis for new transportation conformity analyses outside of California.
§93.112	Did the MPO make the conformity determination according to the consultation procedures of the Conformity Rule or the state's conformity SIP?	Consultation procedures were followed in accordance with the Transportation Conformity Rule. Appropriate agencies were consulted. A scope of work was made available to FHWA, FTA and EPA.
§93.106(a) (1)	(1) Are the transportation plan horizon years correct?	Yes. The attainment years for the 1997, 2008, and 2015 ozone NAAQS are not within the timeframe of the TIP and Plan. The first modeled horizon year is **2022**, a year within the first 5 years of the Plan. The next two horizon years, **2025 and 2035**, are set so that there are no more than 10 years between horizon years. The fourth horizon year is **2045**, the date of full implementation of the Plan.
§93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?	Yes. Round 9a socioeconomic forecasts are available in Appendix D of this document.
§93.106(a) (2)(ii)	Is the highway and transit system adequately described in terms of regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in horizon years?	Yes. The regionally significant additions and modifications to the network utilized in this conformity analysis are listed in Appendix C. It provides a listing of projects from the 2022-2025 TIP.
§93.108	Is the transportation plan fiscally constrained?	Yes. The transportation plan is fiscally constrained. See Appendix J for documentation.

Appendix A: Conformity Requirement Checklist

§93.113(b)	Are TCMs being implemented in a timely manner?	There are no transportation control measures in the SIP.
§93.118	For Areas with SIP Budgets: Is the Transportation Plan, TIP, or Project consistent with the established motor vehicle emissions budget(s) in the applicable SIP?	Yes. The TIP and the Plan result in fewer emissions than the established budgets for all pollutants in each applicable analysis year.

Appendix B: Interagency Consultation

The major steps of the Interagency Consultation Process regarding the Conformity Determination of the 2022-2025 Transportation Improvement Program and Maximize 2045 took place at the following meetings:

- February 3, 2021 – Interagency Consultation Group - Review and approval of methodology/assumptions for conformity determination
- April 7, 2021 – Interagency Consultation Group - Review and approval of conformity status of projects
- June 2, 2021 - Interagency Consultation Group – results presented with support to release for public review
- June 17, 2021 – Virtual Public Meetings on the Conformity Determination and TIP
- July 13, 2021 - Interagency Consultation Group and Technical Committee – Review of public comments and then BRTB approval recommended
- July 27, 2021 - BRTB Meeting – approval of the Conformity Determination and TIP

Appendices C-1 and C-2: Conformity Status of Projects from the 2022-2025 TIP

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Anne Arundel County	Conway Road Bridge over Little Patuxent River	11-2106-13	This project will replace the existing bridge along Conway Road over the Little Patuxent River due to its deteriorating condition. The width and inclusion of shoulders and sidewalks will be evaluated during engineering.	Y
Anne Arundel County	Furnace Avenue Bridge over Deep Run	11-1103-13	This project will reconstruct the existing bridge to correct existing deficiencies, a substandard approach road and bridge deck geometry. Five foot shoulders are planned on both sides of the road. No sidewalks will be included as part of this project. The estimated total cost has increased from the initial program estimate of $1.74 million now that preliminary improvement alternatives have been developed. FY 2022 engineering funds will complete preliminary design through NEPA and FY 2023 engineering funds will complete final design.	Y
Anne Arundel County	Hanover Road Bridge over Deep Run	11-2105-13	This project will replace the existing bridge along Hanover Road over Deep Run due to its deteriorating condition. The width and inclusion of shoulders and sidewalks will be evaluated during engineering.	Y
Anne Arundel County	Hanover Road Corridor Improvement	11-1801-42	This project is to provide design and right-of-way acquisition of a section of Hanover Road on a new alignment between Ridge Road and New Ridge Road in Hanover. Project limits increased to accommodate vertical alignment adjustments. Engineering funds were programmed in FY 2017. The estimated total cost includes estimated funding to complete design and right-of-way acquisition of this project. No schedule or funding for construction has been determined.	Y; As determined prior by ICG
Anne Arundel County	Harwood Road Bridge over Stocketts Run	11-1208-13	This project will replace the existing bridge over Stocketts Run. Three foot shoulders are planned on both sides of the road. The estimated total cost has increased from $2.532 million to $3.292 million due to a revised construction cost estimate as engineering proceeded. Engineering funds were included in the FY 2014-2017 TIP. FY 2022 engineering funds are to complete final design.	Y
Anne Arundel County	Jacobs Road Bridge over Severn Run	11-2107-13	This project will replace the existing bridge along Jacobs Road over Severn Run due to its deteriorating condition. The width and inclusion of shoulders and sidewalks will be evaluated during engineering.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Anne Arundel County	Magothy Bridge Road Bridge over Magothy River	11-1402-13	This project will replace the bridge deck and add shoulders to the bridge over the Magothy River. Five foot sidewalks and seven foot shoulders are planned on both sides of the road. The estimated total cost has decreased from $5.809 million to $5.117 million due to a revised construction cost estimate as engineering proceeded. Engineering funds were first included in a previous TIP. FY 2022 engineering funds are to complete final design.	Y
Anne Arundel County	McKendree Road Culvert over Lyons Creek	11-1601-19	This project is to remove and replace the culvert on McKendree Road over Lyons Creek to correct the structurally deficient condition of the existing multicell culvert. Three foot shoulders are planned on both sides of the road. Engineering funds were first included in FY 2017. FY 2022 funds are to complete final design.	Y
Anne Arundel County	MD 2: US 50 to Baltimore Annapolis Boulevard	11-2102-41	This project will evaluate capacity and safety improvements along MD 2 between US 50 and Baltimore Annapolis Boulevard near the Arnold Post Office. Bicycle and pedestrian facilities will be provided where appropriate. The estimated total cost is preliminary and will be refined in the future as the study progresses. Engineering funds will not take the project past the 30% design milestone.	Y
Anne Arundel County	MD 214: MD 468 to east of Loch Haven Road	11-2104-41	This project will evaluate capacity and safety improvements along MD 214 from MD 468 to east of Loch Haven Road as well as intersection improvements at Loch Haven Road. Bicycle and pedestrian facilities will be provided where appropriate. The estimated total cost is preliminary and will be refined in the future as the study progresses. Engineering funds will take the project to the 30% design milestone.	Y
Anne Arundel County	MD 3: Saint Stephens Church Road to MD 175	11-2103-41	This project will evaluate capacity and safety improvements along MD 3 between Saint Stephens Church Road and MD 175, Millersville Road. Bicycle and pedestrian facilities will be provided where appropriate. The estimated total cost is preliminary and will be refined in the future as the study progresses. Engineering funds will take the project to the 30% design milestone.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Anne Arundel County	O'Connor Road Bridge over Deep Run	11-1403-13	This project will replace the bridge over Deep Run at O'Connor Road. Three foot shoulders are planned on both sides of the road. The estimated total cost has increased from the initial program estimate of $1.379 million now that preliminary improvement alternatives have been developed. Engineering funds were first included in the FY 2014-2017 TIP. FY 2022 engineering funds are to complete final design after NEPA approval.	Y
Anne Arundel County	Parole Transportation Center	11-2101-66	This project will provide a multi-modal transportation center in Parole. The facility will serve existing local and regional bus service, but will also be designed as an intermodal hub with possible future connectivity to modes such as bikeshare, carshare, and ridehailing services. The project study recommended two possible locations: the Westfield Annapolis Mall and the Harry S. Truman Park & Ride. The project map depicts both locations.	Y
Anne Arundel County	Polling House Road Bridge over Rock Branch	11-1602-13	This project will replace the existing bridge along Polling House Road over Rock Branch to correct the deteriorated structure and obsolete deck geometry. Three foot shoulders are planned on both sides of the road. Cost increased from $1.738 million to $2.56 million as a result refined cost estimating procedures. Engineering funds through NEPA approval were included in FY 2020. FY 2022 engineering funds are to complete final design.	Y
Baltimore City	25th Street Rehabilitation from Greenmount Avenue to Kirk Avenue	12-2001-11	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. In addition to roadway rehabilitation, a mixed use trail to accommodate bicycles and pedestrians will be included in the project. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	41st Street over I-83, MTA Light Rail Tracks, and Jones Falls	12-2002-13	The 1,238-foot long bridge was originally built in 1930 and was rehabilitated in 1986, but severe deterioration is now evident throughout and the structure must be evaluated to determine whether the bridge should be rehabilitated or replaced. The estimated total cost of $50.6 million assumes a bridge replacement, which is substantially more expensive than a rehabilitation. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. The existing lighting system will also be upgraded.	Y
Baltimore City	Belair Road Complete Streets	12-1404-11	Design and construction for street, sidewalk, bike improvements and greening at key nodes on Belair Road, including Frankford Avenue, Erdman Avenue, and Fleetwood Avenue. This project is a major implementation item from the Urban Land Institute Belair Road report and BCDOT traffic study. FY 2022 engineering and FY 2023 construction funds are for Phase II, which includes the intersection of Belair Road and Erdman Avenue. Phase I, which includes the intersection of Belair Road and Frankford Avenue, was completed in February 2021. The year of operation of 2025 reflects the completion of Phase II. Phase III, which includes the intersection of Belair Road and Fleetwood Avenue is not currently funded.	Y
Baltimore City	Capital Project Delivery Services	12-1901-99	The purpose of this project is to provide the technological and project management improvements needed to support the design and construction phases of CIP projects. The TIP funding will be used for project delivery services of capital federal-aid roadway projects. This program was initiated in FY 2019.	Y
Baltimore City	Citywide Asset Management	12-2003-19	This project is for activities related to the development and implementation of a performance based management program for Baltimore City federal-aid roadways. Local funds will be used for roads that are not federal-aid eligible. These activities will include, but are not limited to data collection, condition assessment, condition index rating for prioritization rankings, road treatments, licensing software and equipment required for risk-based asset management.	Y
Baltimore City	Citywide Traffic Signals, Intelligent Transportation System and Safety Improvements	12-1218-07	Intelligent Transportation System (ITS) related work includes but is not limited to: traffic signal system integration, traffic signal timing optimization, traffic surveillance camera expansion, traffic signal replacement and upgrades, fiber optic connections, variable message signs, and traffic detector upgrades, including geometric improvement of intersections. Projects included in this TIP ID are: CCTV and signal rewiring citywide, installation of fiber optic and copper communications citywide, ITS deployment and upgrades citywide, geometric improvements at multiple signalized intersections, traffic signal reconstruction, and traffic signal timing optimization.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Citywide Transportation Studies	12-2014-99	This project is to provide funding for transportation studies on federal-aid eligible roads related to, but not limited to, crash studies, traffic circulation studies, bicycle and pedestrian studies, and safety studies.	Y
Baltimore City	East-West Bus Corridor	12-2201-64	The East-West Priority Corridor project proposes a comprehensive suite of investments that will facilitate more efficient transit trips, improve multi-modal connections, and address existing safety issues. This project applies strategies from the Transit Priority Toolkit to directly addresses existing challenges in the corridor, offering near-term investments to better connect people to jobs, education, amenities, and leisure activities while the region considers long-term options via the Regional Transit Plan. Planned strategies include dedicated bus lanes, peak only bus lanes, intersection queue jump for buses, transit signal priority, bus stop optimization and accessibility improvements, and bus bulbs. The corridor is currently served by multiple bus routes, including both the CityLink Blue and Orange. The state of Maryland is providing matching funds for this project.	Y
Baltimore City	Fremont Avenue Rehabilitation from Lafayette Avenue to Presstman Street	12-2007-11	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. The project will also include pedestrian safety improvements. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design. The estimated total cost has been revised downward from $7.5 million to $7.07 million to reflect the actual costs of preliminary design and proposed final design costs.	Y
Baltimore City	Greenway Middle Branch Phase 2	12-2102-03	The Middle Branch Phase 2 project involves the construction of a 0.8 mile trail as part of the Baltimore Greenway Loop that connects Baltimore City's major parks. The trail will serve both pedestrians and cyclists. The type of facility varies between an off-street shared-use trail and an on-street cycle track. The facility will be two-way through the project limits. Engineering was funded with a FY 2019 discretionary grant through the Surface Transportation Block Grant program set-aside for Transportation Alternatives.	Y
Baltimore City	Hanover Street Over CSX	12-2008-13	The 367-foot long bridge was originally built in 1900 and was rehabilitated in 1975, but severe deterioration is now evident throughout and the structure must be replaced. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Harford Road Bridge Over CSX	12-2106-13	The 100 foot bridge that carries Harford Road over the CSX tracks is deteriorated and requires replacement. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. Engineering funds and matching funds for construction are being provided by CSX. Engineering funds were authorized in FY 2019.	Y
Baltimore City	I-83 Concrete Deck Mill and Resurface	12-1604-13	This work will include but will not be limited to rehabilitating the deteriorating concrete decks of the bridges with new wearing surfaces that meet current standards. The limits of this project are between Exit 1 and Exit 10. Engineering funds for this project were authorized in FY 2020.	Y
Baltimore City	Madison Street Rehabilitation from North Milton Avenue to Edison Highway	12-2010-11	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. Pedestrian improvements include bump outs for shorter crossings and improved crosswalks/intersections. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design. The estimated total cost has been revised downward from $8 million to $7.624 million based on the actual costs of preliminary design and the proposed costs of final design.	Y
Baltimore City	MLK Boulevard and Howard Street Intersection Improvements	12-1706-11	Martin Luther King Jr. Boulevard and Howard Street intersection improvements will include roadway pavement rehabilitation and realignment, pedestrian ramp modifications, storm water drainage, stormwater management, signals, signing, roadway markings, street lighting and landscaping within the project limits. Engineering funds through NEPA approval were authorized in FY 2020. Engineering funds to complete final design were authorized in FY 2021.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Monroe Street Ramp over CSX and Russell Street over CSX	12-1801-13	This project will replace the bridges carrying the Monroe Street ramp and Russell Street over CSX (sufficiency ratings of 47.8 and 41.2). This replacement includes full depth concrete pavement replacement as well as water, conduit, and BGE. The Monroe Street ramp bridge carries traffic from the southbound I-95 off ramp onto southbound MD 295. The Russell Street bridge carries traffic northbound and southbound into and out of Baltimore City to MD 295. Engineering funds for this project were authorized in FY 2012 under TIP ID #12-1030-13 (citywide bridge).	Y
Baltimore City	Moravia Road Ramp Bridge over Pulaski Highway	12-1605-13	This work will include but will not be limited to rehabilitating the existing deteriorated bridge with new bridge components that meet current standards.	Y
Baltimore City	Park Heights Avenue from West Rogers Avenue to Strathmore Avenue	12-2011-11	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design.	Y
Baltimore City	Pennington Avenue Rehabilitation from Birch Street to East Ordnance Road	12-2013-11	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. ADA compliant sidewalks will be added where there are no existing sidewalks. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design. The estimated total cost has been revised downward from $10.4 million to $9.9 million to reflect actual preliminary design costs and proposed final design costs.	Y
Baltimore City	Perring Parkway Ramp and Hillen Road Bridge	12-1215-13	This project includes replacement of the Perring Parkway ramp over Herring Run over Herring Run. Engineering for this project was originally authorized in FY 2016.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Radecke Avenue and Sinclair Lane over Moores Run	12-1603-13	This project includes replacement of the deteriorated bridge on Radecke Avenue with a new structure that will meet current standards. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. Engineering for this bridge was authorized in FY 2019. The project scope has expanded to include rehabilitation of the Sinclair Lane bridge over Moores Run. The existing beams and deck will be removed and replaced. Engineering for this bridge was authorized in FY 2021. The two bridges are in close proximity to each other and will advertise for construction as one project in FY 2024. This will result in less disruption to the community and a greater cost savings to Baltimore City.	Y
Baltimore City	Remington Avenue Bridge over Stony Run	12-1602-13	This work will include but will not be limited to rehabilitating the deteriorating bridge so that it meets current standards. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. Engineering for this project was authorized in FY 2016.	Y
Baltimore City	Sisson Street Bridge over CSX Railroad	12-1216-13	The 133-foot long bridge was originally built in 1914 and was rehabilitated in 1950, but severe deterioration is now evident throughout and the structure must be replaced. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. CSX is providing 75% of the construction cost for the project. Engineering funds for this project were authorized in FY 2019.	Y
Baltimore City	Transportation Management Center Upgrade	12-1701-04	This project will upgrade the central computer system or Advance Traffic Management System (ATMS) along with field controllers and integrate the system with controllers and ITS devices to effectively and safely manage traffic. The system may include but is not limited to software, computer hardware, servers, switches and communications equipment. The current ATMS, known as an i2 System is more than 15 years old and has been discontinued by the vendor. Replacement with a new system requires a complete upgrade of hardware and software, replacement of field controllers, and installation of communications equipment for field devices. The estimated total cost has increased from $6.15 million to $11.65 million due to the addition of 150 field locations to the project.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Wilkens Avenue Bridge Over Gwynns Falls	12-1403-13	This project involves replacement of the bridge, which has deteriorated beyond repair. The existing sidewalks will be replaced with standard SHA and ADA compliant sidewalks. Engineering for this project was originally authorized in FY 2013 under TIP ID 12-1030-13.	Y
Baltimore County	Bridge Inspection Program	13-8901-14	This project includes countywide inspection of all bridges as federally mandated as well as review of countywide bridge inspection reports.	Y
Baltimore County	Dogwood Road Bridge No. B-0072 Over Dogwood Run	13-0001-13	This project is for the total replacement of the existing bridge. The new structure will carry two traffic lanes and one 3 foot shoulder and one 6 foot shoulder. The year of operation has been delayed from 2023 to 2024 due to delays in right of way acquisition. Engineering funding was included in the FY 2013 TIP.	Y
Baltimore County	Golden Ring Road Bridge No. B-0110 over Stemmers Run	13-1208-13	This project includes replacement of the bridge carrying Golden Ring Road over Stemmers Run. The proposed bridge will have minimum 2 foot shoulders. Shoulder widths and sidewalks will be evaluated during preliminary design.	Y
Baltimore County	Hammonds Ferry Road Bridge No. B-0100 over CSX Railroad	13-1012-13	This project includes replacing the deck and superstructure, and rehabilitation of the overall structure. The existing bridge has two 5-foot wide sidewalks and two 6-foot shoulders. The new structure will continue to have 5-foot sidewalks and 6-foot shoulders. Engineering funds were included in FY 2013.	Y
Baltimore County	Lansdowne Boulevard Bridge No. B-0113 over CSX Railroad	13-1105-13	This project includes replacing the deck and superstructure and rehabilitation of the substructure. The existing structure carries 4 lanes of traffic and two 5-foot sidewalks. The proposed structure will maintain the same cross section.	Y
Baltimore County	Peninsula Expressway Bridge No. B-0119 over CSX Railroad	13-1108-13	This project includes rehabilitation or replacement of the dual bridge carrying Peninsula Expressway over CSX railroad tracks. Both structures have 3 foot wide shoulders on both sides. The need for sidewalks will be evaluated during preliminary design.	Y
Baltimore County	Rolling Road Bridge No. B-0358 over Branch of Dead Run	13-1209-13	This project includes replacement of the bridge carrying Rolling Road over a branch of Dead Run. The proposed structure will have 5 foot wide sidewalks along both sides of the road and tie into the existing roadway conditions.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore County	Rossville Boulevard Bridge No. B-0132 over Amtrak & Orems Road	13-1701-13	This project includes rehabilitation of the bridge carrying Rossville Boulevard over Amtrak Railroad & Orems Road. The proposed bridge will have 5 foot wide sidewalks along both sides of the deck.	Y
Baltimore County	Sparks Road Bridge No. B-0018 over Gunpowder Falls	13-1206-13	This project includes cleaning and painting of the historic truss bridge carrying Sparks Road over Gunpowder Falls. The project includes no structural modifications.	Y
Carroll County	Babylon Road Bridge over Silver Run	14-1601-13	This project includes replacement of the existing bridge to provide efficient access for local traffic and emergency service vehicles. The planned lane configuration consists of two 10'-4" wide shared use lanes, with no designated shoulders. The total cost was increased from $1.01M to $1.896M to account for the current Engineer's Cost Estimate including escalation to the year of construction.	Y
Carroll County	Bridge Inspection Program	14-9401-14	This project includes a field inspection of 133 county owned and maintained structures and completion and submittal of inspection reports to county and state agencies for each structure.	Y
Carroll County	Brown Road Culvert over Roaring Run	14-2102-13	This project includes replacement of a 3-cell corrugated steel pipe arch. The replacement structure type, geometry, and lane use configuration will be determined during initial design.	Y
Carroll County	Gaither Road Bridge over South Branch Patapsco River	14-1602-13	This project includes rehabilitation of the existing bridge with a new superstructure (type TBD) to provide efficient access for local traffic and emergency service vehicles. The bridge geometry and lane configuration will be determined during initial design.	Y
Carroll County	Hughes Shop Road Bridge over Bear Branch	14-1802-13	This project includes replacement of the existing bridge with a new structure (type TBD). The bridge geometry and lane configuration will be determined during initial design. The overall cost has been updated from $1.697M to $2.079M to reflect funds designated by FHWA and to escalate the construction costs forward to the anticipated year of construction.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Carroll County	McKinstrys Mill Road Bridge over Sam's Creek	14-1603-13	This project includes replacement of the existing bridge with a new structure (type TBD) to provide efficient access for local traffic and emergency service vehicles. The bridge geometry and lane configuration will be determined during initial design. The overall total cost has been updated from $1.147M to $1.465M to account for funds approved by FHWA and escalating the construction cost to the anticipated year of construction.	Y
Carroll County	McKinstrys Mill Road over Little Pipe Creek	14-2103-13	This project includes replacement of a single span steel beam bridge. The replacement structure type, geometry, and lane use configuration will be determined during initial design.	Y
Carroll County	Old Kays Mill Road Culvert over Beaver Run	14-2101-13	This project includes replacement of a 3-cell riveted steel structure plate pipe arch. The replacement structure type, geometry, and lane use configuration will be determined during initial design.	Y
Carroll County	Shepherds Mill Road Bridge over Little Pipe Creek	14-1102-13	This project includes replacement of the existing 3-span bridge with a new structure, including abutments. The new structure will consist of two 11' travel lanes with 3' shoulders on each side of the road. Engineering funds were approved in FY 2011.	Y
Carroll County	Stone Chapel Road Bridge over Little Pipe Creek	14-1103-13	This project includes replacement of the existing bridge to provide efficient access for local truck traffic to MD 31. The bridge geometry and lane configuration will be determined during initial design. The total cost of this project increased from $922K to $1.44M as a result of changing from a rehabilitation to a replacement project.	Y
Harford County	Abingdon Road Bridge #169 over CSX Railroad	15-1001-13	This project includes replacement of the bridge that carries Abingdon Road over the CSX Railroad tracks. A five foot sidewalk is planned on one side of the road. Engineering funds were included in a previous TIP.	Y
Harford County	Bridge Inspection Program	15-9411-14	This federal program provides funding for the inspection of bridges in Harford County.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Harford County	Grier Nursery Road Bridge #43 over Deer Creek	15-2001-13	This project includes replacement of the entire superstructure for the Grier Nursery Road bridge over Deer Creek. The bridge will not include sidewalks but will include shoulders (width TBD during engineering). Engineering funds were authorized in FY 2020. FY 2022 engineering funds are for xx	Y
Harford County	Hess Road Bridge #81 over Yellow Branch	15-2202-13	This project includes replacement of the bridge and abutments carrying Hess Road over Yellow Branch.	Y
Harford County	Hookers Mill Road Bridge #13 over Bynum Run	15-2002-13	This project includes replacement of the entire bridge that carries Hookers Mill Road over Bynum Run. The design is anticipated to include a 30-foot clear roadway consisting of two 11-foot travel lanes and two 4-foot shoulders with a sidewalk on one side. Engineering funds were authorized in FY 2020. FY 2022 engineering funds are for xx	Y
Harford County	Moores Road Bridge #78 over a tributary to Gunpowder Falls	15-2201-13	This project includes replacement of the entire structure carrying Moores Road over a tributary to Gunpowder Falls. The project also includes realignment of the approach roadways for improved safety.	Y
Harford County	St. Clair Bridge Road Bridge #100 over Deer Creek	15-2102-13	This project includes replacement of the deck of the bridge carrying St. Clair Bridge Road over Deer Creek. The bridge will not include sidewalks but will include shoulders on each side of the roadway (width TBD during engineering). The estimated total cost includes only the cost of engineering. It will be updated once the scope of work for construction has been fully defined.	Y
Harford County	Stafford Road Bridge #162 over Buck Branch	15-2103-13	This project includes replacement of the deck of the bridge carrying Stafford Road over Buck Branch. The scope of work could develop into a superstructure replacement as the superstructure is rated in fair condition. The bridge will not include sidewalks but will include shoulders on each side of the roadway (width TBD during engineering). The estimated total cost includes only the cost of engineering. It will be updated once the scope of work for construction has been fully defined.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Harford County	Stafford Road Bridge #24 over Deer Creek	15-1501-13	This project includes replacement of the entire bridge superstructure including the bridge deck and steel beams. The current sufficiency rating is 52.3. A four foot shoulder is planned on the east side of the bridge. Engineering funds were included in FY 2018. Additional engineering funds were included in FY 2020 to account for a design change from a deck replacement to a replacement of the entire superstructure.	Y
Harford County	Trappe Church Road Bridge #161 over Hollands Branch	15-2104-13	This project includes replacement of the superstructure of the bridge carrying Trappe Church Road over Hollands Branch. The scope of work could develop into a full bridge replacement as the substructure is rated in poor condition. The bridge will not include sidewalks but will include shoulders on each side of the roadway (width TBD during engineering). The estimated total cost includes only the cost of engineering. It will be updated once the scope of work for construction has been fully defined.	Y
Howard County	Bridge Repair and Deck Replacement	16-0436-13	This project is to repair/replace bridge decks with a mix of county match and federal funding. The project also includes emergency structure reconstruction. The following bridges are included: River Road over Rockburn Branch; Henryton Road over tributary to the Patapsco River (HO-0105); Pindell School Road over Hammond Branch; Daisy Road over Little Cattail Creek; Pfefferkorn Road over Middle Patuxent River; Carroll Mill Road over Benson Branch; Sheppard Lane over Middle Patuxent River; Watersville Road over Hay Meadow Branch; Henryton Road over tributary to Patapsco River (HO-0053); Old Montgomery Road over Lake Elkhorn Branch; Tamar Drive over Little Patuxent River; Snowden River Pkwy over Robert Fulton Dr (SB & NB); Guilford Road over Middle Patuxent River; Park Circle Drive over Deep Run; Broken Land Pkwy over Little Patuxent River	Y
Maryland Port Administration	Dundalk Marine Terminal Resiliency and Flood Mitigation Improvements	30-2101-82	This project will enable MDOT MPA to provide resiliency and flood mitigation improvements at the Dundalk Marine Terminal (DMT). The project will install sea curbs to prevent the terminal from flooding during storm surges; install back flow preventers on 15 existing storm drain outfalls to prevent storm surges from flooding low level areas on the terminals; and install a new 10' by 5' concrete box culvert to increase the capacity of the existing collection system to handle extreme rainfall events. MDOT is providing a total of $26.7 million in state matching funds, with improvements continuing through FY 2026. Engineering for the project is complete.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Maryland Port Administration	Howard Street Tunnel	32-2101-83	The project will create double-stack rail access to and from the Port of Baltimore. It consists of reconstructing the 125-year-old Howard Street Tunnel in Baltimore. This work is being done in conjunction with improving the vertical clearance of 22 bridges between Baltimore and Philadelphia to create a double-stack rail corridor to and from the Port of Baltimore and along the entire East Coast. Double-stack service is expected to begin in 2024. The project is funded with a federal INFRA grant along with matching funds from the state of Maryland ($202.5 million) and CSX ($113 million).	Y
Maryland Port Administration	Seagirt Marine Terminal Modernization: Berth Improvements	32-2001-83	MDOT MPA received a BUILD discretionary grant from the US DOT to modernize Berth 3 at the Seagirt Marine Terminal. As the size of container vessels continues to increase, Baltimore is becoming berth-constrained and will soon be excluded from continued international trade growth unless it provides an additional deep-draft berth. This public-private partnership will widen the turning basin and deepen the access channel to Seagirt Berth 3 to 50-foot deep. Ports America Chesapeake is a private partner and tenant with MDOT-MPA and will fund berth-side improvements to Seagirt Berth 3. These improvements include construction of a toe-wall, crane tie-downs, new fenders, pavement repairs and concrete RTG runways. The project began in FY 2020 and is funded with a $6.6 million federal BUILD grant along with $26.3 million in state and private matching funds ($7.9 million state/$18.4 million Ports America).	Y
MTA - Commuter Rail	MARC Facilities	70-1503-55	1) MARC Martin State Airport: Purchase private property and construct two additional storage tracks 2) MARC BWI Garage Facility: Identify and prioritize needed repairs which are then designed and constructed 3) Riverside Heavy Maintenance Facility: This project will construct a facility with four new maintenance slots for locomotives undergoing heavy maintenance and repair Note: In addition to the matching funds listed, MTA has committed $5 million in state dollars.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
MTA - Commuter Rail	MARC Improvements	70-1502-54	This project provides funding to implement ongoing improvements derived from the MARC Master Plan and Amtrak/CSX Operating Agreements. Projects include: improvements to the Penn line, improvements to the Brunswick and Camden lines, uninterruptible power supply and lighting protections, the implementation of Positive Train Control (PTC), and the collaborative cost-sharing arrangement to advance development of the Northeast corridor infrastructure. In addition to the matching funds listed, MTA has committed $4.7 million in state dollars.	Y
MTA - Commuter Rail	MARC Rolling Stock Overhauls and Replacement	70-1501-53	This is an ongoing project for the overhaul and replacement of MARC rolling stock. The overhaul of MARC coaches and locomotives is performed in accordance with "10-year minor" and "20-year midlife" schedules and/or the manufacturer's schedule. MARC vehicles will be upgraded with federally-mandated Positive Train Control safety features. In addition to the matching funds listed, MTA has committed $9.3 million in state dollars.	Y
MTA - Transit	Agencywide System Preservation and Improvement	40-1801-64	This is an ongoing project to rehabilitate agency-wide facilities, systems, and infrastructure, including roofing, a system network migration and upgrade, system-wide elevators and escalators, and an upgrade to the fare collection system software. In addition to the matching funds listed, MDOT MTA has committed $238 million in state dollars. In addition to the matching funds listed, MDOT MTA has committed $100 million in state dollars.	Y
MTA - Transit	Bus and Paratransit Vehicle Overhaul and Replacement	40-1802-05	This project provides for the routine replacement of buses past their useful service life. Planned purchases include 310 forty-foot clean diesel buses and 40 sixty-foot articulated buses. MDOT MTA will also proactively repair and replace bus components at key points in the vehicles life, including the vehicle engine, battery, brakes, suspension, body, paint, and wheelchair/ADA, electrical, and pneumatic systems. Batteries in hybrid electric buses near the end of their useful life will be replaced. This project also covers the purchase of paratransit vehicles under MTA's Mobility program. Mobility is a specialized door-to-door service for people with disabilities who are not able to ride fixed route public transportation, including lift equipped buses. In addition to the matching funds listed, MTA has committed $101.4 million in state dollars.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
MTA - Transit	Bus and Rail Preventive Maintenance	40-1204-64	This project provides preventative maintenance on the Bus, Light Rail and Metro systems to improve safety, reliability and passenger comfort.	Y
MTA - Transit	Bus System Preservation and Improvement	40-1803-64	This is an ongoing project to rehabilitate bus facilities and infrastructure, including operating division and MTA offices. Projects included are the replacement of historic gable windows at Bush Division and a paint booth at Washington Boulevard. In addition to the matching funds listed, MTA has committed $9.7 million in state dollars.	Y
MTA - Transit	Kirk Bus Facility Replacement - Phase 1 & 2	40-1203-65	Approximately 163 buses are stored, operated and maintained at the Kirk Division Bus Facility. Operations include preventive bus maintenance, inspections, heavy repairs, fueling, washing, administration, operator support facilities and dispatching. Phase I is the construction of a 100,000 square foot state-of-the-art, sustainable design, energy-efficient/green technology building that will house maintenance work to be performed in an enclosed environment, thereby enabling MTA to better control noise, exhaust fumes and visibility of the buses to the surrounding community. Phase II is the construction of a similar building to store buses overnight. Phase 1 completed; Phase 2 year of completion - December 2020 (FY 2021). Note: In addition to the matching funds listed, MTA has committed $28.4 million in state dollars.	Y
MTA - Transit	MDOT MTA Transportation Alternatives Program Grants	40-2104-29	This is an ongoing program that includes funds associated with MDOT MTA sponsored projects receiving awards through the Transportation Alternatives Program (TAP). TAP is a set-aside of the Surface Transportation Block Grant Program. When transferred to MDOT MTA, these funds are flexed to FTA Section 5307. The TAP awards currently funded under this project include: *Belair Road and Garrison Boulevard Transit Priority Initiatives: These projects will complete final design for improvements along Belair Road and Garrison Boulevard. *Patapsco Pedestrian and Bicycle Connection: This project will complete final design for a bicycle and pedestrian connection between Cherry Hill and the Patapsco Light Rail station.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
MTA - Transit	Metro and Light Rail Rolling Stock Overhauls and Replacement	40-1804-63	The Metro Railcar fleet consists of 90 cars that have surpassed the 30-year design life. Replacement of the Metro fleet and signaling system will provide passengers with enhanced comfort, conveniences, and improved reliability. This project began September 2019, with completion anticipated May 2024. The Light Rail vehicle fleet requires the design of maintenance objectives to perform a 15-year inspection of the major and sub-assemblies of the original 53-vehicle fleet. The inspections will identify all obsolete parts issues needed to overhaul the major and sub-assemblies according to manufacturer recommendations and facilitate any modifications deemed necessary by engineering or OEM for 15-year maintenance. The first vehicles were placed back in service in 2015, and the last vehicle will be placed back in service in 2022. In addition to the matching funds listed, MTA has committed $394 million in state dollars.	Y
MTA - Transit	Metro and Light Rail System Preservation and Improvement	40-1805-64	This is an ongoing project to rehabilitate Light Rail and Metro facilities, infrastructure, track, and equipment, including replacing interlockings, repairing tunnel liners and doors, and the design and installation of new fiber optic cables. In addition to the matching funds listed, MTA has committed $187.2 million in state dollars.	Y
MTA - Transit	Ridesharing - Baltimore Region	40-9901-01	The ridesharing project covers the activities of the ridesharing program in all jurisdictions in the Baltimore region, including the Guaranteed Ride Home (GRH) Program. Entities eligible to receive funding include Baltimore City, the Baltimore Metropolitan Council, and Anne Arundel, Howard, and Harford counties.	Y
MTA - Transit	Rural Transit Systems - Capital Assistance	40-9501-05	This project provides capital assistance to small transit systems located throughout the Baltimore region to purchase vehicles, equipment and facilities. Baltimore region transit systems include Anne Arundel County, Baltimore County (Baltimore County Office on Aging), Carroll County (Carroll Transit), and Howard County (Howard Transit). The planned purchases are 4 small bus replacements.	Y
MTA - Transit	Rural Transit Systems - Operating Assistance	40-9204-61	This project provides operating assistance to transit systems located in the Baltimore region. Transit agencies eligible for funding include Baltimore County (Baltimore County Office of Aging) and Carroll Transit System. Costs generally associated with operating assistance can include utilities, miscellaneous equipment, fuel/oil, and driver, maintenance staff, and administrative salaries.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
MTA - Transit	Seniors and Individuals with Disabilities	40-1502-69	This project provides capital and operating assistance to non-profit agencies who provide transportation services for the elderly and individuals with disabilities. Non-profit recipients are determined through a competitive selection process and based upon the Baltimore Area Coordinated Public Transit - Human Services Transportation Plan.	Y
MTA - Transit	Small Urban Transit Systems - Capital Assistance	40-9502-05	This project includes capital assistance to small urban transit systems throughout the region to purchase vehicles, equipment, and facilities. The Baltimore region's small urban transit system includes Carroll Transit System, Anne Arundel County and Howard County. Planned purchases include 10 small bus replacements and continued preventative maintenance.	Y
MTA - Transit	Small Urban Transit Systems - Operating Assistance	40-0104-61	This project provides operating assistance to small urban transit systems throughout the Baltimore region. Transit agencies eligible for funding include Carroll Transit System. Costs generally associated with operating assistance can include utilities, miscellaneous equipment, fuel/oil, and driver, maintenance staff, and administrative salaries.	Y
MTA - Transit	Urban Transit Systems - Capital Assistance	40-1602-05	This project provides capital assistance for the purchase of vehicles, equipment, and facilities, for Harford County (Harford County Transportation Services) & the City of Annapolis. Planned purchases include 3 heavy duty bus replacements, continued preventive maintenance, and 7 small bus replacements.	Y
MTA - Transit	Urban Transit Systems - Operating Assistance	40-1603-61	This project provides operating assistance to urban transit systems throughout the Aberdeen/Bel Air North/Bel Air South urbanized area. Transit agencies eligible for funding include Harford County. Costs generally associated with operating assistance can include utilities, miscellaneous equipment, fuel/oil, and driver, maintenance staff, and administrative salaries.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Office of the Secretary	Baltimore-Washington Superconducting Maglev (SCMAGLEV) Project	90-1901-99	Baltimore-Washington Rapid Rail (BWRR), a private company based in Maryland, is proposing to construct an SCMAGLEV train system between Baltimore, Maryland and Washington, DC with an intermediate stop at BWI Marshall Airport. An Environmental Impact Statement (EIS) is being prepared to evaluate the potential impacts of the construction and operation of such a system with grant funding from the Federal Railroad Administration and matching funds from BWRR. This project is represented in both the Baltimore Regional Transportation Board (BRTB) (50%) and National Capital Region Transportation Planning Board (TPB) (50%) TIPs. The estimated total cost of $15 billion is projected funding that will be required to construct this project. No schedule or funding for further phases have been identified.	Y
Office of the Secretary	State Safety Oversight	90-1401-39	The Maryland Department of Transportation (MDOT) intends to use these Section 5329 Funds to provide administrative expenses for training, consultant services and miscellaneous equipment to oversee MTAs Light Rail and Metro systems and its operations in the Baltimore, Maryland metropolitan area.	Y
SHA	Areawide Bridge Replacement And Rehabilitation	60-9310-13	This is an ongoing program to provide major upgrades and maintenance of structures on State highways. These are non-capacity improvements which may include but are not limited to structural replacements, deck rehabilitation, superstructure replacements, parapet reconstruction, cleaning and painting, and general maintenance on various state-owned bridges.	Y
SHA	Areawide Congestion Management	60-9504-04	This is an ongoing program to provide traffic control, management, and monitoring on State highways. These improvements may include but are not limited to the employment of variable message signs, video for traffic management (CCTV), traffic management detectors, signal systemization and remote timing, permanent congestion monitoring systems employed by the CHART program, deployment of local jurisdiction intelligent transportation system (ITS) projects, and the development of park-and-ride facilities.	Y
SHA	Areawide Environmental Projects	60-9506-38	This is an ongoing program to provide environmental and aesthetic improvements on State highways. These are non-capacity improvements which include, but are not limited to, projects dealing with noise abatement, wetlands, reforestation, landscape planting, scenic beautification, and pedestrian or bicycle facilities.	Y
SHA	Areawide Resurfacing And Rehabilitation	60-9501-11	This is an ongoing program to provide periodic resurfacing and upgrading of auxiliary features on State highways. These are non-capacity improvements which may include but are not limited to milling, patching, sealing, and resurfacing of existing deteriorated state roadways. Other improvements such as ADA or guardrail may be included incidental to other resurfacing and rehabilitation improvements.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
SHA	Areawide Safety And Spot Improvements	60-9508-19	This is an ongoing program to provide localized improvements to address safety and/or operational issues on State highways. These are highway improvements which may include but are not limited to projects dealing with bypass lanes, acceleration and deceleration lanes, turn lanes, rail crossings, intersection realignment, geometric improvements, safety improvements including bridge, bicycle, and pedestrian safety improvements, pavement markers, ADA improvements, guardrails, and roundabouts. Other improvements such as slope repairs, drainage improvements, and joint sealing may be included incidental to other safety improvements.	Y
SHA	Areawide Transportation Alternatives Projects	60-9903-29	This is an ongoing program to expand travel choices and enhance the transportation experience by improving the cultural, historic, and environmental aspects of our transportation infrastructure. These projects may include but are not limited to pedestrian/bicycle facilities; rehabilitation of historic transportation facilities, including railroad facilities and canals; conversion and use of abandoned railway corridors; archeological activities related to transportation impacts; and mitigation of water pollution due to highway runoff. This program also includes Safe Routes to School projects.	Y
SHA	Areawide Urban Reconstruction	60-9511-19	This is an ongoing program to provide roadway rehabilitation and streetscape improvements on State highways in towns and urban areas. These are non-capacity highway improvements which may include but are not limited to projects dealing with drainage, curb and gutter, pavement milling and resurfacing, sidewalks, streetscapes, signs, and markings and lighting improvements.	Y
SHA	I-695 at Cromwell Bridge Road - Drainage Improvement	63-1801-38	This project includes: restoration of the stream channel and repair of SHA drainage outfalls and outfall channels, construction of stormwater management facilities to provide water quality treatment, and relocation of the Baltimore County sewer line.	Y
SHA	I-695: Bridge Replacement on Putty Hill Avenue	63-2002-13	This project replaces bridge no. 0317400 on Putty Hill Avenue over I-695. The new bridge will maintain two 12' lanes and include 6' bicycle-compatible shoulders with 5'8" sidewalks on both sides of the bridge. The engineering and right-of-way phases for this project were originally funded as part of the Areawide Bridge Replacement and Rehabilitation project (60-9310-13).	Y
SHA	I-83: Bridge Replacement over Padonia Road	63-1701-13	This project replaces bridge nos. 306201 and 306202 carrying northbound and southbound traffic along I-83 over Padonia Road.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
SHA	MD 151/MD 151B: Bridge Replacements	63-2001-13	This project replaces bridge no. 0309900 on MD 151 and bridge nos. 0335100 and 0335000 on MD 151B.	Y
SHA	MD 173: Bridge Replacement over Rock Creek	61-2101-13	The project will replace bridge no. 0204600 over Rock Creek. The new bridge will maintain two 11-foot lanes along with 5' 5" bicycle compatible shoulders. Engineering began in 2015 using state only funds. Construction is not currently funded.	Y
SHA	MD 24: South of Stirrup Run Culvert to Deer Creek Bridge, Section G	65-1601-12	MD 24 will be resurfaced and reconstructed including slope repair and guardrail replacement. This is the southern section (Section G) of MD 24, Rocks Road, from 900 feet south of Sharon Road to 1,700 feet north of Ferncliff Lane. The estimated total cost includes estimated funding to complete construction of this project. A schedule and funding for construction have yet to be determined.	Y
SHA	MD 30 Business: North Woods Trail to CSX Railroad (Hampstead Community Safety & Enhancement)	64-1401-19	This project will provide improvements on MD 30 Business (Main Street in Hampstead) from North Woods Trail to CSX Railroad including reconstruction of the existing roadway with ADA compliant sidewalks on both sides of the street; curb and gutter; crosswalks; and driveway entrances. The project will also upgrade the drainage system, stormwater management facilities, landscaping, traffic signals, and relocate utilities. Because of the low speeds and constrained urban environment, bicycles will be accommodated in the travel lanes. The project also includes curb and drainage upgrades and resurfacing of an additional .5 miles of roadway from CSX railroad to Farmwoods Lane just north of the project limits. The engineering and ROW phases were funded under the Areawide Urban Reconstruction Program.	Y
SHA	MD 45: Padonia Road to Wight Avenue	63-1707-11	This project will replace a 24-inch water main and resurface the roadway within the project limits. The project also includes: reconstructing sidewalks, ramps, curbs and driveways; constructing drainage improvements, replacing damaged inlets and cleaning existing storm drains; installing new signage; and upgrading intersection signal systems. Baltimore County is contributing $12.3 million for water utility replacement.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
SHA	MD 835C Sidewalk: Cockey Lane to Old Love Point Road	67-2101-03	This project will provide a sidewalk where none currently exists along MD 835C (Love Point Road) between Old Love Point Road and Cockey Lane in Stevensville. The sidewalk will be constructed on the east side of the roadway, following the northbound lane of MD 835C. It is anticipated to be 5 feet wide and will include ADA ramps on named side roads. Inclusion of depressed sidewalk along driveways and crosswalk markings on side roads will be determined during design. The project is funded for engineering only at this point. It is funded with a repurposed Section 1702 High Priority Project earmark. The original earmark (MD055) was $306,000 dedicated for the design and construction of the Cross Island Trail in Queen Anne's County.	Y
SHA	Morgan State University Transportation Research Program	60-0702-99	Transportation research, education and technology transfer activities involving university faculty, staff and students.	Y
SHA	US 1: Bridge Replacement over CSX	63-1704-13	This project will replace bridge no. 03008 along US 1 (Washington Boulevard) over CSX railroad track and property. An 8-foot shoulder is planned on both sides of the roadway with pedestrian accommodations on the west side. This project also includes a new sidewalk along US 1 to the Guinness Open Gate Brewery with a controlled pedestrian crossing.	Y
SHA	US 1: Bridge Replacements at Tollgate Road and Winters Run	65-2101-13	The project will replace bridge no. 12066 over Tollgate Road and bridge no. 12065 over Winters Run along US 1 in Bel Air. The bridge over Tollgate Road will maintain three 12-foot lanes with a 10' 6" shoulder on each side of the roadway. The bridge over Winters Run will maintain two 12-foot lanes with a 10' shoulder on one side of the roadway and a 19' 6" shoulder on the other side.	Y
SHA	US 40: Bridge Replacements over Little & Big Gunpowder Falls	63-1706-13	This project will replace and widen the superstructure on bridge nos. 0303403 and 0303404 along eastbound and westbound US 40 over Little Gunpowder Falls and bridge nos. 0303503 and 0303504 along eastbound and westbound US 40 over Big Gunpowder Falls. The new bridge superstructures will maintain two 12-foot lanes on each bridge, as well as 4-foot inside shoulders and 10-foot outside shoulders to match the approach roadways.	Y

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
12-2012-11	Baltimore City	Patapsco Avenue from Magnolia Avenue to Patapsco River Bridge	Roadway rehabilitation work includes concrete roadway slab replacement, concrete type I and type II repair, full depth base repair, milling, paving, ADA compliant sidewalks, pedestrian ramps, crosswalks, drainage improvements, traffic signal replacement, signage, pavement markings, curb and gutter replacement, landscaping, trees, new street lights, and street light fixture upgrades. Existing travel lanes on the south side of the road will be converted to a shared use trail. Engineering funds for preliminary design were appropriated in FY 2021. FY 2022 engineering funds are to complete final design. **Reduction:** 6 to 4 lanes, 5075 ft **Justification:** Roadways need to be repaired and maintained at this time to halt the type of physical deterioration that jeopardizes motorist safety and increases maintenance activities. The work will improve road conditions along major routes leading to and from Baltimore and its neighborhoods without increasing roadway capacity and will provide an opportunity to improve walkways and bicycle access where needed along these routes.	N	2026	2035
13-0803-13	Baltimore County	Mohrs Lane Bridge No. B-0143 over CSX Railroad	This project will construct a new bridge carrying Mohrs Lane over the CSX rail line. The proposed bridge will accommodate 3 lanes of traffic and two 8 foot shoulders. Improvements to the immediate approach roadways are also necessary in the project to tie the new bridge into the existing roadway. The previous bridge was a single lane timber structure owned and maintained by CSX. Due to its deteriorated condition, the previous bridge was closed to traffic in 2007 and removed in 2011. Engineering funds were included in FY 2013. This project has been delayed due to coordination issues with CSX and right of way acquisition. **Capacity:** re-established connection between roadways **Justification:** This replacement project will re-establish a vital link between MD 7 and US 40 and eventually become part of the overall Campbell Boulevard corridor. This corridor is needed for existing and planned development in this area of eastern Baltimore County.	N	2025	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
13-1107-13	Baltimore County	Piney Grove Road Bridge No. B-0140 over CSX railroad	This project will replace the existing 44' long, 16' wide timber bridge carrying a single lane of traffic over CSX railroad tracks. There are no sidewalks on the approaches or existing bridge, but the need for sidewalks will be evaluated during preliminary design. CSX currently owns and maintains the bridge. Prior to beginning engineering for this project, ownership will be transferred from CSX to Baltimore County. **Widening:** 1 to 2 Lanes **Justification:** Bridge No. B-0140 on Piney Grove Road is a three span, timber beam bridge in overall poor condition per National Bridge Inspection Standards (NBIS) criteria. Both the deck and the substructure are rated poor. The bridge is posted for a weight restriction and is on a yearly inspection cycle.	N	2032	2035
15-1601-13	Harford County	Glenville Road Bridge #30 over Mill Brook	This project includes replacement of the bridge that carries Glenville Road over Mill Brook. Three foot shoulders are planned on both sides of the road. Engineering funds were authorized in FY 2021. FY 2022 engineering funds are for the completion of final design. **Widening:** 1 to 2 Lanes **Justification:** The existing bridge is a single lane, steel beam, concrete deck structure. The existing concrete deck, exterior beams, and wingwalls are severely deteriorated and there is evidence of scour under the western abutment.	N	2024	2025
15-2101-13	Harford County	Madonna Road Bridge #113 over Deer Creek	This project includes replacement of the entire bridge that carries Madonna Road over Deer Creek. The bridge will not include sidewalks but will include shoulders on each side of the roadway (width TBD during engineering). Engineering funds were authorized in FY 2020. FY 2022 engineering funds are for completion of final design. **Widening:** 1 to 2 Lanes **Justification:** The beams, deck and abutments are deteriorated and need to be replaced. This project is consistent with the master planning goal of maintaining a safe and adequate transportation system to serve existing and future populations.	N	2024	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
16-1405-41	Howard County	Guilford Road: US 1 to Dorsey Run Road	This project is to study, design, and reconstruct Guilford Road to three lanes from US 1 to Old Dorsey Run Road; a distance of 5,800 linear feet. The project will incorporate sidewalks to increase transportation alternatives. Once the design is finalized, more information will be provided. This project is funded through local funds (bonds, developer contributions, excise tax, excise tax backed bonds). This project has been divided into phases. Phase I involves improvements at the intersection of US 1 and Guilford Road. Phase II will widen Guilford Road between Stayton Drive and Old Dorsey Run Road. **Widening:** 2 to 3 lanes **Justification:** The existing road is sub-standard with varying width and limited capacity. Guilford Road is classified as a major collector in the Plan Howard 2030 and three lanes are needed to accommodate the increasing volume of commercial traffic.	N	2028	2035
16-1410-41	Howard County	Snowden River Parkway: Broken Land Parkway to Oakland Mills Road	This project will design and widen Snowden River Parkway by adding a third lane in each direction and shared-use paths from Broken Land Parkway to Oakland Mills Road. The project will incorporate shared use pathways to increase transportation alternatives to activity centers and public transit. This project is funded through local funds (bonds, developer contributions, and excise tax backed bonds). **Widening:** 4 to 6 lanes, 6300 feet **Justification:** This project will develop the third lane on each side between these two intersections to increase the capacity of the roadway and improve level of service to county standards. This project was requested by the Traffic Division.	N	2025	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
16-1901-42	Howard County	US 29/Broken Land Parkway Interchange and North South Connector Road	The project will provide new direct connections from the westbound US 29/Broken Land Parkway interchange ramp to a new road (Merriweather Drive) and to Little Patuxent Parkway. The project will also provide a direct connection from Merriweather Drive to Broken Land Parkway, including configuring the north and south bound US 29 ramps at Broken Land Parkway into a signalized intersection. The project will also remove an existing ramp from Broken Land Parkway to US 29 southbound. The project will be funded locally through the recently approved tax increment financing (TIF) district. **Capacity:** 3.1 miles of new lanes on ramps and new roadways **Justification:** The new US 29/Broken Land Parkway north/south collector road connection to Little Patuxent Parkway is needed to increase vehicular and pedestrian mobility, address safety concerns, and provide adequate capacity to meet the future growth and development as outlined in Downtown Columbia. The project will address the future traffic demand along the Broken Land Parkway link from US 29 to downtown Columbia by providing an additional access and new central link to downtown Columbia for traffic from points southeast of Columbia and primarily for US 29 traffic to and from the south.	N	2023	2025
22-2201-46	Maryland Transportation Authority	I-895/Baltimore Harbor Tunnel Toll Plaza and Interchange Improvements Project	The I-895/Baltimore Harbor Tunnel Toll Plaza and Interchange Improvements Project includes the removal of the toll booths and installation of an overhead gantry at the I-895/Baltimore Harbor Tunnel Toll Plaza. The project will provide two lanes of barrier-separated mainline through-traffic in each direction along I-895 between the K-Truss bridge and Baltimore Harbor Tunnel, and a two-lane barrier-separated collector-distributor road would be installed in each direction adjacent to the mainline traffic lane between the I-895 interchanges with Frankfurst Avenue and Childs Street. The proposed mainline I-895 modifications include replacing and raising the I-895 bridge over Frankfurst Avenue, replacing the I-895 bridge over Childs Street, and removing the I-895 bridge over the toll facility campus storage area. **Interchange Capacity:** ramp reconfigurations and collector-distributor road additions **Justification:** This project will improve travel speeds by eliminating vehicle queues and maintaining a consistent number of travel lanes on I-895 between the K-Truss bridge and the tunnel. It will also improve safety by reducing crash risk and MDTA employee exposure to traffic flows. The risk of bridge strikes and associated repairs will be reduced as well. Finally, fuel consumption and vehicle emissions will be reduced by providing more constant travel speeds.	N	2027	2035

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
22-1901-45	Maryland Transportation Authority	I-95 Fort McHenry Tunnel: Port Covington Access	MDTA and Baltimore City have developed a suite of improvements to I-95 ramps and other nearby transportation facilities to support ongoing and planned redevelopment of the Port Covington peninsula in South Baltimore and to address traffic needs in the Port Covington area. The study limits for these improvements are Caton Avenue to the Fort McHenry Tunnel, involving approximately seven miles of I-95 and sections of Hanover Street, McComas Street and Key Highway. The total project cost is estimated to be $495 million, with completion anticipated in 2029. The first phase of this project was MDTA's funding and oversight of the projects planning, with a NEPA study that is anticipated to be complete in 2021. Future planning efforts will be funded by a private developer. MDTA construction funding is anticipated in FY 2024 and would be MDTA's match for a potential future INFRA Grant. **Interchange Capacity:** ramp reconfigurations and auxiliary lane additions **Justification:** The improvements will support local and regional economic development in Baltimore and the region. They will improve connectivity to existing land uses along the I-95 corridor and major local roads, including Hanover Street, McComas Street, and Key Highway. The improvements will also increase access to planned development that is envisioned for the Port Covington peninsula, and as described in the Port Covington Master Plan, thereby increasing connectivity to planned residential development, businesses, waterways, parks, and new transit facilities on improved street grids.	N	2029	2035
25-1801-41	Maryland Transportation Authority	I-95 Express Toll Lanes Northbound Extension	The I-95 Express Toll Lanes (ETL) Northbound Extension project is the first phase of implementation of I-95 Section 200. The project is funded by MDTA toll revenues and includes the provision of two additional ETLs on I-95 from north of MD 43 to north of MD 24, a distance of more than 11 miles. Tolls are expected to be collected automatically at highway speeds using E-ZPass or Video Tolling. The project also includes: reconstruction of the I-95 interchanges at MD 152 and MD 24 along with a 1.7 mile auxiliary lane between the interchanges; widening MD 24 from two to three lanes from MD 924 to north of Singer Road; reconstruction of the overpasses at Raphel, Bradshaw, Old Joppa, Clayton, and Abingdon roads; construction of five noise walls; widening the I-95 northbound bridges over the Big and Little Gunpowder Falls and Winters Run; environmental mitigation; and additional safety improvements. **Widening:** 11.25 miles, 6 to 8 lanes **Justification:** The ETLs project will bring much needed traffic relief to one of the most congested portions of I-95 in Baltimore and Harford counties. Traffic operations on northbound I-95 beyond the current MD 43 Express Toll Lanes terminus experience routine congestion during peak hours. The improvements will address capacity concerns, improve safety, and allow for better incident management and maintenance activities. An Intelligent Transportation System (ITS) will allow MDTA to better operate the ETLs and general purpose lanes while addressing transportation safety along I-95. The construction of additional noise	N	2026	2035

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
25-2101-41	Maryland Transportation Authority	I-95 Southbound Part-Time Shoulder Usage	This project will provide for the part-time use of the left shoulder along I-95 southbound between the Maryland House Travel Plaza and MD 24. It requires restriping I-95 southbound lanes and pavement improvements to the left shoulder lane for approximately 5.4 miles in Harford County. The project will also include the installation of intelligent transportation systems (ITS) devices to deploy a new ITS system, including lane-use control gantries, closed-circuit television cameras, traffic detectors, and dynamic message signs. It will allow for the left shoulder to be dynamically opened and closed based on traffic conditions. The project is funded by MDTA toll revenues. **Capacity:** 5.4 miles, 3 to 4 lanes (3 + Left Shoulder) **Justification:** This project will address existing and recurring congestion and safety issues during summer weekends by providing additional capacity on a part-time, as needed basis along I-95 southbound between the Maryland House Travel Plaza and MD 24. It will improve safety by providing additional capacity to reduce congestion-related crashes, as well as reducing potential conflicts at the entrance ramp from Maryland House. This project is an interim phase of implementation of I-95 Section 200 and is the first phase of the I-95 Express Toll Lanes (ETL) Southbound Extension project. The phasing of the project will allow for maximum benefits to be provided in the interim, while minimizing impacts from future construction of the I-95 Express Toll Lanes (ETL) Southbound Extension project.	N	2025	2025
61-1701-41	SHA	MD 175: Sellner Road/Race Road to McCarron Court	This project will widen MD 175 from Sellner Road/Race Road to McCarron Court from two lanes to six lanes, including through the MD 295 interchange. It also reconfigures ramps in the northeast and southwest quadrants of the MD 295 interchange to create signalized left turns at MD 175. Bicycle and pedestrian facilities will be provided. This project is scheduled to re-advertise in fall 2021 after significant BGE utility realignment delays resulted in the termination of the original contract. In addition, the original project limits included the MD 175 segment from National Business Parkway to Sellner Road/Race Road. This segment was eliminated from the project to accommodate ongoing development in this area. The current project title (previously MD 175: National Business Parkway to McCarron Court) reflects this change. **Widening:** 2 to 6 lanes, 0.7 miles **Justification:** This project will improve safety and operation along MD 175 and ease growing congestion related to the BRAC expansion at Fort Meade.	N	2024	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
63-1802-41	SHA	I-695: I-70 to MD 43	The purpose of this project is to utilize the inside shoulder to create a new travel lane on the inner and outer loops of I-695 during daily peak travel periods from I-70 to MD 43. In previous TIPs, this project also included the reconfiguration of the I-695 and I-70 interchange. The interchange is now a stand alone project with TIP ID #63-2201-12. This project primarily uses federal funding due to toll credits. **Capacity:** 6 to 8 lanes, 19 miles (6 + 2 shoulders) **Justification:** This project will address capacity, safety, and operations concerns along I-695.	N	2024	2025
63-2201-12	SHA	I-695: Reconstruction of Interchange at I-70	This project involves reconstruction of the interchange at I-695 and I-70. The ultimate interchange configuration will be determined through the design build process. This project was previously funded as part of the I-695: I-70 to MD 43 project with TIP ID #63-1802-41. **Interchange Capacity:** ramp reconfigurations **Justification:** This project will address the mobility and state of good repair needs of the I-695/I-70 interchange.	N	2027	2035
63-1601-41	SHA	I-695: US 40 to MD 144	This project will widen the I-695 outer loop from US 40 to MD 144 from three to four through lanes. This project will also accommodate the final configuration of this section of the beltway. The noise barrier on the inner loop will be replaced and extended from Shady Nook to US 40 as part of this project. The project is anticipated to be open to traffic in fall 2021. The noise barrier is funded for construction beyond the open to traffic date. **Widening:** 3 to 4 lanes, 1.2 miles **Justification:** This project will provide additional capacity and improve safety and operations on this segment of I-695.	N	2021	2022

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
66-1703-41	SHA	MD 32: Linden Church Road to I-70, Capacity & Safety Improvements	This project will widen MD 32 in both directions from a two lane to a four-lane divided roadway, from just north of the Linden Church Road interchange to just south of the I-70 interchange. The project also includes replacement of the Triadelphia Road bridge over MD 32. This is a design build project and phase 2 of the MD 32: MD 108 to I-70 corridor project improvements, which had TIP ID #66-1405-41 in previous TIPs. This is the final phase and contains the funding for the original corridor project planning. Phase 1, MD 108 to Linden Church Road (TIP ID #66-1602-41) was open to traffic in 2019. Road improvements are anticipated to be completed in 2022. The remaining funds in FY 2023 will complete utility relocation. **Widening:** 2 to 4 Lanes, 6.6 Miles **Justification:** The project will address congestion and safety problems experienced as a result of increasing traffic volumes on the existing two lane roadway.	N	2022	2022

Appendix D: Round 9A Cooperative Forecasts

Local Jurisdiction Submissions: Round 9A
Cooperative Forecasts – Population, Household and Employment Controls

Table 1: Round 9A Population

JURISDICTION	2015	2020	2025	2030	2035	2040	2045
Anne Arundel County	564,420	578,883	594,998	608,993	620,354	632,195	645,195
Baltimore City	615,813	617,018	626,989	627,904	636,723	648,033	647,127
Baltimore County	830,918	852,310	860,556	868,589	880,917	895,127	905,979
Carroll County	167,550	169,200	171,700	175,150	178,500	181,800	185,150
Harford County	250,025	257,680	264,870	271,865	280,570	289,220	294,250
Howard County	313,359	329,986	346,147	358,856	366,641	370,823	371,222
Queen Anne's County	48,477	51,813	55,434	58,319	61,021	63,533	66,148
Baltimore Region	2,790,561	2,856,890	2,920,693	2,969,675	3,024,726	3,080,732	3,115,070

Round 9A Population Changes

JURISDICTION	**2015-2025**	**2025-2035**	**2035-2045**	**2015-2045**	**2015-2025**	**2025-2035**	**2035-2045**	**2015-2045**
Anne Arundel County	30,578	25,356	24,841	80,775	5.4%	4.3%	4.0%	14.3%
Baltimore City	11,176	9,733	10,405	31,314	1.8%	1.6%	1.6%	5.1%
Baltimore County	29,638	20,361	25,061	75,061	3.6%	2.4%	2.8%	9.0%
Carroll County	4,150	6,800	6,650	17,600	2.5%	4.0%	3.7%	10.5%
Harford County	14,844	15,700	13,680	44,224	5.9%	5.9%	4.9%	17.7%
Howard County	32,788	20,494	4,581	57,863	10.5%	5.9%	1.2%	18.5%
Queen Anne's County	6,957	5,588	5,127	17,671	14.4%	10.1%	8.4%	36.5%
Baltimore Region	130,131	104,033	90,345	324,509	4.7%	3.6%	3.0%	11.6%

Note: Throughout, Anne Arundel County data includes the City of Annapolis

Table 2: Round 9A Households

JURISDICTION	2015	2020	2025	2030	2035	2040	2045
Anne Arundel County	209,104	215,369	224,654	232,360	238,833	244,964	247,110
Baltimore City	250,238	254,557	259,667	262,988	269,119	271,327	273,363
Baltimore County	322,738	328,174	332,906	336,349	341,413	346,943	351,163
Carroll County	61,045	62,667	64,394	66,522	67,975	69,118	70,332
Harford County	93,362	97,241	101,021	104,801	108,590	112,380	114,752
Howard County	111,753	118,936	126,992	133,388	138,062	139,802	139,932
Queen Anne's County	18,645	20,355	22,068	23,413	24,705	25,735	26,807
Baltimore Region	1,066,885	1,097,299	1,131,703	1,159,822	1,188,698	1,210,269	1,223,459

Round 9A Household Changes

JURISDICTION	2015-2025	2025-2035	2035-2045	2015-2045	2015-2025	2025-2035	2035-2045	2015-2045
Anne Arundel County	15,550	14,179	8,277	38,006	7.4%	6.3%	3.5%	18.2%
Baltimore City	9,429	9,452	4,244	23,124	3.8%	3.6%	1.6%	9.2%
Baltimore County	10,168	8,507	9,750	28,425	3.2%	2.6%	2.9%	8.8%
Carroll County	3,350	3,581	2,357	9,288	5.5%	5.6%	3.5%	15.2%
Harford County	7,658	7,570	6,161	21,389	8.2%	7.5%	5.7%	22.9%
Howard County	15,239	11,070	1,870	28,179	13.6%	8.7%	1.4%	25.2%
Queen Anne's County	3,423	2,637	2,102	8,162	18.4%	11.9%	8.5%	43.8%
Baltimore Region	64,818	56,995	34,762	156,574	6.1%	5.0%	2.9%	14.7%

Table 3: Round 9A Total Employment

Jurisdiction	2015	2020	2025	2030	2035	2040	2045
Anne Arundel County	369,580	382,795	397,236	413,039	431,305	451,373	474,511
Baltimore City	401,082	418,102	436,252	454,948	466,906	485,731	505,068
Baltimore County	462,770	479,680	500,515	515,752	528,684	540,935	550,843
Carroll County	74,313	77,411	79,760	82,268	84,419	86,815	89,281
Harford County	115,560	125,454	136,745	147,685	158,761	170,668	183,468
Howard County	204,050	219,050	234,050	249,050	259,050	269,050	279,050
Queen Anne's County	20,748	22,454	24,251	24,790	25,778	26,406	27,050
Baltimore Region	1,648,103	1,724,946	1,808,811	1,887,531	1,954,902	2,030,979	2,109,271

Round 9A Total Employment Changes

	Change				Percent Change			
Jurisdiction	2015-2025	2025-2035	2035-2045	2015-2045	2015-2025	2025-2035	2035-2045	2015-2045
Anne Arundel County	27,657	34,069	43,206	104,931	7.5%	8.6%	10.0%	28.4%
Baltimore City	35,170	30,654	38,162	103,986	8.8%	7.0%	8.2%	25.9%
Baltimore County	37,745	28,168	22,159	88,073	8.2%	5.6%	4.2%	19.0%
Carroll County	5,447	4,658	4,862	14,968	7.3%	5.8%	5.8%	20.1%
Harford County	21,185	22,015	24,707	67,908	18.3%	16.1%	15.6%	58.8%
Howard County	30,000	25,000	20,000	75,000	14.7%	10.7%	7.7%	36.8%
Queen Anne's County	3,503	1,527	1,273	6,303	16.9%	6.3%	4.9%	30.4%
Baltimore Region	160,708	146,092	154,369	461,168	9.8%	8.1%	7.9%	28.0%

Appendix E: *Excerpt- Baltimore Metropolitan Council InSITE Activity Based Travel Model: Model Validation Report*

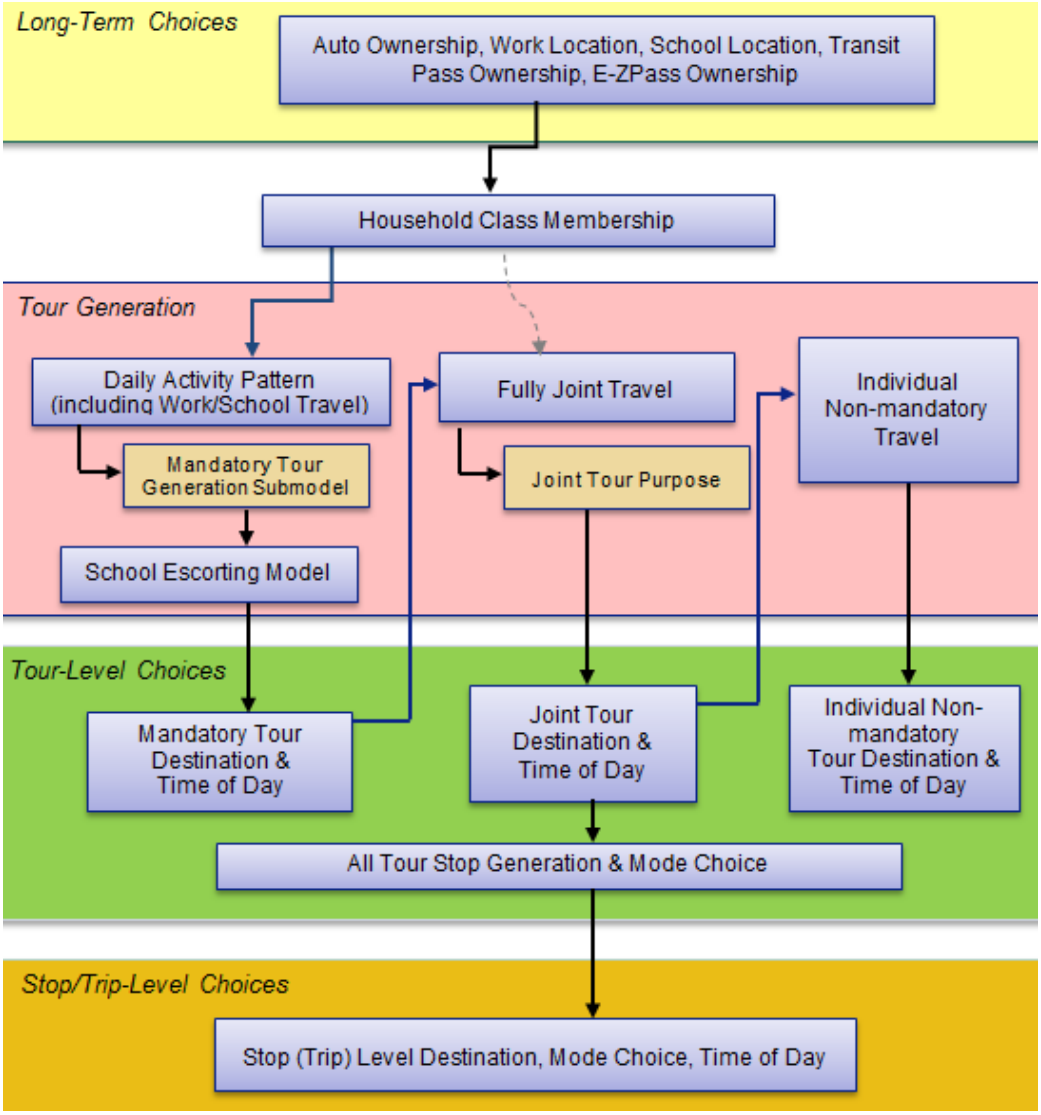
1.0 Summary of Validation and Sensitivity Testing Process

This report summarizes the validation of the activity based model developed for the Baltimore region. This model was developed for the Baltimore Metropolitan Council (BMC) by a team led by Cambridge Systematics, Inc. (CS) and including Gallop Corporation, AECOM, and Sabra-Wang Associates. The model estimation results are documented by Cambridge Systematics, Inc. (2016), and user documentation is provided in a separate document.

The model is applied disaggregately using a synthetic population, generated by the PopGen synthetic population generator (Konduri and Pendyala, 2015), representing the population of the model region, which includes the entire BMC region, plus the District of Columbia and the Maryland portion of the region covered by the Metropolitan Washington Council of Governments (MWCOG). The portion of Maryland in the model region consists of Baltimore City and Anne Arundel, Baltimore, Carroll, Harford, Howard, Frederick, Montgomery, and Prince George's Counties.

The model structure is shown in Figure 1.1. The activity and travel choices made by each household and person in the synthetic population are realized through Monte Carlo simulation, with the choice probabilities determined by the individual model components.

Figure 1.1 Activity Based Model Design



A model validation plan (Cambridge Systematics, Inc., 2014) was developed prior to model development. This plan laid out the process that was followed for the model validation and specified the tests that were performed. A few tests changed slightly or were more specifically defined for the final model validation, but in general the plan was followed. The tests in the plan included verification of the input highway and transit skim data and the synthetic population data, checks of the results of all model components compared to the 2007-2008 regional household survey data set, checks of the highway and transit assignment, and tests of the sensitivity of the model to changes in input data. The remainder of this report focuses on the checks of the activity and travel data from the model components, the assignment results, and the tests of the model sensitivity.

1.1 MODEL COMPONENT VALIDATION

Note that some of the smaller boxes in Figure 1.1 include multiple model components. The components that were validated include the following:

- Vehicle availability
- Regular workplace location
- School location
- Daily activity pattern (segmented by person type)
- School escorting
- Fully joint travel (number and purpose of tours)
- Individual non-mandatory tour generation
- Work based subtour generation
- Tour destination choice (segmented by aggregated tour purpose)
- Tour time of day choice (segmented by aggregated tour purpose)
- Tour stop generation (segmented by aggregated tour purpose)
- Tour mode choice (segmented by aggregated tour purpose)
- Stop destination choice
- Stop time of day choice
- Trip mode choice (segmented by aggregated tour purpose)

The tests consisted of comparisons of model results for various market segments to the expanded household survey data. These tests are summarized in Chapter 2.0.

1.2 HIGHWAY AND TRANSIT ASSIGNMENT

Since the highway and transit assignment processes are essentially the same static, aggregate process used in BMC's previous (trip based) model, the checks are similar to those performed for the validation of the previous model. They consist mainly of comparisons of model results to observed data, i.e., traffic and transit ridership counts. Highway assignment checks include:

- Volume/vehicle-miles traveled (VMT) by facility type
- Volume/VMT by area type
- Volume/VMT by county
- Volume/VMT by volume level
- Volume/VMT by time of day
- Volume/count ratio on key routes

- Sum of volumes on screenlines/cutlines

Transit assignment checks include:

- Boardings by service category (Metrobus local, Metrobus park-and-ride, MetroRail)
- Boardings by service category and geographic orientation, defined as follows:
  - Local-Radial
  - Local-Crosstown
  - Local-Circulator
  - Local-Limited
  - Local-Shuttle
  - Park-and-Ride-CBD
  - Park-and-Ride-Secondary
  - MetroRail
- Boardings per linked trip (transfer rate)
- Boardings by route
- Boardings by MetroRail station

The highway and transit assignment testing is summarized in Chapter 3.0.

1.3 SENSITIVITY TESTING

One goal of activity-based models is an increased sensitivity to model inputs. Sensitivity testing involves adjusting key factors in the model and observing the effects on forecasted travel. These adjustments can be made to model parameter values (e.g., the mode choice cost coefficient) and to model inputs (e.g., land use variables, socioeconomic conditions, fuel costs, etc.).

The following sensitivity tests were performed:

- Aging population showing more retirees
- Brownfield development
- Time of day switching due to congestion

The sensitivity tests are summarized in Chapter 4.0.

Appendix F: HPMS Adjustment Factors

HPMS Adjustment Factors by Jurisdiction

		Interstate	*Freeway*	*Principal Arterial*	*Minor Arterial*	*Collector*
Urban	Baltimore City	1.2956	1.3173	0.8937	1.0302	3.3721
	Anne Arundel	0.9668	1.2797	1.3228	1.3807	1.6799
	Baltimore	1.0713	1.5556	1.1171	1.6468	1.8958
	Carroll	0.8905	0.8905	1.3528	0.8011	0.8241
	Harford	1.0911	1.6879	1.5403	1.3714	1.5941
	Howard	0.9888	1.3445	1.2916	1.5986	1.3614
Rural	Baltimore City	1.2956		0.8937	1.0302	3.3721
	Anne Arundel	0.8711		1.1586	1.2110	1.2649
	Baltimore	0.8672		1.4350	1.0194	1.3488
	Carroll	0.8905		0.7593	1.1747	1.2209
	Harford	1.0498		1.0411	1.1464	1.3288
	Howard	0.7900		2.3278	0.8259	1.2185

Local to Non-local Ratios by Jurisdiction

Jurisdiction	*Urban*	*Rural*
Baltimore City	0.0774	0.0774
Anne Arundel	0.0768	0.1409
Baltimore	0.0774	0.1402
Carroll	0.0775	0.1265
Harford	0.0777	0.1364
Howard	0.0765	0.1394

Appendix G: Resolutions

The following resolutions will be added to the final report:

BRTB Resolution #21-1 Approving the Round 9A Cooperative Forecast

BRTB Resolution #21-18 Approval of Technical Process for Baltimore Regional Travel Model Update

BRTB Resolution #22-1 Approving the 2022-2025 TIP and Conformity Determination

BALTIMORE METROPOLITAN PLANNING ORGANIZATION
BALTIMORE REGIONAL TRANSPORTATION BOARD

RESOLUTION #21-01

ENDORSEMENT OF ROUND 9A COOPERATIVE FORECASTING PROCESS THROUGH 2045 FOR USE IN LOCAL AND REGIONAL TRANSPORTATION AND AIR QUALITY PLANNING

WHEREAS, the Baltimore Regional Transportation Board is the designated Metropolitan Planning Organization for the Baltimore region, encompassing the Baltimore Urbanized Area, and includes official representatives of the cities of Annapolis and Baltimore, the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, the Maryland Transit Administration, and Harford Transit; and

WHEREAS, the Metropolitan Planning Organization has the responsibility for developing future estimates of travel demand in the Baltimore region and approving conformity analysis of the Baltimore Regional Transportation Plan and the Transportation Improvement Program for the Baltimore region; and

WHEREAS, in connection with these responsibilities, the Baltimore Regional Transportation Board established the Cooperative Forecasting Group to develop a consensus among State, local and regional planners regarding the current estimates and long-range projections for growth and development in the Baltimore region; and

WHEREAS, the previously endorsed Round 9 forecasts have been updated to reflect the most current socioeconomic development in the Baltimore region. These forecasts which consist of data for population, households and employment for small geographic areas, called transportation analysis zones (TAZ), capture the development projected in earlier forecasts and any new development; and

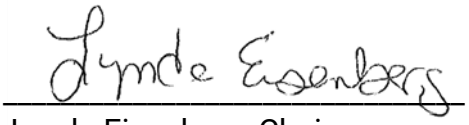
WHEREAS, the Cooperative Forecasting Group has recommended to the Baltimore Regional Transportation Board a set of forecasts termed Round 9A, for use in transportation and air quality planning activities; and

WHEREAS, the purpose of socioeconomic forecasting analysis is to provide inputs to decision makers to assist with determining the overall travel demand and air quality effects of growth, at the regional level, on future year highway and transit networks; and

NOW, THEREFORE, BE IT RESOLVED that the Baltimore Regional Transportation Board endorses the Round 9A cooperative forecasting process for use in transportation and air quality planning in the Baltimore region as provided in Attachment 1.

I HEREBY CERTIFY that the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approved the aforementioned resolution at its July 28, 2020 meeting.

7-28-20
_____
Date



Lynda Eisenberg, Chairman
Baltimore Regional Transportation Board

Attachment 1

Local Jurisdiction Submissions: Round 9A
Cooperative Forecasts – Population, Household and Employment Controls

Table 1: Round 9A Population

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Note: Throughout, Anne Arundel County data includes the City of Annapolis

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Round 9A Household Changes

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Anne Arundel County	15,550	14,179	8,277	38,006	7.4%	6.3%	3.5%	18.2%
Baltimore City	9,429	9,452	4,244	23,124	3.8%	3.6%	1.6%	9.2%
Baltimore County	10,168	8,507	9,750	28,425	3.2%	2.6%	2.9%	8.8%
Carroll County	3,350	3,581	2,357	9,288	5.5%	5.6%	3.5%	15.2%
Harford County	7,658	7,570	6,161	21,389	8.2%	7.5%	5.7%	22.9%
Howard County	15,239	11,070	1,870	28,179	13.6%	8.7%	1.4%	25.2%
Queen Anne's County	3,423	2,637	2,102	8,162	18.4%	11.9%	8.5%	43.8%
Baltimore Region	64,818	56,995	34,762	156,574	6.1%	5.0%	2.9%	14.7%

Table 3: Round 9A Total Employment

Jurisdiction	2015	2020	2025	2030	2035	2040	2045
Anne Arundel County	369,580	382,795	397,236	413,039	431,305	451,373	474,511
Baltimore City	401,082	418,102	436,252	454,948	466,906	485,731	505,068
Baltimore County	462,770	479,680	500,515	515,752	528,684	540,935	550,843
Carroll County	74,313	77,411	79,760	82,268	84,419	86,815	89,281
Harford County	115,560	125,454	136,745	147,685	158,761	170,668	183,468
Howard County	204,050	219,050	234,050	249,050	259,050	269,050	279,050
Queen Anne's County	20,748	22,454	24,251	24,790	25,778	26,406	27,050
Baltimore Region	1,648,103	1,724,946	1,808,811	1,887,531	1,954,902	2,030,979	2,109,271

Round 9A Total Employment Changes

	Change				Percent Change			
Jurisdiction	2015-2025	2025-2035	2035-2045	2015-2045	2015-2025	2025-2035	2035-2045	2015-2045
Anne Arundel County	27,657	34,069	43,206	104,931	7.5%	8.6%	10.0%	28.4%
Baltimore City	35,170	30,654	38,162	103,986	8.8%	7.0%	8.2%	25.9%
Baltimore County	37,745	28,168	22,159	88,073	8.2%	5.6%	4.2%	19.0%
Carroll County	5,447	4,658	4,862	14,968	7.3%	5.8%	5.8%	20.1%
Harford County	21,185	22,015	24,707	67,908	18.3%	16.1%	15.6%	58.8%
Howard County	30,000	25,000	20,000	75,000	14.7%	10.7%	7.7%	36.8%
Queen Anne's County	3,503	1,527	1,273	6,303	16.9%	6.3%	4.9%	30.4%
Baltimore Region	160,708	146,092	154,369	461,168	9.8%	8.1%	7.9%	28.0%

BALTIMORE METROPOLITAN PLANNING ORGANIZATION

BALTIMORE REGIONAL TRANSPORTATION BOARD
RESOLUTION #21-18

APPROVAL OF TECHNICAL PROCESS FOR
BALTIMORE REGIONAL TRAVEL MODEL UPDATE

WHEREAS, the Baltimore Regional Transportation Board is the designated Metropolitan Planning Organization for the Baltimore region, encompassing the Baltimore Urbanized Area, and includes official representatives of the cities of Annapolis and Baltimore, the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, the Maryland Transit Administration, and Annapolis Transit; and

WHEREAS, the Transportation Planning Division of the Baltimore Metropolitan Council, which serves as staff to the Metropolitan Planning Organization, has revised its computerized modeling process for simulating person and freight/commercial vehicle travel behavior and submitted its Initiative to Simulate Individual Travel Events (InSITE) to the Technical Committee of the Metropolitan Planning Organization; and

WHEREAS, the Technical Committee has reviewed the technical process (attached) of the Baltimore Region Travel Demand Model for the 2012 validation year as developed through the FY 2021 Unified Planning Work Program; and

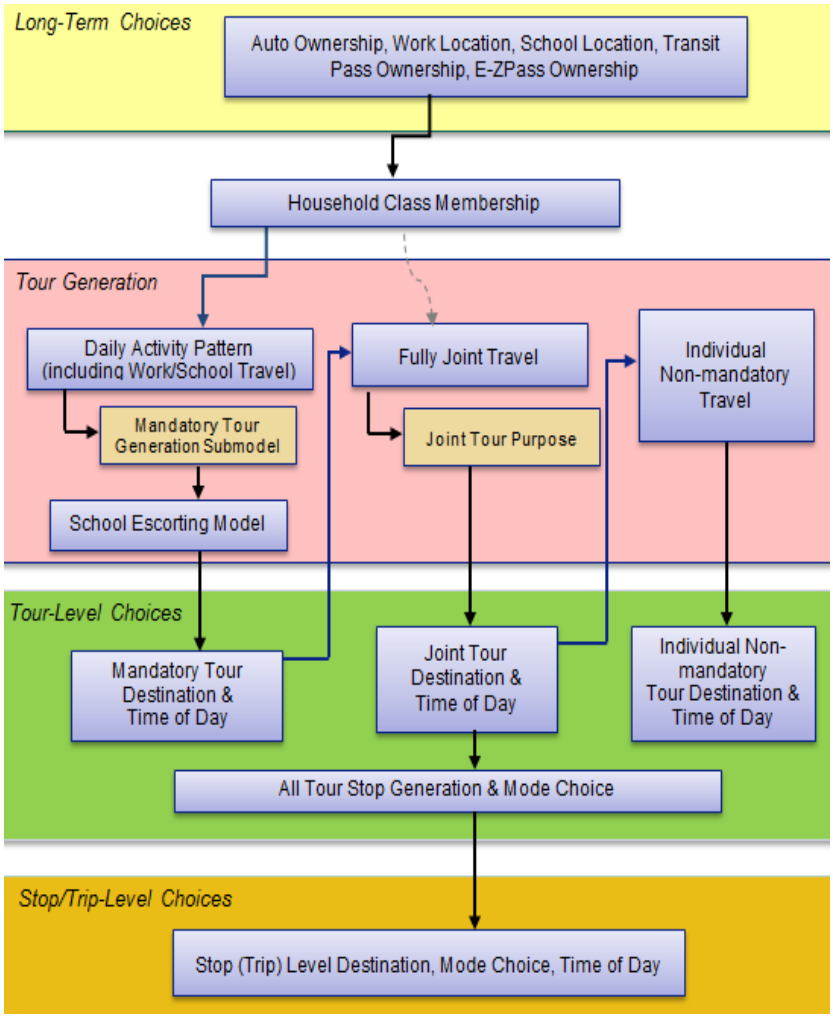
NOW, THEREFORE, BE IT RESOLVED, that the Baltimore Regional Transportation Board approves the Initiative to Simulate Individual Travel Events (InSITE) technical process for the 2012 validation year and recommends its use in analyzing and evaluating transportation demand in a multitude of UPWP tasks, including but not limited to: conformity determinations, Transportation Improvement Programs, as well as the Long-Range Transportation Plans.

I HEREBY CERTIFY that the Baltimore Regional Transportation Board as the Metropolitan Planning Organization for the Baltimore region approved the aforementioned resolution at its February 23, 2021 meeting.

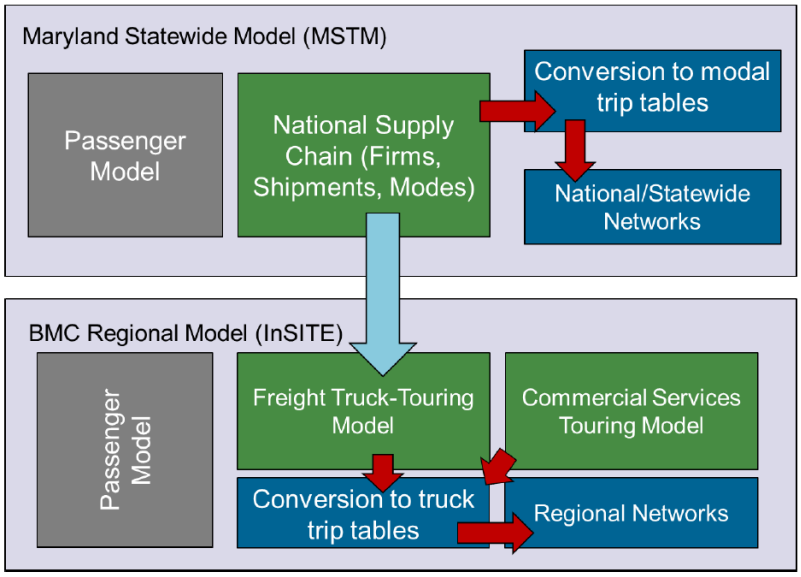
2-23-21
_____
Date

Lynda Eisenberg
_____
Lynda Eisenberg, Chair
Baltimore Regional Transportation Board

InSITE: Activity Based Model Components



InSITE: Freight Modeling System



BALTIMORE METROPOLITAN PLANNING ORGANIZATION

BALTIMORE REGIONAL TRANSPORTATION BOARD
RESOLUTION #22-1

APPROVAL OF THE BALTIMORE REGION 2022-2025 TRANSPORTATION IMPROVEMENT PROGRAM AND THE ASSOCIATED CONFORMITY DETERMINATION OF THE 2022-2025 TIP AND MAXIMIZE2045

WHEREAS, the Baltimore Regional Transportation Board is the designated Metropolitan Planning Organization for the Baltimore region, encompassing the Baltimore Urbanized Area, and includes official representatives of the cities of Annapolis and Baltimore, the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's, as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, the Maryland Transit Administration, and Annapolis Transit; and

WHEREAS, the FY 2022-2025 Baltimore Region Transportation Improvement Program was prepared in response to Fixing America's Surface Transportation (FAST) Act, and meets all of the requirements of the May 2016 final rule governing the development of metropolitan plans and programs, and all projects and activities funded in the FY 2022-2025 TIP have been developed in relationship to the regionally adopted *Maximize2045: A Performance-Based Transportation Plan*; and

WHEREAS, the FY 2022-2025 Baltimore Region Transportation Improvement Program is a prioritized program of transportation projects which are financially constrained by year and includes a financial plan that demonstrates that projects can be implemented using available revenue sources; and

WHEREAS, the conformity analysis as reported in the "Conformity Determination of the FY 2022-2025 Transportation Improvement Program and *Maximize2045*," dated July 2021, provides the basis for a finding of conformity to the 8-hour ozone national ambient air quality standard (NAAQS) SIP for the Baltimore region, which includes meeting the 2012 Reasonable Further Progress motor vehicle emissions budgets, as determined adequate by U.S. EPA. This addresses three ozone NAAQS: 1997, 2008, and 2015. (Attachment 1: Tables 1 through 2); and

WHEREAS, a range of outreach strategies were employed to share information about the FY 2022-2025 Baltimore Region Transportation Improvement Program including a public review from June 8 to July 9, 2021. The public review included presentations to BRTB subcommittees and one virtual public meeting. The draft FY 2022-2025 TIP document was also supported by an online Storymap, dashboard, and interactive map. Some 30 comments were submitted and considered by the BRTB; and

WHEREAS, the FY 2022-2025 Baltimore Region Transportation Improvement Program uses federal and matching funds for the following project categories: 32.9 percent highway preservation, 23.7 percent highway capacity, 18.0 percent transit preservation, 11.3 percent ports, 7.1 percent emission reduction strategies, 3.7 percent commuter rail preservation, 2.3 percent environmental and/or safety, 0.8 percent enhancement program, 0.1 percent miscellaneous, 0.05 percent transit capacity, and 0.0 percent commuter rail capacity.

NOW, THEREFORE, BE IT RESOLVED that the Baltimore Regional Transportation Board approves the FY 2022-2025 Baltimore Region Transportation Improvement Program.

I HEREBY CERTIFY that the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approved the aforementioned resolution at its July 27, 2021 meeting.

7-27-21

Date

Ramond Robinson, Chair
Baltimore Regional Transportation Board

Table 4. VOC Emissions Test Results (average summer weekday, tons/day)

	2022	2025	2035	2045
Total Emissions	19.1	16.3	10.3	9.4
Conformity Budget[1]	40.2	40.2	40.2	40.2
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**

[1] 2012, 8-hour ozone Reasonable Further Progress (RFP) SIP budget for the Baltimore region (motor vehicle emission budgets determined adequate by EPA on February 22, 2016)

Table 5. Weekday NOx Emissions Test Results (average summer weekday, tons/day)

	2022	2025	2035	2045
Total Emissions	34.4	25.2	15.6	15.2
Conformity Budget[1]	93.5	93.5	93.5	93.5
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**

[1] 2012, 8-hour ozone Reasonable Further Progress (RFP) SIP budget for the Baltimore region (motor vehicle emission budgets determined adequate by EPA on February 22, 2016)

Appendix H: Public Participation


Join us at a virtual public meeting
JUNE 17
Learn more at
baltometro.org
INVESTING IN THE REGION'S FUTURE
The Baltimore Regional Transportation Board (BRTB) has a $4.04 Billion transportation plan for the region and we want to know what you think!
BRTB

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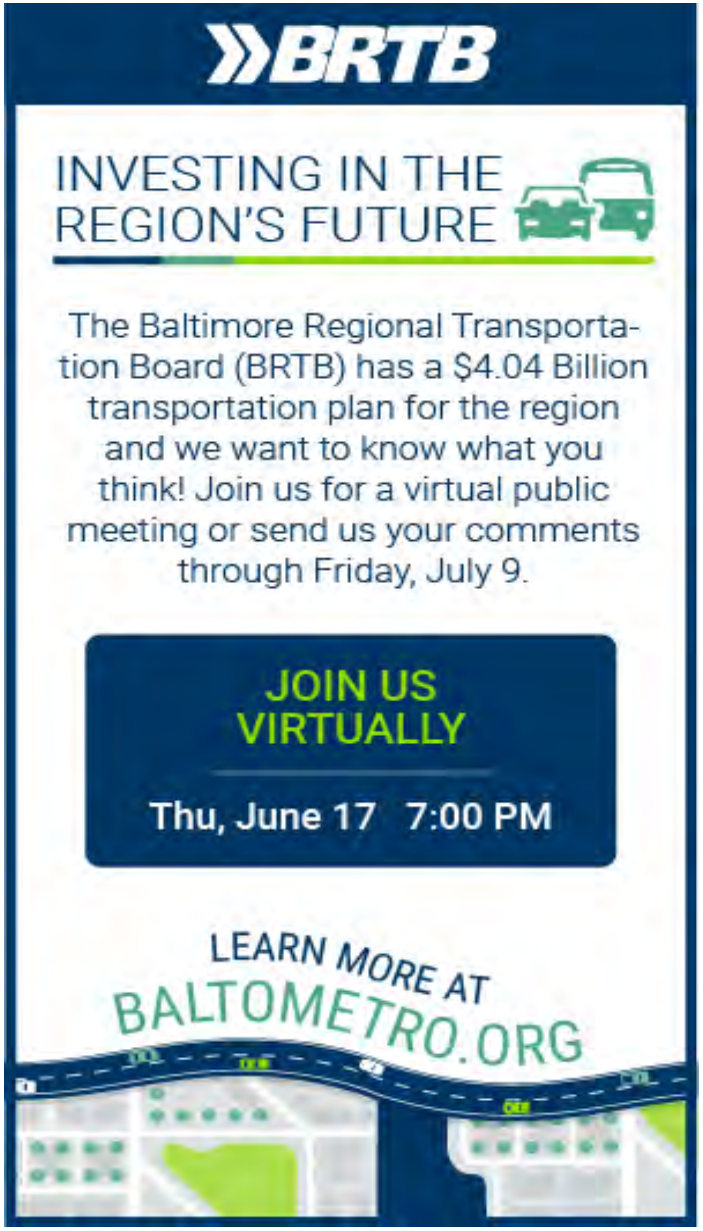
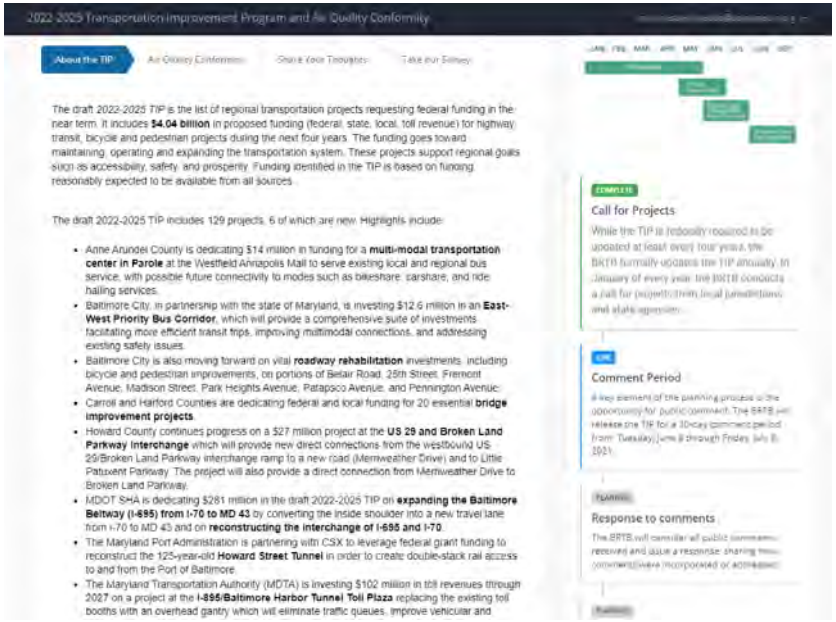
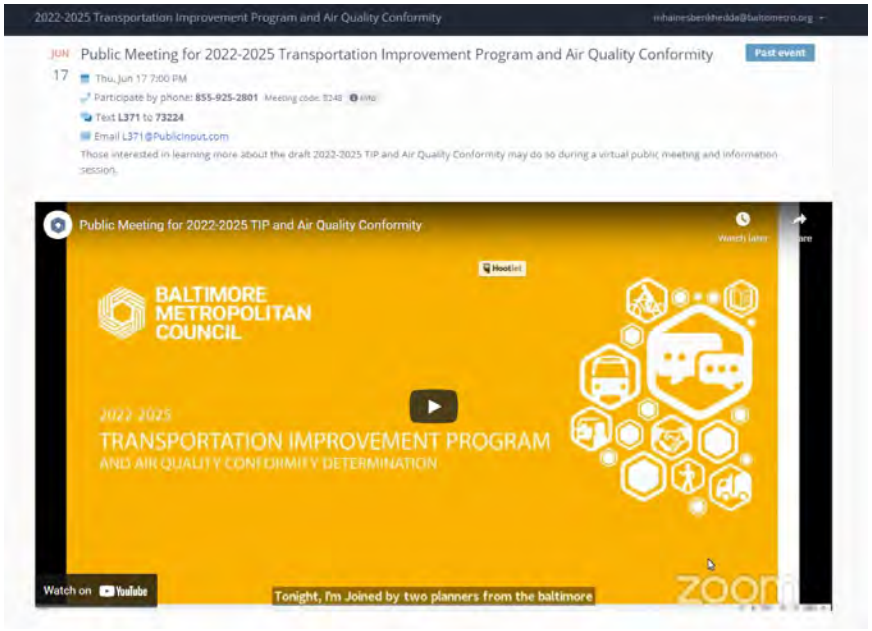


WEBSITES

BMC Featured News Item
https://www.baltometro.org/newsroom/2021-06-08-22-25TIP-public-comment-period

Interactive project page
https://publicinput.com/H2050





Virtual public meeting livestreamed on June 17

Recording made available online

PRESS RELEASE

BALTIMORE METROPOLITAN COUNCIL

FOR IMMEDIATE RELEASE
CONTACT: Ciara Blue
Communications Associate
(410) 732-9564

$4 BILLION IN TRANSPORTATION PROJECTS OPEN FOR PUBLIC COMMENT

BRTB considers approval of the draft 2022-2025 Transportation Improvement Program and the associated Air Quality Conformity Determination

BALTIMORE, MD (Tuesday, June 8, 2021) – The Baltimore Regional Transportation Board (BRTB), as the metropolitan planning organization (MPO) for the Baltimore region, seeks public comments through **Friday, July 9** on two transportation-related documents – the draft *2022-2025 Transportation Improvement Program (TIP)* and the associated *Air Quality Conformity Determination*.

Those interested in learning more about the draft 2022-2025 TIP and Air Quality Conformity may do so by visiting the interactive **story map**. Comments will be accepted through the **interactive project map**, by email at: **h2050@publicinput.com**, Twitter **@BaltoMetroCo**, **@BmoreInvolved**, or #BRTBlistens, or by leaving a voicemail at 855-925-2801 X 8248.

Comments will also be accepted at the virtual public meeting on Thursday, June 17th at 7pm. Learn more and register at **www.publicinput.com/h2050**.

Draft 2022-2025 Transportation Improvement Program (TIP)

The draft 2022-2025 TIP is the list of regional transportation projects requesting federal funding in the near term. It includes **$4.04 billion** in proposed funding (federal, state, local, toll revenue) for highway, transit, bicycle and pedestrian projects during the next four years. The funding goes toward maintaining, operating and expanding the transportation system. These projects support regional goals such as accessibility, safety, and prosperity. Funding identified in the TIP is based on funding reasonably expected to be available from all sources.

The draft 2022-2025 TIP includes 129 projects, 6 of which are new.

Please view the draft 2022-2025 TIP through the BRTB's **interactive project map** or learn more in our **story map**. The draft 2022-2025 TIP is also available in PDF format for download: **Draft *2022-2025 TIP***.

Analysis of Air Quality Conformity

The Baltimore region does not meet the National Ambient Air Quality Standards and so must review its current transportation plans and programs to ensure conformity with the State Air Quality Implementation Plan (SIP).

The Air Quality Conformity Determination report details a comprehensive analysis of Baltimore region mobile source emissions as a result of implementing the draft 2022-2025 TIP.
The conformity determination is available in PDF format for download. Download the Draft Conformity Determination of the draft 2022-2025 TIP: **Conformity Determination**.

###

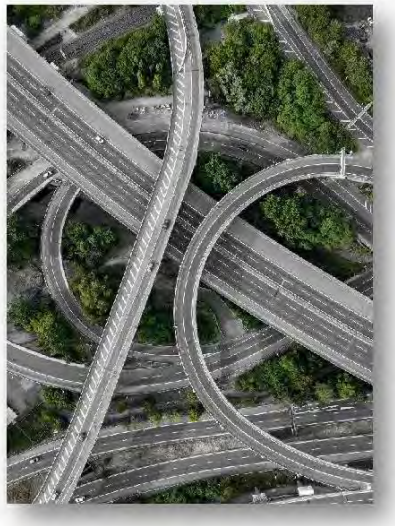
The Baltimore Metropolitan Council (BMC) works collaboratively with the chief elected officials in the region to create initiatives to improve the quality of life and economic vitality. BMC, as the Baltimore region's council of governments, hosts the Baltimore Regional Transportation Board (BRTB), the federal metropolitan planning organization (MPO), and supports local government by coordinating efforts in a range of policy areas including emergency preparedness, housing, cooperative purchasing, environmental planning and workforce development.

BMC's Board of Directors includes the executives of Anne Arundel, Baltimore, Harford and Howard counties, the mayor of the City of Baltimore, a member of the Carroll County and Queen Anne's County boards of commissioners, a member of the Maryland State Senate, a member of the Maryland House of Delegates, and a gubernatorial appointee from the private sector.

Baltimore Metropolitan Council
1500 Whetstone Way, Suite 300, Baltimore, MD 21230

Overview of the Draft 2022-2025 TIP

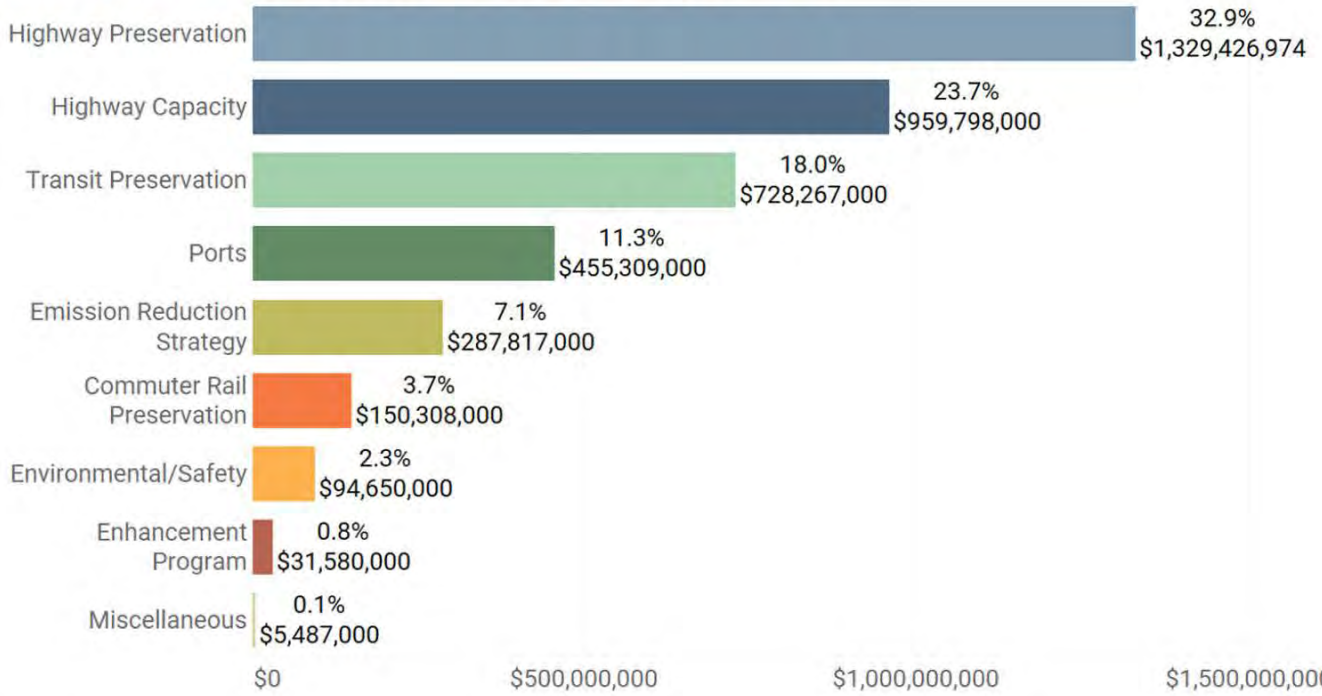
- **129 federally-funded and regionally significant projects**
  - 6 are new projects
- **$4.04 billion in proposed federal, state and local money**
  - $2.44 billion federal; $1.6 billion state/local
  - highway, transit, bicycle and pedestrian projects
  - maintaining, operating and expanding the transportation system
- **Projects support long-range transportation goals**
  - for example: accessibility, safety, and prosperity.
- **Funding limited**
  - Programmed funds cannot exceed what is reasonably expected to be available from local, state, and federal sources



BMC

BRTB

Funding in the Draft 2022-2025 TIP



BMC

BRTB

How to Share Your Thoughts

- **Comment Period: June 8 through July 9, 2021**
- **Comments accepted by**
  - Interactive TIP project map featuring comment tool
  - Email: comments@baltometro.org
  - Mail: 1500 Whetstone Way, Suite 300 | Baltimore, MD 21230
  - Fax: 410-732-8248
  - Twitter: @BaltoMetroCo | @BmoreInvolved | #BRTBlistens
- **Learn more at a Virtual Public Meeting**
  - Thursday, June 17 at 7 p.m.

BMC

BRTB

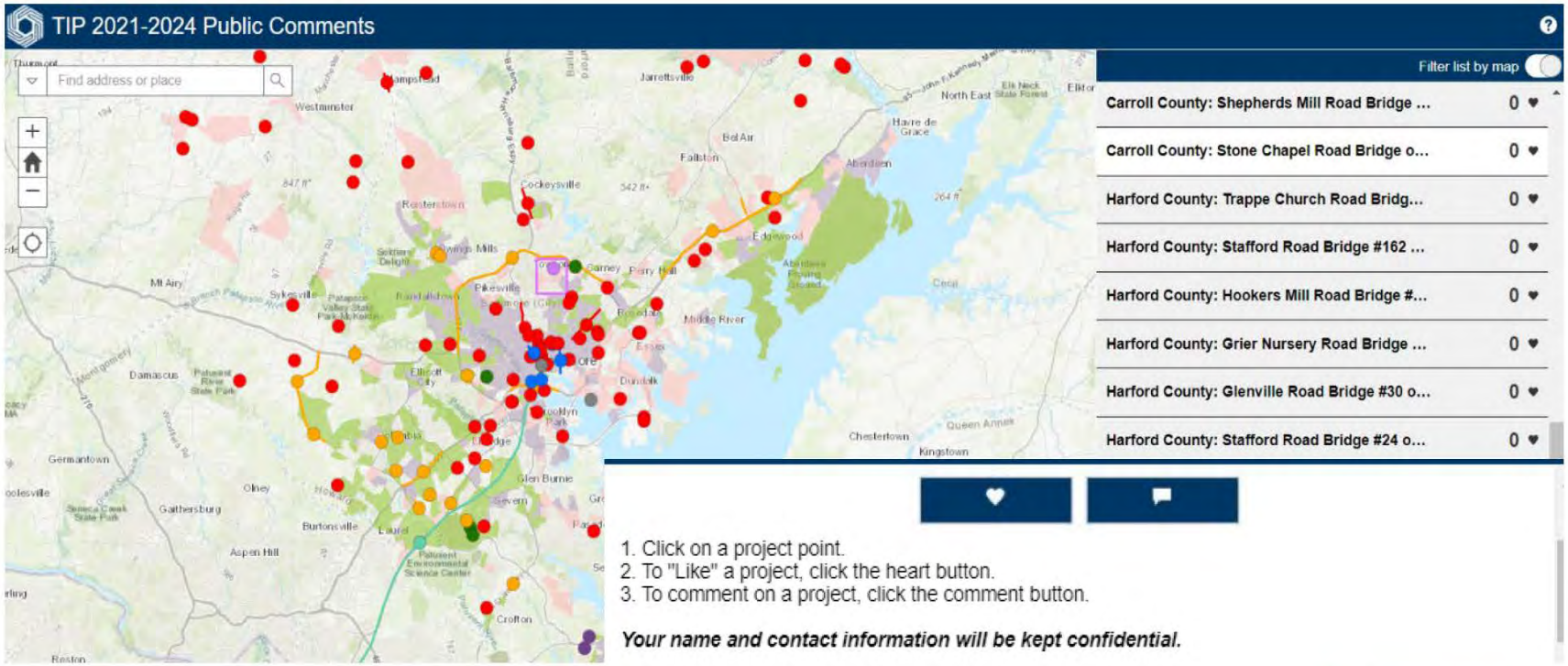
Public Comment Period

- Comment Period: June 8 through July 9, 2021
- One virtual public meeting publicinput.com/H2050
- Over 50 pages of comments received from 30 individuals and organizations
- Majority of comments supported modification of the TIP to:
  - (a) Reduce highway capacity expenditures
  - (b) Invest more in transit, particularly in transit capacity for transit-reliant populations
  - (c) Support local bicycle and pedestrian improvements
  - (d) Address Climate Change and equity

BMC

BRTB

Interactive Mapping Features



BMC

BRTB

COMMENTS baltometro.org/sites/default/files/bmc_documents/general/transportation/tip/22-25/22-25TIP_Comments.pdf

BRTB RESPONSE baltometro.org/sites/default/files/bmc_documents/general/transportation/tip/22-25/22-25TIP_Comments_BRTBResponse.pdf

Many of the comments below are shortened for purposes of space. Full comments were shared with all BRTB, Technical Committee, and Interagency Consultation Group members and are also located on the BMC website.

Let us say up front that we are very appreciative of the effort so many individuals and organizations have gone through to review materials and send in comments. This is informative for all of our members and does have an impact on the planning process. As is customary for the BRTB, we share all comments and responses with everyone who commented as well as on the BMC website and include them in the TIP and Conformity Determination documents.

1. **Lori Franceschi**

Comment: There's a lot of stuff I could say, but really, the thing that stands out the most is basically none of this money is for improving stuff INSIDE Baltimore. Who cares about highways? The roads in the city are enough to damage most vehicles. There is no rail; and 4b$ would fund that.

BRTB Response: Baltimore City projects total over $227 million in the FY 2022-2025 TIP. While many of the projects are roadway rehabilitation and bridge replacement projects, many of these projects contain elements that enhance bicycle and pedestrian accommodations. Most of these projects include new or upgraded ADA compliant sidewalks. Please see this full list of Baltimore City sponsored projects for additional information. One constrain to note is that Federal formula funding for roadway projects is distributed by USDOT separately from transit funding. It would require federal legislation to alter that formula and distribution of funds in this region. Funds distributed for transit are being utilized for a variety of MDOT MTA and local projects.

The East-West Bus Corridor is a comprehensive suite of investments that will facilitate more efficient transit trips, improve multi-modal connections, and address existing safety issues. This project will address existing challenges in the corridor, offering near-term transit investments to better connect people to jobs, education, amenities, and leisure activities while the region considers long-term options via the Regional Transit Plan.

Additionally Baltimore City is funding several non-motorized improvements. The 25th Street Rehabilitation from Greenmount Avenue to Kirk Avenue includes a mixed-use trail for pedestrians and bicyclists and the $2.2 million Middle Branch Phase 2 project constructs 0.8 miles of trail as part of the Baltimore Greenway Loop.

The FY 2022-2025 TIP also includes several projects not listed under Baltimore City that do not include roadway improvements. MDOT MPA is committing over $400 million in funds, including over $200 million of state funds, to reconstruct the Howard Street Tunnel. When complete, the new tunnel will allow double-stacked containerized cargo to and from the Port of Baltimore, thus alleviating a major freight rail bottleneck on the east coast and reducing truck trips within Baltimore City.

MDOT MTA has numerous pedestrian, bus, light rail and MARC improvement projects that fall within the limits of Baltimore City or are of a regional nature that benefit the City. The Patapsco Pedestrian Bridge Connection is a Transportation Alternatives Program project that includes $780,000 to design a bicycle and pedestrian connection between Cherry Hill and the Patapsco Light Rail Station.

MDOT MTA also includes $192.2 million over the next four years for Bus and Rail Preventive Maintenance projects. These projects for buses, light rail and metro systems will help to ensure safety, reliability and comfort for passengers.

Note: This matrix includes a summary of comments received during the public comment period with responses from the BRTB. Additional comments that may have been submitted verbally at a BRTB meeting prior to a vote are not included. Please refer to meeting minutes at www.baltometro.org for documentation of any verbal comments received during BRTB meetings.

BRTB Baltimore Regional Transportation Board
SUMMARY OF PUBLIC COMMENTS AND BRTB RESPONSES
2022-2025 Transportation Improvement Program and the Associated Air Quality Conformity Determination

MDOT MTA has also $394 million in state funds for Metro and Light Rail Rolling Stock Overhauls and Replacement to provide modern and reliable equipment which will enhance passenger comfort and ensure better reliability and improved safety. Additionally, $26.3 million, including $9.3 in state funds is dedicated to MARC Rolling Stock and Replacement. This will extend the life of trains and provide safe and reliable MARC service.

MDOT MTA has also committed over $187 million to Metro and Light Rail System Preservation and Improvements which will improve service and safety of the Light Rail and Metro Systems.

And finally, MDOT MTA is providing $62.2 million including over $4.7 million in state funds, for MARC improvements which will help improve and maintain safety and quality of the MARC infrastructure.

2. **Brian Seel**

Comment: Its 2020, and we are still rolling out millions of dollars for projects that will expand roads, but are allocating just a few million for bike projects, and a bit more for generally unconnected transit projects. While climate change is not as steep of a curve as COVID, its still a looming crisis, and many of these projects will be around and in use 50 years from now. Seriously, are we still going around and widening the beltway? Even a tenth of that $281 million could be revolutionary for bike or transit projects.

BRTB Response: There is a wide range of projects in the TIP which support all modes of transportation. There are a number of transit and bicycle projects in the planning stage with support in the current Unified Planning Work Program and more that sponsors have requested RAISE grants for; such as Dobbin Road and Baltimore Greenways.

3. **Greater Washington Partnership**

Comment: We commend the Board for the addition of the East-West Priority Bus Corridor to the TIP, an essential project to better connect the Baltimore metro area, improve transportation equity, and improve access to employment centers for East and West Baltimore residents. This is a critical first step to realizing the region's Central Maryland Regional Transit Plan.

BRTB Response: The BRTB appreciates support for this project. In FY 2022 Baltimore City will complete engineering and move to construction beginning in FY 2023. This is a critical corridor and we look forward to service beginning in 4 years.

Comment: With MDOT MTA, we encourage you to work to identify other short-term Priority Bus Corridors projects from the Central Maryland Regional Transit Plan that can be advanced in the next four years, such as the North-South corridor from Towson to Downtown Baltimore City.

BRTB Response: BMC coordinates regularly with MDOT MTA via the RTP Implementation Team to discuss progress on corridors as well as other recommendations from the RTP. While two corridors have been identified by MDOT MTA to begin further planning, MDOT MTA has worked with the BRTB to allow the BMC and consultants to begin to screen corridors to prepare information on which are prepared to apply for FTA funding under the Capital Investment Grant guidelines. BMC is exploring a screening process now and plans to release an RFP this Fall for assistance in screening several corridors in FY 2022. It is anticipated that there will be a similar task in the FY 2023 UPWP.

Comment: With Amtrak and MDOT, we encourage you to coordinate to see if there is a need to identify near-term funds in the TIP for the replacement of the B&P Tunnel, which will be named the Frederick Douglass Tunnel, or speed up the redevelopment and track enhancements at Baltimore

Note: This matrix includes a summary of comments received during the public comment period with responses from the BRTB. Additional comments that may have been submitted verbally at a BRTB meeting prior to a vote are not included. Please refer to meeting minutes at www.baltometro.org for documentation of any verbal comments received during BRTB meetings.

Penn Station. The tunnel replacement project was formally announced June 18, with Governor Hogan directing MDOT to coordinate with Amtrak and USDOT to create a funding plan for the project which is still a few years away from breaking ground.

BRTB Response: A significant project to undertake, the new tunnel will replace the deteriorated B&P Tunnel and will address ongoing issues with fire/life safety systems, congestion and delays (as this is the largest rail bottleneck between Washington and New Jersey), increase redundancy. As this was a relatively recent announcement by MDOT and Amtrak, we are working with them to understand what the next steps will be. The improved tunnel is scheduled to be operational in 2026.

Comment: With the City of Baltimore, we encourage you to identify funding opportunities in the TIP for the completion of the Baltimore Greenway Trails Network, a 35-mile loop around the city of Baltimore that will provide safe pedestrian and bike access to many of the city's employment centers. 25 miles are already complete, but a few segments, such as the Norfolk Southern Corridor and the BGE corridor, are not currently in active design or construction phases.

BRTB Response: As the recent federal discussions focused on providing funds for improved infrastructure begin to solidify and the Biden Administration gets its staffing at USDOT in place, we expect that more and significant grant funding will be forthcoming for these types of projects. Be assured that the BRTB and the City of Baltimore remain vigilant in identifying and seeking such funds for the Baltimore Greenway as well as other significant greenway/shared use facilities.

Comment: With the City of Baltimore, MDOT, and the Federal Delegation, we encourage you to support a planning process to remove the Highway to Nowhere (US 40) that divides West Baltimore and limits social and economic mobility for far too many residents and businesses.

BRTB Response: As the recent federal discussions focused on providing funds for improved infrastructure begin to solidify and the Biden Administration gets its staffing at USDOT in place, we expect that more and significant grant funding will be forthcoming for these types of projects. Be assured that the BRTB and the City of Baltimore remain vigilant in identifying and seeking such funds.

Comment: As the Baltimore Region Transit Governance and Funding Study is expected to wrap up this summer, which identifies options for governance and funding reform, we encourage the Board to identify a next step, such as study that identifies the preferred reform option and lays out a regional implementation strategy.

BRTB Response: The BRTB was asked by legislative leaders, the Central Maryland Regional Transit Plan Commission and the MDOT MTA to provide alternatives and options for consideration. The study and the final report will outline six alternative options but will not be narrowing these down to a single option or recommendation.

4. Paul Emmart

Comment: Incorporate health impacts to the modeling & assessment modules. ...there should be evaluations of expanded human health metrics related to the TIP projects and the human health risks should be weighted and included in the prioritization of projects to be funded. The TIP and the Conformity Determination are required because the Baltimore region does not meet the national standard for ground-level ozone. The EPA also has classified the region as a "maintenance" area for carbon monoxide (CO) and fine particulate matter (PM2.5). Related to socioeconomic forecasting, the *air quality effects of growth* should in my view include the quantification of the impact on environmental justice and human health outcomes. The TIP should incorporate an alternatives

Note: This matrix includes a summary of comments received during the public comment period with responses from the BRTB. Additional comments that may have been submitted verbally at a BRTB meeting prior to a vote are not included. Please refer to meeting minutes at www.baltometro.org for documentation of any verbal comments received during BRTB meetings.

SUMMARY OF PUBLIC COMMENTS AND BRTB RESPONSES
2022-2025 Transportation Improvement Program and the Associated Air Quality Conformity Determination

analysis to determine which projects are most necessary from the perspective of public health and which are most damaging. Without these linked aspects, the decision makers are not evaluating the full set of "effects."

BRTB Response: The Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for six criteria pollutants in order to provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. As required under the Clean Air Act, it must be shown that the adoption of a TIP conforms to the purpose of the State's State Implementation Plan (SIP) for meeting these Federal air quality standards. The Clean Air Act outlines how conformity supports the purpose of the SIP – which means federal approvals are given to highway and transit activities that will not cause new air quality violations, worsen existing air quality violations, or delay timely attainment of the relevant air quality standard, or any interim milestone. For an MPO in nonattainment of the standards, this is demonstrated by meeting emissions budgets as determined in coordination with the EPA based on the SIP. The conformity determination emissions analysis for the 2022-2025 TIP and 2019 Long Range Transportation Plan (*Maximize2045*), as completed through interagency consultation and in concert with the Maryland Department of the Environment, resulted in emissions well below the SIP budget and therefore demonstrates conformity with the NAAQS protecting public health.

The BRTB recognizes that more can be done to protect public health. There is a Healthy Communities study underway as part of the FY 2021 UPWP to look at current and best practices in the areas of Capital Improvement Programs (CIP) and promoting healthy communities. This effort will be completed by late September or early October. The final report will include recommendations for jurisdictions to better to promote healthy communities through the built environment. BMC staff will work with local jurisdictions as future TIP and LRTP(s) are developed to find ways to include the recommendations from this study into individual projects. Please note, the Baltimore region is no longer within nonattainment or maintenance of CO or $PM_{2.5}$.

Comment: Develop planning scenarios which exceed the required thresholds and base projects on the most stringent criteria, not necessarily the required minimum. Related to signal timing, ... planning needs to ratchet down and plan for a horizon that is even stricter in term of the federal standards applied. The same general comment goes for the statement in the Conformity document that it uses "the base year 2012." The question to me is why would Maryland base its calculations on a budget that is outdated by 9 years?

BRTB Response: Emissions were estimated for each horizon year and compared to the 2012 8-hour ozone Reasonable Further Progress (RFP) State Implementation Plan (SIP) budget. The 8-hour ozone RFP SIP was prepared by the Maryland Department of the Environment (MDE) and contains motor vehicle emissions budgets for volatile organic compounds (VOC) and nitrogen oxides (NO_x), the precursors to ozone. The RFP budgets were determined by EPA as adequate for use in conformity determinations, as published in the Federal Register on February 22, 2016.

Comment: The TIP Budget Dedicates Too Small a Portion to Emission Reduction Strategy (ERS) Projects. I urge the TIP staff to seek more opportunities and direct more funds to ERS as opposed to other surface projects.

BRTB Response: Members are actively applying to discretionary grants and are pursuing the inclusion of more ERS projects. Outside of the TIP, members look to funding through grants offered by the Maryland Energy Administration and MDE and also participate is the Volkswagen (VW) settlement program to promote electric vehicle deployment and renewable energy in Maryland.

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Comment: Address Climate Change Reduction Actions in Relation to the TIP. The term 'climate change' is used only six times in the TIP and it is identified in footnotes for the road projects. How will these TIP projects increase or decrease impacts from climate change by 2045?

BRTB Response: Members are looking into ways to incorporate climate change considerations. One major task in the UPWP involves infrastructure in a changing climate, under which a Baltimore region-wide toolkit is being developed to guide operations and maintenance departments in including climate change considerations in their decision making. This activity will be extended further to address areas of interest expressed by BRTB members.

Comment: Associated with this question is also need to identify the cumulative impact from TIP projects. I believe that all TIP projects should be accounted for and not made exempt or non-exempt and should be explicitly modeled to understand cumulative effect. I urge the TIP staff to quantify the environmental and human health impacts form road expansion. I would also like to have the benefit of knowing what the impact of associated air emissions from air/port and rail transportation sectors, which should be factored in to the TIP. If the conformity determination process ensures that long-range transportation plans and short-term programs contribute to air quality improvement objectives delineated in the State Implementation Plan, then it is important to identify and link the SIP to the TIP.

BRTB Response: Transportation conformity is required under CAA Section 176(c) to ensure that Federally-supported transportation activities are consistent with ("conform to") the purpose of a State's SIP. Transportation conformity applies to surface transportation projects and establishes the framework for improving air quality to protect public health and the environment. The Clean Air Act outlines that conformity to the purpose of the SIP means federal approvals are given to highway and transit activities that will not cause new air quality violations, worsen existing air quality violations, or delay timely attainment of the relevant air quality standard, or any interim milestone. For an MPO in nonattainment of the NAAQS, this is demonstrated by meeting emissions budgets as determined in coordination with the EPA based on the SIP. Since the Baltimore region is in nonattainment of the 2008 and 2015 Ozone NAAQS, an air quality conformity determination in which ozone precursors are estimated is required. Code of Federal Regulations (CFR) Part 93 Section 126 identifies a list of projects which are exempt from the requirement to determine conformity. Additionally, CFR Part 93 Section 127 identifies a list of projects which are exempt from regional emissions analysis requirements. Through interagency coordination, more specifically the Interagency Consultation Group, the exemption status of each TIP project is confirmed prior to completing the regional conformity determination emissions modeling. Projects identified as exempt are therefore not included in the emissions analysis. Quantifying the environmental impacts of TIP projects is completed at the project level by the project sponsor, as opposed to regional level, during the National Environmental Policy Act review process. The EPA considers public health when setting National Ambient Air Quality Standards.

General conformity is a similar Clean Air Act requirement to transportation conformity, but applies to projects and plans outside of surface transportation such as airport activities. The Maryland Department of the Environment carries out robust air quality monitoring and improvement programs, including the Mobile Sources Control Program, which work to reduce emissions from non-road vehicles such as aircraft, marine vessels, and locomotives.

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5. CMTA

Comment: MDOT MTA's Capital Needs Inventory is not directly referenced in the TIP so it is difficult to verify whether funding to address those specific needs has increased. ... we are encouraged to see that this year's TIP has the highest amount, both in real dollars and as a percentage of the Budget.

BRTB Response: The BRTB recognizes that the traditional framework of the TIP does not help the public to identify important transportation priorities that have been funded in State spending plans such as MDOT MTA's CNI. BMC staff will meet with MDOT MTA to determine ways to improve the identification of MTA CNI projects in future TIPs if they are also included in the MDOT MTA's Capital Needs Inventory.

Comment: ADA is referenced ... but since it is not its own discrete category it is difficult to know whether funding has increased. ... lack of ADA compliance suggests that this is an area where the region should be directing more resources.

BRTB Response: The BRTB is committed to improving bicycle and pedestrian safety and access across the region. MDOT has introduced new technologies such as the HAWK Beacons that are improving pedestrian crossing conditions in Annapolis and elsewhere in the State. The region searches for discretionary grant opportunities at the Federal and State level to help provide more resources but isn't always successful in identifying enough programs for needed investments. When possible, targeted investments are possible such as the trails you mentioned. These are key investments that will improve active transportation connectivity and safety.

Comment: Similar to ADA, bicycle facilities are often spread throughout many projects and it's difficult to track overall regional spending levels. We're glad to see a portion of the Greenway Trails Network included in this program. We do not see evidence that other trails or separated bike facilities are being prioritized.

BRTB Response: Another place in the TIP to look for bicycle projects is under MDOT SHAs Areawide Transportation Alternatives Project. The TIP include $28.6 million for a range of projects. Some of them awarded funding from the previous year are located in Appendix D. However the TIP is specifically to identify requests for federal funding, a source of funding outside if the TIP includes the Maryland Bikeways Grants, where Baltimore City was awarded funding in each of the last three years. Other jurisdictions in the region have also had funds awarded through this program.

Comment: We are pleased to see "East-West Bus Corridor", which corresponds with an Early Opportunity transit corridor identified in the RTP. However, that is the only project that mentions the RTP.

BRTB Response: The BRTB is pleased that the MDOT MTA has produced the RTP and that MDOT has programmed funding for an East-West Bus Corridor study from the RTP. The East-West Priority Corridor will provide a broad range of investments designed to address existing challenges in the corridor, offering near-term investments to facilitate more efficient transit trips, improve multi-modal connections, and address existing safety issues. Planned strategies include dedicated bus lanes, peak only bus lanes, intersection queue jump for buses, transit signal priority, bus stop optimization and accessibility improvements, and bus bulbs. The BRTB is also pleased the MDOT MTA is studying a bus hub in Towson. The BRTB will be studying additional corridors this year to help accelerate the pace of planning, analysis and future investment.

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6. Transit Choices

Comment: Ineffective - The single largest category of spending in the Draft TIP is for highway capacity projects that are supposed to "fix congestion".

BRTB Response: Nearly seventy percent of the funds under the highway capacity category go to one project being advanced by the Maryland Transportation Authority. This project is not utilizing any federal funds, it is in the TIP for air quality purposes. The I-95 corridor is a major trade and travel corridor and serves major distribution facilities and the Port of Baltimore. The I-695 project includes improvements to the inner shoulder to allow additional capacity in the morning and evening commute periods. The I-695 project includes improvements focused on making better use of the existing facility by allowing limited access to (or "use of") the inner shoulder during peak hours to alleviate current congestion

Comment: Inequitable - Investments in transportation do not impact all populations equally. The proposed 21-24 TIP's lopsided investments in widening highways are aimed at improving mobility for higher income people and those with private automobiles. Additionally, it will further entrench structural inequities that disadvantage some populations over others.

BRTB Response: Every region supports a robust multimodal system where a variety of improvements are supported. Significant efforts are underway to assess and deliver a transportation system that supports all segments of our society.

Comment: Unhealthy - Transforming our dirty transportation system has long been an urgent public health issue.

BRTB Response: The EPA sets National Ambient Air Quality Standards (NAAQS) for six criteria pollutants in order to provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. EPA conducts research that provides the critical science to develop and implement Clean Air Act regulations that protect the quality of the air we breathe, and EPA is required by the Clean Air Act to perform periodic reviews of the science upon which the standards are based and the standards themselves. As required under the Clean Air Act, it must be shown that the adoption of a TIP conforms to the purpose of the State's State Implementation Plan (SIP) for meeting these Federal air quality standards. The Clean Air Act outlines that conformity to the purpose of the SIP means federal approvals are given to highway and transit activities that will not cause new air quality violations, worsen existing air quality violations, or delay timely attainment of the relevant air quality standard, or any interim milestone. For an MPO within nonattainment this is demonstrated by meeting emissions budgets as determined in coordination with the EPA based on the SIP. The conformity determination emissions analysis for the 22-25 TIP and 2019 Long Range Transportation Plan, as completed through interagency consultation and in concert with the Maryland Department of the Environment, resulted in emissions well below the SIP budget and therefore demonstrates conformity with the NAAQS protecting public health.

Comment: Environmentally unsustainable - Widening highways while shortchanging investment in public transportation does not meet the challenge of climate change. We understand that the vast majority of the highway capacity spending is on two projects already underway (the I-95 Express Toll Lane Extensions and I-695 widening), and that it may be impractical to cancel these projects. However, there are five highway capacity projects that are new to the 21-24 TIP (see Table II-2: New Projects in the 2021-2024 TIP).

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BRTB Response: As stated elsewhere, no new highway capacity projects were added to the TIP while new transit projects have been included.

7. Baltimore-Washington Transportation Research Group

- Regarding SCMAGLEV, the proposed project to be wholly inconsistent with the widely-accepted transportation needs of both the corridor of focus, as well as the wider region.
- SCMAGLEV would represent a major misallocation of scarce transportation dollars (and even more scarce rail dollars), a huge step backwards in the relationship between mass transportation and the environment ... we urge the rejection of any funding consideration or support by the State of Maryland for this project, and instead push for the immediate funding of what we have determined to be the "Preferred Option" for fast train service in the Baltimore-Washington corridor: Express MARC Service.
- we have determined that MARC ...could run a full express service (1 train each way per hour, Baltimore to Washington, 6am-8pm every workday) on existing tracks with existing equipment, tomorrow, if it chose to do so.
- who is going to buy that $60 ticket for this service when $8 tickets are available that take only 14 minutes longer, and drop the passenger in a more central location?

BRTB Response: We appreciate your opinion on the SCMAGLEV project. At this time the project is in the planning phase utilizing Federal Railroad Administration funds. While some jurisdictions are already on the record opposing this project, it will advance through planning before a decision of its future is determined.

8. Shayna

Comment: Looking at Baltimore City, remember there is a Complete Streets ordinance.

BRTB Response: The BRTB is aware of the ordinance and recognizes that other jurisdictions in the region have similar efforts. Several years ago the BRTB funded a study to advance Complete Streets planning and Baltimore City has shared their work with the BRTBs Bicycle and Pedestrian Advisory Group.

Comment: Show Maglev at Camden Yards, not Penn Station

BRTB Response: Thank you for finding that inconsistency, the maps have been corrected.

9. Graham Projects

Comment: We need East West choo choo

BRTB Response: Presently a train or light rail is not planned within the TIP project along the East-West Corridor. This project is slated to be completed in 2025.

10. Eli Pousson

Comment: Regional transportation priorities are terrible.

BRTB Response: We appreciate your opinion and will continue to advance a regional program based on guidance from our members.

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11. Jed Weeks

Comment: We challenged the PAC so they stopped meeting

BRTB Response: We regret that is your perception of what occurred. The BRTB approved a consultant task to evaluate the effectiveness of a wide range of public involvement activities and products. The team, led by WSP provided a range of recommendations. One recommendation did relate to the PAC. The BRTB has decided to explore the option of building a virtual advisory panel in order to engage a wider audience from around the region. If the larger, virtual panel works well, that may be the main vehicle for input moving forward. If it does not the BRTB will consider a revised format for the PAC. Staff are currently working with a consultant team to outline what a virtual panel would look like and how it would operate. We hope you'll stay tuned for updates and consider applying for the virtual panel in the future.

12. Myles Muehlberger

Comment: Increasing vehicular lanes along the inner loop of 695 would only serve to create more vehicular traffic. This phenomenon is known as "induced traffic demand" and is well documented and proven to occur. As a current driver of this route for work, I strongly oppose the additional lane proposal. Instead the proposed space for the lane and some existing lanes should be used to create a rail and/or trail system. We are far past the time to continue focusing travel on automobiles rather than public transit. A rail and trail system would provide greater opportunity for all residents in the area, especially those who are people of color and lower income, the primary residents within the area inside the beltway, to travel to destinations as needed. It would also provide sustainable reuse of the highway space as Baltimore County, Maryland, the US, and the world need to move away from automobile infrastructure that contributes to global warming.

BRTB Response: MDOT SHA considered possible uses of the space available and determined that the inner shoulder would be suitable for morning and evening use to alleviate the strain of "rush hour" traffic.

13. Daniel Paschall

Comment: Greenway Middle Branch Phase 2: This is an important project for the Baltimore Greenway Trails Network and the East Coast Greenway.

BRTB Response: Thank you. We agree it will be a critical link.

14. Robert Waldman

Comment: Parole Transportation Center - Without the opportunity to give it much thought, take my comment for what you think is its worth. The Sears site at the Annapolis Mall is maybe adequately situated at Route 650 and ramps to/from I 97, and there is already public transit and parking. But it is removed from the bulk of the population of Annapolis, which is closer to Parole. I suggest a presentation to the Planning Commission of Annapolis as to your thinking. Please contact Dr. Sally Nash, Dir of Planning & Zoning, City of Annapolis.

BRTB Response: The Anne Arundel and Annapolis members of the BRTB have contacted you regarding the Parole Transportation Center project. Your suggestions are welcome and we hope you continue to engage with our members on issues you are concerned about.

Comment: McKendree Road Culvert over Lyons Creek - This is the first I have heard of this nearly $2M project, and I am not only on the Annapolis Planning Commission but also am the Chairman of the

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local community association. I would appreciate, and would collaborate with, a presentation (even by Zoom) to the local community and another to the Planning Commission. You may contact me as to both. I am concerned that this project may miss stormwater benefits and that the community knows nothing about it.

BRTB Response: The Anne Arundel and Annapolis members of the BRTB have contacted you regarding this bridge project. Your suggestions are welcome and we hope you continue to engage with our members on issues you are concerned about.

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Appendix I: Emission Reduction Strategies in the Region

This Appendix includes the following sections:

- Appendix I-1: Description of Emission Reduction Strategies
- Appendix I-2: Tracking the Status of Emission Reduction Strategies

Appendix I: Description of Emission Reduction Strategies

This appendix provides descriptions of the key categories of emission reduction strategies used in the Baltimore region and the status of implementation of those strategies. The categories of strategies covered in this appendix include Commuter Assistance Activities, Bicycle/Pedestrian Activities, Park-and-Ride Programs/Lots, Public Transit Services, Management and Operations Projects, Preferential Parking Management, and Clean Vehicles, Fuels and Technologies. These categories are used for organizational purposes and do not relate directly to any particular legislative or funding areas.

COMMUTER ASSISTANCE ACTIVITIES

Rideshare Program

The Rideshare Program, a continuing statewide program since 1978, is administered by Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) that provides funding support to local rideshare programs in order to strengthen carpool/vanpool matching and Transportation Demand Management (TDM) services at the jurisdictional level. The Baltimore Metropolitan Council (BMC) provides ridesharing coordination services for Baltimore and Carroll Counties. Through the Rideshare program, the following rideshare services are provided:

- Carpooling/vanpool/trip matching to interested commuters via the Commuter Connections Database.
- TDM information to commuters and employers.
- Assistance with identifying opportunities for alternative commuting strategies such as transit, flexible work hours, and teleworking for both commuters and employers.
- Printed and electronic information is distributed to both the general public and private employers.
- Advertisements in social media, newspapers, regional magazines, radio, and online to encourage all TDM modes.
- Clean commute activities including, Bike to Work Week, Love to Ride cycling program, Dump the Pump Day, and transportation fairs.
- The regional Guaranteed Ride Home program is promoted to both employers and commuters.
- The Regional School Pool program is promoted, which matches students (through their parents' registration) for carpool, bike convoy and pedestrian group matching within member schools.
- The MDOT MTA Commuter Choice discount transit fare program are both organized and promoted.

Commuter Choice Maryland and the Maryland Commuter Tax Credit

The Commuter Choice Maryland commuter benefits program is an incentive designed primarily to encourage Maryland employees who drive to work to switch to transit or vanpools. It has a membership of approximately 16 employers and 1,280 employees. The program provides employers with monthly pass distribution options which encourage employees to ride MDOT MTA Buses, Light Rail, Metro Subway, MARC trains or qualified vanpools to work for less than full fare. Employers are also rewarded with special state tax deductions, state tax credits, and savings on

certain payroll taxes. The Maryland Commuter Tax Credit allows Maryland-based employers to claim a tax credit of up to $100 per employee per month or 50% of eligible costs of providing commuter benefits for eligible expenses for providing tax-free commuter benefits to an employee. Private and non-profit organizations are also able to participate in the program. Maryland employers are able to claim tax credits for providing transit passes and vouchers, as well as for setting up a Guaranteed Ride Home, Cash In Lieu of Parking, Bike Commute Benefits, or Vanpooling programs. Carpooling is not an eligible expense under the program. Employers must register annually to participate in the Maryland Commuter Tax Credit program. This feature of Maryland law has the potential to reduce single occupancy vehicle use, increase transit ridership, reduce traffic congestion, and improve air quality. Details are available at www.commuterchoicemaryland.com.

Clean Commuting Outreach

The BRTB teams up annually with state transportation and air quality agencies as well as private organizations to promote clean commuting during the peak ozone season. This promotion originally began as a weeklong initiative, expanded in 2003 to a month-long program, and now covers events throughout multiple months during the "clean commuting season" from May to September. Every year, BMC asks residents of the Baltimore region to try an alternative to driving alone for at least one day during "clean commuting season." In 2018, promotion began in early April with a number of outreach events throughout the region. In 2020, September included the 23rd edition of Bike to Work programming from September 21st to the 27th. Typically a daylong event, the program was expanded to be a week long to allow for social distancing during the COVID-19 pandemic. This proved to be even more inclusive than a single day event and the Baltimore Metropolitan Council is planning to continue with an extended timeframe for the event. Many local businesses and organizations donate prizes for registered participants. Bike to Work Week, a true region-wide initiative, partnered with numerous bike shops in Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Harford County, Howard County, and Queen Anne's County.

To support these clean commuting events, MDE, MDOT, MDOT MTA, and other organizations reach out to employers to encourage voluntary participation in alternate commute options such as telework, flexible work arrangements, and guaranteed ride home.

Clean Air Partners

The Clean Air Partners program is a public/private partnership, founded by BMC and MWCOG. Its goal is to improve air quality in both the Baltimore and Washington regions by motivating individuals and organizations to take voluntary actions to reduce emissions.

In 2020, Clean Air Partners conducted aggressive social media campaigns, as well as public relations efforts, in both the Baltimore and Washington markets. Clean Air Partners staff members conducted press interviews in both Baltimore and Washington. The Partnership has worked hard to nurture a relationship with reporters in both markets. This effort has paid off with accurate and positive press coverage, raising awareness of both air quality issues and the Clean Air Partners organization.

Clean Air Partners produced updated educational materials, including information on $PM_{2.5,}$ climate change, and ground-level ozone, for use in its education program. That program reaches hundreds of students in Baltimore, DC, and Northern Virginia. Clean Air Partners has also worked

with MDE, as well as agencies in DC and Northern Virginia, to improve both air quality forecasting and communicating those forecasts.

Clean Air Partners continues to be a sponsor of BMC's annual Clean Commute Initiatives, especially Bike to Work Week, which raises awareness of the relationship between transportation choices and air quality and promotes alternatives to the use of single occupant vehicles.

Telework

The promotion of teleworking is a strategy to reduce traffic congestion and air pollution in the Baltimore region. Employers in the region are directed—typically through the Clean Commute program and local TDM coordinators—to the BMC website, where they are able to download all of the information and materials needed to launch telework programs within their organizations.

Guaranteed Ride Home Program

In October 2010, the Washington D.C. metropolitan area Guaranteed Ride Home program was expanded to cover the Baltimore region, St. Mary's County, and Cecil County. This program, provided by Commuter Connections, MDOT, and MDOT MTA, provides a free ride home to commuters who carpool, vanpool, bike, walk or take transit to work at least twice a week. Those who register for this program can take advantage of it up to four times annually. It can be used for unexpected personal illness, sick children, household emergency, or employer-mandated unscheduled overtime. MDOT MTA and local rideshare coordinators provide marketing for Guaranteed Ride Home.

Reduced Fare Passes

Programs that reduce transit fares help to encourage greater usage of transit, thereby reducing pollution from private automobiles. One of these reduced transit fare programs is MDOT MTA's All Access College Transit Pass program. It reduces the cost of a regular monthly pass to $52.90 for college students in certain enrolled schools. There are 22 schools in the Baltimore area currently enrolled. Additional information on this program can be found at https://www.mta.maryland.gov/all-access-college-transit-pass.

Another reduced fare program from MDOT MTA is the Reduced Fare CharmCard®, available to seniors and persons with disabilities. The card may be used to ride at reduced fare on these MDOT MTA services: Local Bus, Light Rail, Metro Subway, and in Washington, DC wherever the SmarTrip logo is displayed. For more information, visit https://www.mtacharmcard.com/seniors/.

Car Sharing

Car sharing availability in the Baltimore region includes multiple options, the largest of which is the Zipcar program in Baltimore City. Zipcar offers nearly 200 vehicles, including over 60 vehicles in parking spots allocated through an agreement with the Parking Authority of Baltimore City and 15 vehicles available at transit stations. Zipcar has a considerable presence in Charles Village, Fells Point, Mt. Vernon, the Central Business District, Station North, JHU Homewood, and other Baltimore neighborhoods. The cars can be reserved online, over the phone, or with a mobile app. Studies show that when people have the ability to rent a car just for the few hours they need it, they are more likely to eliminate one or more of their cars. This is especially the case if they have access to transit and live in bikeable and walkable neighborhoods.

Because of the efficiency of shared car systems, members drive fewer miles on average and emit fewer airborne pollutants. They also tend to take advantage of other cleaner forms of transportation such as walking, biking, and riding mass transit. In a survey conducted by Zipcar in Baltimore during 2018, 74 percent of respondents do not own a car and 55% postponed purchasing a vehicle because of the availability of Zipcar.

BICYCLE/ PEDESTRIAN ACTIVITIES

In each jurisdiction, local efforts continue to support bicyclists and pedestrians. The Maryland Department of Transportation also continues similar efforts. The following governmental agencies in the Baltimore region have created bicycle and pedestrian master plans. Through these master plans, agencies can work to develop this key part of a multi-modal transportation network.

Agency	Plan Name	Status
Maryland Department of Transportation	*2040 Maryland Bicycle and Pedestrian Master Plan*	Completed in January 2019
City of Annapolis	*Bicycle Master Plan*	Adopted in January 2012
Baltimore City	*Bicycle Master Plan*	Adopted in 2015
Baltimore County	*Phase I: Eastern County Bicycle & Pedestrian Plan*	Adopted in 2006
	Phase II: Western County Bicycle & Pedestrian Plan	Adopted in 2012
Anne Arundel County	*Pedestrian & Bicycle Functional Master Plan*	Completed in 2013
Carroll County	*Freedom Area Bicycle and Pedestrian Master Plan*	Completed in 2013
	Bicycle-Pedestrian Master Plan	Approved in November 2019
Harford County	*Bicycle & Pedestrian Master Plan*	Adopted in 2013
Howard County	*WalkHoward*	Adopted in 2020
	BikeHoward	Adopted in 2016

As policy, MDOT includes bicycling and walking accommodations in all of its projects, wherever possible. Two programs provide nearly all funding for bicycle projects, they are the FHWA Transportation Alternatives (TA) Program and the Maryland Bikeways Program. For FY 2021, TA funds went to 7 projects ranging from $20,000 to $2,199,995.The Maryland Bikeways Program for FY 2021 awarded 6 projects funding in the Baltimore region ranging from $50,500 to $509,828. In 2020 MDOT launched its first **WALKTOBER**, a month where MDOT and other partnering agencies promoted and hosted events and webinars spotlighting Maryland pedestrians' safety, health, and commuting options in current walk programs and Initiatives. The Maryland Department of Transportation, several state agencies, America Walks, and AARP shared a series of informational resources and free webinars for pedestrians throughout the month of October. Four webinars, termed walkinars, were tailored to interest pedestrian enthusiasts, advocates, planners, and residents. The purpose was for individuals to learn how walking is an easy and accessible exercise, how to safely use pedestrian infrastructure, and how to incorporate walking in your daily routines within the provisions of social distancing and other restrictions. MDOT MTA has had bicycle racks on all of its transit buses serving the Baltimore region since September 2008.

In addition, all MARC Penn Line weekend trains running between Baltimore and Washington D.C., and most weekday trains are equipped with a bike car which accommodates full size bicycles. (See Figure 1) These bike cars provide another option to driving solo. Combining bicycling with transit use may provide a reasonable alternative to driving, one that may not be possible if a traveler considers only bicycling or transit as a travel option.

In *Maximize 2045*, the long-range transportation plan for the Baltimore region, 31 of the 74 projects add pedestrian and bicycle improvements to either roadways or to new or existing transit stations. Additionally, the BRTB set-aside $105M toward projects associated with the Patapsco Regional Greenway and the Baltimore Greenway.

The BMC is supporting BRTB members who wish to pursue 30% design for segments of the PRG. The Elkridge to Guinness project is wrapping up and the Sykesville to McKeldin segment is now underway. In FY 2022 a segment from Guinness to the Southwest Area Park will be initiated.
The BMC, on behalf of the BRTB, promotes bicycling and walking through the following mechanisms:

- Bicycling and Pedestrian Advisory Group (BPAG) is hosted, staffed, and supported by BMC. Its members advise the BRTB's Technical Committee on important bicycle and pedestrian issues.
- BPAG has two work groups, one for Active Transportation: Bicycling and the other for Active Transportation: Walking. These two work groups meet virtually and discuss programs that support these active modes such as the Bike benefits Program and Walk with a Doc.
- Periodic articles in COG Quarterly, BMC's public newsletter, inform people in the region on bicycling and pedestrian matters.
- The Annual Bike to Work Day effort is 20+ years old and is now morphing into a year round program with the entrance of the Love to Ride platform. Launched in 2020 as a way to reach and encourage riders during the pandemic, this program offers support to riders of all levels. The traditional May Bike rides moved to a week in September where riders were able to ride any day of the week and at a time suited to their schedule. This approach will embrace employees on all shifts and those that ride more casually. T-shirts and safety packets were available from a bike shop of their choosing in place of pit stops.

PARK-AND-RIDE PROGRAMS/LOTS

The Maryland Department of Transportation State Highway Administration (MDOT SHA) has assessed their park-and-ride facilities. Usage of MDOT SHA park-and-ride facilities in 2019 is estimated at 45 percent across the region, compared with 46 percent in 2017. The most parking spaces are provided in Anne Arundel and Howard Counties. Baltimore County usage is lower from

2017 with a percentage drop from 44 to 32 percent. The table below displays information on these lots from 2019. A substantial amount of VMT is reduced every year as a result of park-and-ride lots in the Baltimore region. MDOT SHA lots only account for a portion of park-and-ride lots in the region.

SHA Park-and-Ride Facilities 2019

County	Lots	Spaces	Percent Use
Anne Arundel	8	2,120	56
Baltimore	9	1,121	29
Carroll	7	453	32
Harford	13	1,222	38
Howard	8	1,922	51
Regional Total	**45**	**6,838**	**45**

PUBLIC TRANSIT SERVICES

The Baltimore region is served by an array of bus and rail transportation services. This section addresses both bus and rail transportation in the Baltimore region.

Bus Transit

The MDOT MTA operates a far-reaching system of bus services. The size of MDOT MTA's bus fleet is constantly changing the delivery and retirement of buses, and is approximately 765 buses, including approximately 400- hybrid electric buses. Most of the bus routes serve areas within and adjacent to the Baltimore Beltway, connecting the region's suburbs to downtown and neighborhoods within the downtown area. MDOT MTA's BaltimoreLink bus service has 65 bus routes, which include the following.

- **CityLink**: 12 color-coded, high-frequency bus routes connect with each other, as well as Metro SubwayLink, Light RailLink, MARC Train, Commuter Bus, and other services such as Greyhound, Amtrak, and university shuttles, creating a single integrated transit network.
- **LocalLink**: 44 local bus routes provide comprehensive crosstown connections and system-wide connectivity to neighborhoods and communities.
- **Express BusLink**: Express BusLink consists of 9 express bus routes that provide suburb-to-city and suburb-to-suburb connections. Typically, express bus routes have fewer stops, use higher speed roadways, and operate during peak hours.
- **Commuter Bus:** Commuter bus service provides an express transit connection from suburban and residential areas to the Baltimore and Washington, D.C. regions. Commuter bus service uses coach vehicles and typically comprise longer trips than Express BusLink routes. 30 routes operate throughout Central and Southern Maryland and 7 routes operate in the Baltimore region.

There are also locally-operated transit systems, or LOTS, that operate in the Baltimore metropolitan region, including Anne Arundel Office of Transportation, Annapolis Transit, Baltimore CountyRide, Carroll County's Trailblazer, the Charm City Circulator and Harbor Connector, Harford Transit LINK, and the Regional Transportation Agency of Central Maryland (RTA).

The Rabbit Express commuter bus operated by Rabbit Transit out of York, Pennsylvania has the I-83 South route with multiple weekday roundtrip service from York to Hunt Valley, Black and Decker, and Towson, Maryland. It connects with MDOT MTA Light Rail and the Towson University Shuttle. 83S buses will stop at any marked MDOT MTA bus stop along the designated route for alighting passengers, however, all boarding locations must be pre-approved by Rabbit Transit.

In addition to MDOT MTA bus service, local bus service, and Rabbit Express, there are private bus companies that offer intercity bus service to the region. MDOT MTA launched an intercity bus program in January 2011 to connect rural communities in Maryland. The Western service operates from Grantsville to Baltimore via the Bay Runner Shuttle, the Central service operates from Elkton to Baltimore via Greyhound, and the Eastern service operates from Ocean City to Baltimore via Bay Runner Shuttle.

The recently renovated Greyhound bus station at 2110 Haines Street provides a link between intercity and local public transportation, being served by MDOT MTA routes 73 and 75 with routes 69 and 70 stopping nearby. Additionally, numerous companies such as Megabus and Bolt Bus provide intercity service from Baltimore to regional destinations such as New York, Richmond, and Pittsburgh. Megabus departs from the White Marsh Park-and-Ride facility while Bolt Bus departs from Maryland Avenue near Penn Station.

Rail Transit

Rail Transit in the Baltimore region is provided through MDOT MTA's Metro SubwayLink, Light RailLink, and Maryland Area Rail Commuter (MARC) service.

- **Metro SubwayLink -** MDOT MTA's Metro Subway system, called Metro SubwayLink, provides high-speed heavy rail transit service in a 15.5-mile corridor, with 14 stations from Owings Mills in western Baltimore County through downtown Baltimore to Johns Hopkins Hospital east of downtown. Connecting bus service is provided with MDOT MTA bus routes. Currently, Metro SubwayLink is undergoing upgrades and replacement of the Metro Cars and Train Control System with modern, reliable equipment that will enhance passenger comfort, ensure better reliability, and offer improved safety.
- **Light RailLink -** MDOT MTA's Light RailLink provides light rail service in a 30-mile north-south corridor from Baltimore County to Anne Arundel County. The main line runs between Hunt Valley and Glen Burnie with extensions to Penn Station in downtown Baltimore and to Baltimore/Washington International Thurgood Marshall Airport in Anne Arundel County. Light RailLink serves the area by linking communities in the northern and southern suburbs with the downtown core and provides Baltimore City residents access to suburban job centers, such as those located at BWI Airport, the BWI Business District, and the Hunt Valley office park. Service runs every day of the week. There are 33 stations with free parking provided at 12 of these stations.

  All but 2.6 miles of the Light Rail are double-track, which makes service more reliable and increases ridership. The remaining 2.6 miles are single-track due to right-of-way issues. A majority of the system from Linthicum to Timonium operates on 10-minute headways during peak service (6 a.m. to 9 a.m. and 3 p.m. to 6 p.m.) and 15-minute headways during off-peak hours. The Penn Station-Camden Yards service operates on 20-minute peak and 30-minute base headways.

Light RailLink vehicles are undergoing upgrades to various systems to address parts obsolescence, improve vehicle performance and reliability, and enhance passenger comfort. The first delivery of refurbished Light RailLink vehicles were put into revenue service in April of 2018 and continue at present.

- **Maryland Area Rail Commuter (MARC) -** MDOT MTA's MARC service provides high-speed, medium frequency commuter rail service in the Baltimore region and beyond. MARC operates on three lines: Brunswick, Camden, and Penn Lines with service to Baltimore, Maryland; Washington, DC; eight counties in Maryland; and parts of northern West Virginia. MARC serves Anne Arundel, Baltimore, Cecil, Frederick, Harford, Howard, Montgomery, and Prince George's Counties, and Baltimore City. The system encompasses approximately 200 miles of track and 42 stations, providing 95 trips daily. MARCs revenue fleet consists of 177 railcars and 42 diesel locomotives, which are operated at maximum speeds of 125 miles per hour, depending on design and railroad limitations. In the Baltimore region, MARC trains operate in two existing rail corridors totaling 112 miles. The Penn Line runs between Perryville in Cecil County and Union Station in Washington D.C. and stops at eleven stations in the region. The Camden Line runs from Camden Station in Baltimore City to Union Station and stops at ten stations in the region.
  Commuters traveling the Penn Line benefit from the BWI MARC/Amtrak facility renovation and improvements. The project involved station improvements such as an expanded waiting area, new facilities for ticketing and concessions, new restrooms, and new canopies. The facility boasts a new roof, upgraded HVAC, plumbing, and electrical systems. The facility opened for passenger use in 2019. Additionally, Camden Station opened for passenger use in early September 2019. The new station complements the historic headhouse and Camden Yards ballpark. The brick and glass structure has a large canopy and incorporates an expanded seated area, ticket vending machines, and restrooms. Bike facilities are located outside the building. The station includes wayfinding to nearby bike and pedestrian trails, scenic byways, and the Baltimore Visitor Center and Inner Harbor.

  MDOT MTA has completed installation of Positive Train Control (PTC) equipment for all MARC diesel locomotives and cab cars. PTC includes added safety features that aide in preventing train collisions, missed rail traffic signals, and ensure safe and proper spacing of mainline rail traffic.

  In addition, there are several MARC overhaul projects ongoing that will improve passenger experience. Sixty-three multi-level MARC vehicles are being overhauled, which includes upgrades to HVAC, trucks, brakes, doors, and communications. Upgrades to HVAC and communications system are included to enhance passenger comfort. Another overhaul project will be the repower of six MARC diesel locomotives, which will reduce emissions, lower fuel costs, and extend the useful life of the locomotive by 15 years. Finally, the overhaul of 26 MARC IIA vehicles will include safety, interior, and communication improvements.

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS PROJECTS

Transportation systems management and operations (TSMO) projects improve the efficiency of the transportation system using strategies, techniques, and tools.

Traffic Flow Improvements

MDOT SHA continues its efforts to improve traffic flow, mitigate congestion, and reduce mobile source emissions in major travel corridors and at critical intersections throughout the region. These ongoing efforts include traffic signal retiming projects, roundabout construction, intersection reconstruction, park-and-ride facility construction, improved fixed message and variable message signage, corridor congestion relief projects, and other traffic management projects.

MDOT SHA's TSMO efforts are being led by the Office of Transportation Mobility and Operations. In June 2020, the MDOT SHA Administrator signed a memorandum directing the mainstreaming of TSMO programs across the administration. The focus on TSMO will enhance safety, reliability, and efficiency of the roadway network, as well as reduce emissions.

One of the major components of the TSMO efforts is the CHART (Coordinated Highways Action Response Team) program, operated jointly by MDOT, MDOT SHA, MDOT MDTA, and Maryland State Police; it focuses on improving the mobility and safety for the users of Maryland's highways through the application of intelligent transportation system technology and interagency teamwork. The goals of the CHART program are to:

1) Improve highway safety and efficiency by rapidly detecting and responding to hazardous highway conditions using traffic and roadway monitoring strategies;
2) Quickly and efficiently restore normal traffic flow after incidents using incident management strategies;
3) Provide timely and reliable mobility information to the traveling public through its traveler information systems;
4) Reduce congestion on highways by employing traffic management strategies;
5) Expand the CHART operating system and communications network to support sharing of transportation information, and inter-modal and inter-agency coordination and connectivity; and,
6) Deploy emergency response equipment and establish coordinated preparedness and response plans for large-scale natural and man-made disasters to establish a secure and safe transportation system.

These goals highlight the focus of CHART operations on non-recurring congestion, as caused by crashes, severe weather, and special events. To achieve its mission and goals, CHART has installed various ITS technologies, such as closed circuit television cameras, dynamic message signs, traffic speed detectors, roadway weather information systems, and highway advisory radio on interstate highways in the Baltimore region and other parts of the state using a combination of federal and state funds. The Statewide Operations Center, Authority Operations Center, and the two satellite Operations Centers in the region, use these technologies to monitor the state's roadways to quickly identify and clear crashes as well as manage traffic to reduce the impact of incidents. CHART also maintains roving rapid response teams (emergency traffic patrols) that operate 24 hours 7 days per week on many of the state highways in the region and provide assistance to disabled motorists, assist in clearing incidents from travel lanes, and reroute traffic around incidents. The state also has a 511 traveler information system (www.md511.org) to provide real-time transportation condition information to the public. CHART operations save tens of millions of vehicle-hours of delay statewide, millions of gallons of fuel statewide, and reduce overall mobile source emissions.

Electronic Toll Collection

The use of electronic toll collection technology enables vehicles to move faster through the tolling process, reducing delay at tollbooths, thereby reducing traffic congestion and air pollution emissions. The Maryland Transportation Authority commenced operation of its electronic toll collection system, M-TAG, at the Authority's three harbor crossing facilities in 1999. By fall 2001, all toll facilities in the region were equipped with electronic toll collection equipment.

In 2001, MDTA joined the E-ZPass InterAgency Group, a coalition of 25 toll agencies in 15 states. At present, travelers in Maryland, as well as at most toll facilities in Delaware, Illinois, Indiana, Maine, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia can pay tolls using one electronic device. Starting in October 2019, MDTA began cashless toll collection at the Francis Scott Key Bridge and the Thomas J. Hatem Memorial ("Bay") Bridge, with tolls being collected by E-ZPass or video tolling. In the first phase of the transition, new gantries were erected to collect tolls, but vehicles will still travel through the toll plazas; the existing toll plazas at this location will be removed by spring 2021, enabling vehicles to maintain highway speeds during toll collection.

The COVID-19 pandemic had a notable impact on the volume of traffic on Maryland's tolled facilities and on the transition to all electronic toll collection. Due to the pandemic and significant reduction in traffic (from July 2019 to July 2020, decrease of 28%), the transition to all electronic toll collection was accelerated. Cash collection was suspended at all facilities on March 17, 2020, and the Governor announced that cash collection had permanently ended on August 6, 2020. Vehicles without an E-ZPass were transitioned to video collection. As a result, E-ZPass use dropped system-wide from 78% in July 2019 to 72% the following year. The process to convert to gantry use and remove toll plazas will be phased in through 2025.

Benefits of cashless tolling include less idling time resulting in increased fuel efficiency and reduced emissions as well as decreased congestion and increased driver and worker safety. MDTA estimates drivers at the Hatem and Key bridges will save $1 million in fuel and 44,000 hours by not stopping at toll booths. Additional MDTA facilities will be converted in the future.
The table below shows the portion of vehicles that use E-ZPass and video tolling in the Baltimore region.

Facility	Percent Using E-ZPass	Percent Using Video
I-95 Express Toll Lanes	86%	14%
William Preston Lane Jr. Memorial (Bay) Bridge	76%	24%
Baltimore Harbor Tunnel	73%	27%
Fort McHenry Tunnel	78%	22%
Francis Scott Key Bridge	81%	19%
Thomas J. Hatem Memorial Bridge	85%	15%
John F. Kennedy Memorial Highway	77%	23%

Traffic Signal Retiming

MDOT SHA has a program to review and retime its signals statewide every three years, including its 1,200 signals in the Baltimore region. In addition, signals in high profile corridors or corridors subject to significant traffic pattern change are evaluated on a more frequent schedule. This program results in smoother traffic flow as well as reduced emissions resulting from idling vehicles. *Synchro* software is used to develop new timing plans and to calculate benefits from the new timing plans. In CY 2019, MDOT SHA reviewed six systems containing 42 signals in the Baltimore region. Timing changes were made on five systems containing 34 signals. Delay was reduced by 214,100 hours and fuel consumption was reduced by 51,500 gallons. It is estimated that NOx, VOC, and CO emissions were reduced 0.5%, 1.3%, and 1.6% respectively for the signal systems.

Traffic Incident Management for the Baltimore Region Committee

Launched in September 2000, the Traffic Incident Management for the Baltimore Region Committee (formerly called the Baltimore Regional Operations Coordination Committee) works to improve coordination of incident management activities to enhance the safety of responders and the traveling public, reduce traffic congestion and delay, and improve the quality of the environment. Participants on the TIMBR Committee include police, fire, transportation and emergency management agencies from the jurisdictions, MDOT and its business units, Maryland State Police, MDE, FHWA, and others. Since the inception of the TIMBR Committee, various projects have been undertaken to improve responder coordination, cooperation, and communication, leading to incidents being cleared more quickly and more safely.

PREFERENTIAL PARKING MANAGEMENT

Parking management is an important strategy for managing transportation demand and a complementary action to increase the effectiveness of the various rideshare programs. This strategy assumes several forms, with preferential parking management being the most basic.
Preferential parking for carpools/vanpools is a traditional emission reduction strategy in the Baltimore region. Carpoolers receive the most desirable parking spaces, usually those nearest to the building or in protective garages.

CLEAN VEHICLES, FUELS AND TECHNOLOGIES

Alternative Fuel Vehicle Incentives

All-electric and plug-in hybrid vehicles provide the ability for drivers to reduce the amount of fuel they burn, and reduce emissions as a result. Incentives are often provided by the state and federal government for the purchase of these clean vehicles and their supply equipment. Currently, the State of Maryland offers a state *rebate* of *40%* of the cost of electric vehicle charging equipment and installation (up to *$700* for individuals, *$4,000* for commercial businesses *through the EVSE Rebate Program*.). And, the federal government provides a tax credit of up to $7500 for all-electric or plug-in hybrid cars."*The State of Maryland also offers fleets varying incentives for electric vehicles and other alternative fuel vehicles through the Clean Fuels Incentive Programs (CFIP) and the Maryland Smart Energy Communities (MSEC) Program.*

Also, as part of the Maryland Volkswagen Settlement, MDE and MEA have worked to develop a light duty charging infrastructure grants program. Maryland will be conducing three rounds of funding. The program will focus on workplace charging, state owned properties (Park-and-Rides,

state parks etc.) and Corridor/HUB charging locations. There is a total of $11.3 million available. The first round of funding opened on December 8, 2020 and applications are due March 5, 2021. It is planned that the remaining two rounds of funding will open later in the 2021 calendar year. Each round of funding will have approx. $3.7 million in funds.

Dray Truck Program

An important program that MDOT, MDE, and the Maryland Port Administration work jointly on is the Dray Truck Replacement Program. Under this program, participating truck owners (either independent owner-operators or fleet owners) are provided with funding towards the purchase of a newer truck (MY 2014 or newer) with an engine that meets more stringent emission standards. The Port's dray truck replacement program has been in place for several years and to date has replaced approximately 245 dray trucks. Funding for this program has largely been through EPA Diesel Emission Reduction Act grants, Congestion Mitigation and Air Quality program funds via the state and Volkswagen Settlement funding. To date, the Port Dray Truck Program has received approximately $9.4 million in funding.

In 2018, through the work of this partnership, the Port received approximately $2.4 million dollars in EPA funding under its regional DERA Program. This funding will go toward the replacement of approximately 35 dray trucks, 30 pieces of cargo-handling equipment such as forklifts and yard tractors, and the repowering of four marine engines. These replacements and repowers will result in the lifetime emission reduction of approximately 37 tons of particulate matter, 398 tons of nitrogen oxides, 165 tons of carbon monoxide, and 724 tons of carbon dioxide. It will also save more than 64,000 tons of fuel. In addition to his regional DERA award, the Port received approximately $230,000 from MDE as part of its state DERA funding from EPA to fund the Dray Truck Program in 2018."

In 2019, through the work of this partnership, the Port received approximately $1.9 million dollars in EPA funding under its regional DERA Program. This funding will go toward the replacement of approximately 50 dray trucks and 4 pieces of cargo-handling equipment such as forklifts and yard tractors.

Planned Emission Reducing Projects

Project Type:

Implementing Agency	*Project Name*	*Project Description*
Anne Arundel County	Parole Transportation Center	This project will provide a multi-modal transportation center in Parole.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Route 2 Improvements	This project will design, acquire rights of way, and construct a 3rd northbound travel lane, shoulder, and sidewalk along MD 2 between US 50 and MD 648 near the Arnold Post Office.
Anne Arundel County	South Shore Trail - Phase II (Route 3 to Odenton)	This is a portion of a larger trail project which involves acquiring property, design and construction of a trail between Annapolis and Odenton on WB&A.
Anne Arundel County	Jennifer Road Shared Use Path	This Project will install a shared use path along the north side of Jennifer Road from Pavilion Parkway to Admiral Drive.
Anne Arundel County	MD 214 & Loch Haven Road	This project will design, acquire rights of way, and construct improvements consisting of an additional westbound travel lane along MD 214 from MD 468 to east of Loch Haven Road, including bicycle compatible shoulders and intersection improvements at Loch Haven Road.
Anne Arundel County	WB&A - West County Trail - Phase V	Design and construct a pedestrian bridge of the Patuxent River to connect the Prince George's and Anne Arundel County segments of the WB&A Trail. The project is a joint effort of MDOT and the 2 counties.
Anne Arundel County	Waugh Chapel Road Improvements	This project will design, acquire rights of way, and construct improvements along Waugh Chapel Road between Maytime Avenue and MD 3, consisting of intersection upgrades, bicycle compatible shoulders, and a shared use path.
Anne Arundel County	MD Rte 175 Sidewalks	This project funds a County contribution to the State project to design, acquire rights of way, and construct a sidewalk along the south side of MD Rte 175 from the Sappington Station Roundabout to MD Rte 170. Given the location and nature of this public improvement, available funds from the BRAC Revitalization and Incentive Zone will be the source of funding for this project.
Anne Arundel County	Brock Bridge/ MD 198	As part of an intersection improvement and road reconstruction project, there will also be the construction of an ADA compliant sidewalk extending approx. 500 feet from 241 Brock Bridge Road connecting to the sidewalk being constructed as part of the intersection improvements.
Anne Arundel County	Anne Arundel Community College B&A Connector	This project includes design, right-of-way acquisition and construction of a trail connection between Anne Arundel Community College (AACC) with the B&A Trail, near West Campus Drive

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	South Shore Trail - Phase III (Bestgate to Eisenhower Golf Course	This is a portion of a larger trail project which involves acquiring property, design and construction of a trail between Annapolis and Odenton on WB&A.
Anne Arundel County	Broadneck Peninsula Trail - Phase III	This is part of a larger project to develop a multi-use trail to connect Bay Bridge and Sandy Point State Park with B&A Trail. Phase III goes from Peninsula Farm Road to Bay Dale Drive
Anne Arundel County	Jumpers Hole Rd Improvements	This project will design, acquire rights of way, and construct improvements along Jumpers Hole Road from Benfield Boulveard to Earleigh Heights / Kinder Road / Kinder Park. Improvements include a shared use path along the west side, a sidewalk along the east side, and bike lanes along the road.
Anne Arundel County	Tanyard Springs Ln Ext	This project is to add shoulders and sidewalks along approximately 1/4 mile of Tanyard Springs Lane, and improve the intersection at Solley Road.
Anne Arundel County	Race Road - Jessup Village	This project will design, acquire rights of way, and construct improvements along MD 175 (Annapolis Road), Redbud Avenue, Champion Forest Avenue, Chestnut Avenue, Race Road, and National Business Parkway providing improved vehicular, bicycle, and pedestrian access to the new Jessup Elementary School and the corridor.
Anne Arundel County	South Shore Trail - Phase IV (Eisenhower Golf Course to Waterbury Road)	This is a portion of a larger trail project which involves acquiring property, design and construction of a trail between Annapolis and Odenton on WB&A.
Carroll County	Northwest Trail Acquisition	This project provides funding to acquire approximately four miles of an existing inactive rail corridor for a future trail from Taneytown to the Pennsylvania state line.
Carroll County	Sykesville to Piney Run Park Greenway	Construct a 4-mile greenway trail to link the Town of Sykesville to Piney Run Park. This project will interconnect parks and other high-user areas with surrounding residential and town development.
Carroll County	Westminster Veterans Memorial Park	This project provides funding for the design, engineering, and construction of a 32-acre parcel in the Westminster area into a new active park. Design includes three multi-purpose fields, playground, pavilion, one-mile walking trail, and parking areas.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Carroll County	Washington Road (MD 32) Sidewalk	Length: Approximately 2,160 feet Limits: Kate Wagner Road to Washington Lane This project provides planned funding for construction of a sidewalk along Washington Road (MD 32) in Westminster. The project will provide a continuous sidewalk connection with the residential neighborhoods south of Westminster and the facilities of Westminster High School, Carroll Community College, Robert Moton Elementary School, and Carroll County YMCA.
Carroll County	Westminster Community Trail - Phase III	Westminster Community Trail Phase III is a state project, with State Highway Administration providing 100% of construction costs, estimated at $1.1M. Pedestrian walkway/bike trail is to be macadam from Hahn Road along Route 27 south to the MD Route 140 overpass. Included is a pre-engineered bridge to cross an existing drainage area.
Carroll County	Johnsville Road Sidewalk	This project provides funding for construction of a sidewalk along Johnsville Road in Freedom. The project will provide sidewalk connection to Eldersburg Elementary School, Liberty High School, residential neighborhoods, and the commercial corridor along MD 32 (Sykesville Road) via Bartholow Road.
Carroll County	Ramp and Sidewalk Upgrades	Upgrade or replace non-compliant sidewalk ramps for ADA accessibility. Non-compliant ramps and sidewalks are also addressed through the Pavement Management Program. As part of this process, a self-evaluation of pedestrian facilities within county rights-of-way has been completed and will be used to develop a prioritized plan to address deficiencies.
Carroll County	Leister Park	Funding to develop the Leister property into a new 100-acre park. The park will include a pavilion, a tot lot, bike paths and trails, and baseball/softball fields among other things.
Carroll County	Gillis Falls Trail - Phase I	This project provides planned funding to establish a 5,700 foot compacted stone pedestrian trail connecting Salt Box Park to Flag Marsh Road near the Equestrian Center. This section of trail will require a boardwalk in several areas and the installation of a pre-engineered bridge to cross the existing stream and to traverse the marshy areas.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Carroll County	Little Pipe Creek Trail	This project provides planned funding for the development of a 10-foot wide, 4 mile macadam trail along MD Rte 75 corridor for walking, biking and in-line skating. From Union Bridge to New Windsor.
City of Annapolis	Cedar Park Sidewalks	This project will install a five foot wide concrete sidewalk along the southside of Cedar Park Road from Windell Avenue to the existing sidewalk near Halsey Road, including ADA ramps at each sidestreet crossing. The City is pursuing a Safe Routes To School Grant to assist with funding for the project.
City of Annapolis	S. Southwood Sidewalk and Stormwater Management	This project is for the installation of sidewalks, curbs, gutters, and roadway construction in the South Southwood area, an area that includes almost three miles of roads with and approximate 40 foot right-of- way. A feasibility study of the existing infrastructure will determine potential areas for connecting missing sidewalk sections and upgrading the existing sidewalks to be ADA compliant.
City of Annapolis	Trail Connections	As recommended in the Bicycle Master Plan (2012) this project consists of several components to create a more cohesive trail system in the City. This project improves the safety of bike travel and supports City policy to encourage alternative transportation options. Project includes planning, land acquisition, design, and construction. Phase 1: Connect the Poplar Trail to the Spa Creek Trail with pavement markings and signage. Phase 2: Connect Taylor Avenue to West Washington Street via former railroad corridor. Phase 3: Connect Admiral Drive and Gibraltar Avenue
City of Annapolis	Hiker/ Biker Path - Rte. 450 to the Navy Memorial Stadium	This project consists of (1) a shared-use path within the state right of way along Routes 450 and 435 from the Naval Academy Bridge to Taylor Ave. and (2) a bike lane or sharrows along Annapolis St., Melvin Ave., and Farragut Rd. Portions of the route require the state to obtain an easement for ownership. Along Annapolis St., a bike lane or sharrows will be installed from Taylor Ave. to Melvin Ave. The city is partnering with the Naval Academy and SHA and contributing toward the completion of the total project.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Harford County	Bike Trails/Linear Park Development	Project to acquire and develop bike trails, greenways and linear parks. Trails can be constructed along existing roadways, in existing and proposed park sites and/or the Ma & Pa Railroad track bed.
Howard County	OAKLAND MILLS ROAD IMPROVEMENTS	A project to improve Oakland Mills Road from Guilford Road northward to Carters Lane.The improvements would include road widening, sidewalk, curb and gutter and bicycle compatibility. At present this section of road is two lanes with no sidewalks and poor drainage. A traffic signal will be installed at the Oakland Mills & Guilford Road intersection.
Howard County	SNOWDEN RIVER PARKWAY WIDENING BROKENLAND TO OAKLAND MILLS	A project to design and construct a widening of Snowden River Parkway (intermediate arterial) by adding a third lane and sidewalks from Broken Land Parkway to Oakland Mills Road.
Howard County	US1 CORRIDOR REVITALIZATION	A project to plan, design and implement a series of streetscape, pedestrian, bicycle, transportation and public green space improvements on public property in the US1 Corridor. Acquisition for these improvements may be needed. Funding includes developer contributions. The County will either construct the improvements or have the developers construct the improvements for the County.
Howard County	Routine Sidewalk and Walkway Extensions	A project to design and construct routine sidewalk and walkway extensions about 1,000 feet in length.
Howard County	FY2014 Bicycle Plan Projects	A project for the implementation of the comprehensive Howard County Bicycle Master Plan.
Howard County	FY 2017 Savage Area Complete Streets	The project includes complete street improvements in Savage, Maryland to enhance multimodal travel for pedestrians, bicyclists, transit, and automobiles.
Howard County	Sanner Road Improvements	Project providing bicycle compatibility by widening the existing 10 feet lanes to 12 feet and filling in the missing shoulders along both sides of the road.
Howard County	FY 2007 Pedestrian Plan Projects	Ongoing evaluation, design and construction of pedestrian improvements listed in the Howard County Pedestrian Master Plan. The candidate project list is updated annually by the Dept. of Planning and Zoning in coordination with the Dept. of Public Works.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Howard County	Intersection Improvement Program	Project for the study, design and construction of geometric and pedestrian modifications to improve the safety or increase capacity at various intersections.
Howard County	School Route Pathways or Sidewalks	Installation of sidewalks/pathways to provide safe walking route for school children.
Howard County	Mission Road Sidewalk	A project to install sidewalk along parts of Mission Road. Area 1 will install sidewalk from Pleasant Chase Road to the Ridgley's Run Community Center. Area 2 will address Mission Road from Guildford Road to Concord Drive.
Howard County	FY 2009 State Roads Sidewalk Retrofit Program	Design and construct improved pedestrian access along State roads.
Howard County	FY 2009 Pathway and Trail Rehab and Expansion	Rehabilitate and expand the existing Pathway System which currently extends from Savage Park through Columbia to Dorsey's Search.
Howard County	Sidewalk Repair Program	This project is for the repair of deteriorated sidewalks and driveway aprons that are in public rights-of-way.
Howard County	School Crosswalk Improvements	This project is for the installation or modification of crosswalks, raised crosswalks, chokers, sidewalks, raised shoulders, signs and/or other roadway retrofits to provide for an enhanced walking route for school children.

Project Type:	*Congestion Management*	
Implementing Agency	***Project Name***	***Project Description***
City of Annapolis	Wayfinding Signage	A system of signage and wayfinding technologies to be implemented city-wide. The signage will include gateway signs, pedestrian signs, information kiosks, and other wayfinding tools. Project coordinated with new parking and transportation initiatives and with improvements to the City Dock area. It will improve drivers and pedestrian information available and improve circulation inefficiencies and congestion.
Howard County	Residential Traffic Calming	Project to construct geometric roadway changes to reduce traffic speeding in residential areas.

Project Type:	*ITS*	
Implementing Agency	***Project Name***	***Project Description***
Howard County	Signalization Program	Project designing and constructing various traffic signals when the MUTCD Warrants are met; also includes the modification and modernization of existing traffic signals.

Project Type:	*Public Transit Improvement*	
Implementing Agency	***Project Name***	***Project Description***
Howard County	FY 2014 Bus Stop Improvements	Project implementing a series of improvements to Howard Transit bus stops including installation of bus shelters, concrete pads, bus stop signs, connecting sidewalks, curb cuts (consistent with ADA requirements), crosswalks, route map holders and other improvements. The Office of Transportation will determine the location and extent of these improvements.
Howard County	FY 2021 Transit Center - Howard County	A project for the site selection, design and construction of a transit center.

Ongoing Emission Reducing Projects

Project Type: *Bike/Ped/Greenway*

Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Sidewalk/ Bikeway Fund	This project includes design and construction of needed sidewalk/bikeway links along County roadways.
Anne Arundel County	School Sidewalks	Funds are needed to provide sidewalk improvements to accommodate walkers, and reduce bus requirement.
Anne Arundel County	Arundel Mills LDC Roads	The project funds all aspects of road and pedestrian rehabilitation, and safety improvements as identified by the Anne Arundel County Arundel Mills - MarylandLive! Local Development Council for the purpose of improving motorist and pedestrian facilities for communities near Arundel Mills - MarylandLive!.
Anne Arundel County	Trail Resurfacing	This multi-year, recurring project provides funds to resurface trails such as the B&A ,WB&A, South Shore, and Broadneck Peninsula trails.
Anne Arundel County	Greenways, Parkland & Open Space	This project establishes a fund for County-wide Greenway, Parkland and Open Space Acquisitions and related expenses. This project will be used to acquire land, which satisfies one or more of the following objectives: addresses local or state Greenway objectives, protects sensitive natural resources, provides an addition to an existing park/trail and/or satisfies County park, recreation and preservation needs as identified in the Land Preservation, Park and Recreation Plan, the Greenway Master Plan, the General Development Plan and the Small Area Plans.
Anne Arundel County	Odenton Area Sidewalks	This project will design, acquire rights of way, and construct sidewalks on one side of Hammond Lane, Monie Road and Higgins Drive to provide a safe way for students from the community to get to Arundel Middle School.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Severn-Harman Pedestrian Network	This project will fund design, right-of-way acquisition and construction of pedestrian and bicycle facility improvements, creating a network as recommended in the Pedestrian and Bicycle Master Plan Update (2013) connecting communities with public and major privately owned facilities and activity centers.
Anne Arundel County	Ped Improvement - SHA	This Project is to cover the County's share of costs for the SHA to construct new sidewalk and reconstruct exisiting sidewalks along state highways. (MD 253 - 2017 construction; MD 424 - 2018 construction; MD 214 - 2019 construction; MD 173 - 2020 construction; MD 168 - 2021 construction)
Baltimore County	Greenways/Stream Valleys/Trails Dev.	Acquisition and development of stream valley parks and greenways, including develop rec trails county wide, Turner Station Park)
Baltimore County	Curbs, gutters and sidewalks	Replacement and repair of deteriorated curbs, gutters and sidewalks as well as construction of new sidewalks where needed.
Baltimore County	Sidewalk Ramps Program	This project provides funds to construct sidewalk ramps to assist the handicapped.
Baltimore County	Recreation Facility Renovations	Capital improvements and/or capital renovations to existing parks and facilities including comfort stations, plantings, benches, pavilions, lighting, sidewalks, fountains, etc.
Baltimore County	Dundalk Heritage Trail and Park	Funds to construct a trail and park that will connect the center of historic Dundalk to Baltimore City and the waterfront.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
City of Annapolis	General Sidewalks	Project for the repair of sidewalks in Annapolis. The ongoing repair program is based on a comprehensive city-wide sidewalk condition assessment. Based upon this assessment, a list of priorities for repair and reconstruction is developed each year, taking into account not only sidewalk condition, but location of sidewalk in terms of its importance to citywide pedestrian traffic.

Project Type:	*Commute Alternatives Incentive*	
Implementing Agency	***Project Name***	***Project Description***
MDOT	Commuter Choice Tax Benefit Program	Conduct marketing efforts to promote use of state and federal commuter choice tax benefits.

Project Type:	*Congestion Management*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Neighborhood Traffic Control	Funds are requested to construct various traffic calming devices on neighborhood streets in order to control traffic speeds.
Baltimore County	Miscellaneous Intersection Improvement	This project will increase capacity and safety along roads and major intersections throughout Baltimore County. Road improvements will relieve congested areas defined as deficient under Baltimore County law. Priority is given to intersections rated as service level "E" or "F".
Baltimore County	Traffic Calming	This project will support a traffic calming program countywide in response to concerns from various communities.

Project Type:	*ITS*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	New Traffic Signals	This project will fund the construction of new traffic control equipment on County roadways. This project also includes the construction of new Intelligent Transportation Systems (ITS) such as video detection and monitoring, automated count stations and communication systems to coordinate signals.
Baltimore County	GPS Routing for County Vehicles	The route optimizer will prescribe an efficient schedule that should increase productivity, while reducing fuel consumption, by minimizing travel time to various locations throughout the workday. Operations involving vehicles with multiple stops per day and those responding to unscheduled maintenance calls will benefit the most from this program.
MDOT	CHART - (Coordinated Highways Action Response Team)	Focuses on non-recurring congestion includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems and rapid response team.
MDOT	Adaptive "Smart" Signal Systemization - Baltimore Area	Traffic Relief Plan - Smart traffic Signals - Phased statewide installation of traffic control devices that utilize the input of real-time area traffic conditions along with intelligent signal timing and synchronization of traffic flow along travel corridors.

Project Type:	*Land Use*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Agricultural Preservation Program	This project provides funding for the purchase of agricultural easements or fee simple interest in accordance with the County and State Agriculture and Woodland Preservation Programs. Easements, in the form of development rights, are purchased from qualified property owners of agricultural and woodland properties. Funds may also be used to match or augment other state or federal agricultural preservation programs such as Rural Legacy.
Baltimore County	Agricultural Preservation	This is for the protection of farmland through the acquisition of development rights. Easements purchased through the MD Agricultural Land Preservation Program, the Baltimore County local program, and other programs. These programs are financed using the MD Agricultural Transfer Tax, county bonds, general funds, federal funds, state funds, and private funds. Funds are also being set aside to purchase easement options on farmland imminently threatened by development.
Baltimore County	Rural Legacy	Protection of rural natural resources through the acquisition of development rights, easements or fee-simple interest in properties. Activities will be in conformance with approved rural legacy plans and the MD rural legacy program. Protection of resources by this program will be consistent with the adopted Baltimore County Master Plan. Financing for this project will be through grants from the MD Rural Legacy Program, county bonds and/or general funds and private funds.
Carroll County	Agricultural Land Preservation	This project provides funding for the Carroll County Agricultural Land Preservation program by providing an opportunity for landowners to make a longterm commitment to agriculture by offering financial incentives in exchange for their property development rights. Preserving farmland with permanent easements helps to maintain the rural character of Carroll County and enables agriculture to remain a viable industry.

Project Type:	*Outreach/Education*	
Implementing Agency	***Project Name***	***Project Description***
MDOT	Clean Air Partners	A public/private consortium that carries out a public education campaign in the Baltimore and Washington, D.C. regions, to encourage individuals and employers to take voluntary actions to reduce air emissions and protect their health from air pollution. The campaign involves an Air Quality Action Days component.

Project Type:	*Public Transit Improvement*	
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	Transit Improvements - Anne Arundel County	This project is for the installation of new transit improvements including concrete pads, shelters, benches, bike racks, bike lockers, bike racks on buses, etc.; as well as the maintenance and repair of existing transit improvements on County or State right-of-way for services operated by or in coordination with the Office of Transportation.
Anne Arundel County	Vehicle Replacement (Anne Arundel County)	This multi-year project is necessary to maintain and upgrade the school system's vehicle fleet.
Anne Arundel County	School Bus Replacement (Anne Arundel County)	Purchase of replacement school buses.
City of Annapolis	Annapolis Transit Reduced Fare Program for Seniors, Disabled Persons and Students	Half-price one-way tickets, as well as day, weekly, and monthly passes are available for purchase by students, senior citizens, and the disabled, with proper identification.
MDOT	MTA Bus Replacement	This project provides for the routine replacement of buses past their useful life.
MDOT	State Worker Free Transit Program	Provide free service to state employees for MTA bus, light rail, some commuter buses, and Metro subway systems.
MDOT	MTA All Access College Transit Pass Program	Reduced transit pass for area college students.
MDOT	Metro Railcar Overhaul	Overhaul of rail cars at 10 plus years after the midlife, to ensure safe reliable operation of ~ 200 vehicles.
MDOT	MARC Coaches - Overhauls and Replacement	Overhaul MARC coaches in accordance with "10-year minor" and "20-year mid-life" schedules

Implemented Emission Reducing Projects

Project Type:

Implementing Agency	*Project Name*	*Project Description*
Howard County	SOUTHEAST INFRASTRUCTURE IMPROVEMENTS	A project to plan, design and construct a series of infrastructure improvements targeted within the southeast area of the US1 corridor. Projects will advance community, economic and environmental sustainability goals. Infrastructure includes storm water management, sidewalk and biking facilities, transit and community open space.

Project Type: *Bike/Ped/Greenway*		
Implementing Agency	***Project Name***	***Project Description***
Anne Arundel County	South Shore Trail - Phase 1 (Waterbury to Route 3)	This is a portion of a larger trail project which involves acquiring property, design and construction of a trail between Annapolis and Odenton on WB&A.
Anne Arundel County	Broadneck Peninsula Trail - Phase IA	This is part of a larger project to develop a multi-use trail to connect Bay Bridge and Sandy Point State Park with B&A Trail. Phase IA goes from Green Holly to Old Cape St. Claire.
Anne Arundel County	Ridge/Teague Rds RTL	This project will provide for increased capacity and operational efficiency along Ridge Road at its intersection with Teague Road. This project will also complete sidewalk along Ridge Chapel Rd to Harmans Elementary Rd.
Anne Arundel County	WB&A - West County Trail - Phase III	Construct new paved, multi-use trail from Conway Road to Patuxent River.
Anne Arundel County	Cape St. Claire Rd. Widening	Design and construct widening of road between Woodland Circle and Hilltop Dr., and provide sidewalks.
Anne Arundel County	Broadneck Peninsula Trail - Phase II	This is part of a larger project to develop a multi-use trail to connect Sandy Point State Park with B&A Trail. Phase II goes from Bay Dale to Green Holly.
Anne Arundel County	Pasadena Road Improvements	Addess impacts of East-West Boulevard traffic on Pasadena Road. This project will include sidewalks on the south side of the road, two median islands with associated road widening, a raised intersection at Penny Lane, and the relocation of the intersection at Spruce Lane to improve sight distance.
Carroll County	Bennett Cerf Bridge Replacement	This project provides planned funding for the design and replacement of a pedestrian bridge located at Bennet Cerf Park in Westminster.
Carroll County	MacBeth Trail Connection	Construction of an 850 linear foot asphalt trail between the eastern and western sections of MacBeth Way in Eldersburg. This trail project is a part of the larger overall Governor Brown Trail project that will connect Eldersburg with Sykesville and include connections to Springfield Hospital Center, the Warfield Business Complex, and Freedom Park.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Harford County	Bel Air Area Transportation Study	Project performing a traffic and safety analysis on MD 22, US 1 (Business) and MD 24 between MD 543 and Tollgate Road to the east/west and MacPhail Road to US 1 Bypass to the north/south. The study will include an existing conditions analysis, a no-build analysis, and a future conditions analysis based on several scenarios designated to address improved vehicular mobility and safety, improved transit, bicycle and pedestrian facilities along the corridors including the ability and benefits of providing dedicated bicycle lanes and sidewalks. The study will assess Complete Streets and include a roadway safety audit and an origin/destination report.
Harford County	Site and Parking Lot Improvements (Harford Comm. College)	Replacement, installation, and/or repair of campus parking lots, roadways, and sidewalks.
Harford County	Churchville Complex Development	This project proposes the further development of the Churchville Recreation Complex in accordance with the Master Plan. Improvements will include additional parking, athletic facilities and nature trails.
Harford County	Emily Bayliss Graham Park	This park will focus on passive park development for a site in Emmorton. The park will include the natural trails, picnic pavilions and opportunities for the public to learn about the history of the site and surrounding community. The initial step was the preparation of a site master plan and review of the existing structures. Additional environmental studies will be done to determine the trail placement so as to minimize habitat disturbance. Preservation of this tract will provide critically needed public open space. Additional residential growth is anticipated in the area and will generate demand for parks.
Howard County	Doncaster Drive Sidewalk	A project to construct approximately 1200 LF of sidewalk along Doncaster Drive from Roundhill Road to Hale Haven Road.
Howard County	Hunt Club Sidewalk	Construction of approximately 4,000 LF of sidewalk along Hunt Club Rd. from US 1 to Bauman Dr.
Howard County	St. John's Lane Sidewalk	Project to construct sidewalk and pathway improvements along St. Johns Lane to link Mt. Hebron High School to US 40.
Howard County	Tower Drive Drainage and Sidewalks	A project to design and construct improved drainage and sidewalks along Tower Drive.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
Howard County	Howard County Bikeshare Program	This project is to launch the Howard County's Bikeshare Program. Phase I of this project is to add 7 stations in Columbia. Phase II of this project will be adding stations in Ellicott City.
Howard County	Port Capital Sidewalks	A project for the construction of approximately 1,200 LF of sidewalk along Port Capital Drive from US1 to New Colony Boulevard.
Howard County	Community Renewal / Enhancements	A project to design and implement a series of pedestrian improvements, streetscape enhancements and repair or enhancement of public green spaces.
MDOT	Bike Racks on Weekday MARC Train	Bike racks will be added to the MARC train during weekday service. The MARC cars with the bike racks will be marked on the outside. Two bicycles would be able to be accommodated on these indicated MARC cars.

Project Type:	*Clean Technology*	
Implementing Agency	***Project Name***	***Project Description***
Howard County	Howard County Electric Bus	Zero emission electrified bus transportation is coming to Howard County with the advent of fully electric buses powered by wireless charging technology.
Howard County	Howard County Hybrid Buses	This includes 11 hybrid-electric replacement buses for the Howard Transit fleet. (Three included in another entry.)
MDOT	MTA Hybrid Buses - FY 2013	57 new hybrid buses were put into service in the MTA fleet in FY 2013.
MDOT	MTA Hybrid Buses - FY 2014	50 new hybrid buses were put into service in the MTA fleet in FY 2014.
MDOT	MTA Hybrid Buses - FY 2015	41 hybrid buses were put into service in the MTA fleet in FY 2015.
MDOT	Dray Truck Replacement Program - 2016	This program provides an incentive for drayage truck owners to replace their existing truck with a newer, lower polluting truck that meets more recent engine emission standards. An EPA grant of $870,000 was awarded to Maryland Environmental Service (MES) on behalf of MPA for up to $30,000 per truck. 2006 model year and older trucks will be replaced with dray trucks having 2010 or newer EPA certified engines.
MDOT	Dray Truck Replacement Program - 2017	This program provides an incentive for drayage truck owners to replace their existing truck with a newer, lower polluting truck that meets more recent engine emission standards. An EPA grant was awarded to Maryland Environmental Service (MES) on behalf of MPA for up to $30,000 per truck. Older trucks will be replaced with dray trucks having 2010 or newer EPA certified engines.
MDOT	MTA Buses - FY 16/17	172 clean diesel buses will be purchased in FY 16/17.
MDOT	MTA - FFY 19 Bus Replacements	For the procurement of 42 additional Clean Diesel buses as part of a 2-year procurement, for core bus service, replacing 2005 and 2003 models.

Project Type:	*Commute Alternatives Incentive*	
Implementing Agency	***Project Name***	***Project Description***
MDOT	MARC Halethorpe Station Improvements	Phase I of the project provided an additional 428 surface parking spaces at the Halethorpe MARC Station. Phase II includes installation of high level platforms, a pedestrian bridge, new shelters, lighting, landscaping and improved ADA access.
MDOT	Telework Partnership with Employers/ Telework Baltimore	Baltimore region program to market the development of teleworking programs to employers.

Project Type:	*Congestion Management*	
Implementing Agency	***Project Name***	***Project Description***
Harford County	Tollgate Road and Plumtree Road Roundabout	Construction of a roundabout at South Tollgate Rd and Plumtree Rd.

Project Type:	*ITS*	
Implementing Agency	***Project Name***	***Project Description***
MDOT	Signal Systemization - MD 151	Wise Avenue to Trappe Road

Project Type:	*Land Use*	
Implementing Agency	***Project Name***	***Project Description***
Baltimore County	Owings Mills Transit Center	Build a town center that includes a square, main street, road and path network, hotel, library, education center. (Funding for infrastructure and parking needs at the Owings Mills Transit Center.)

Project Type:	*Public Transit Improvement*	
Implementing Agency	***Project Name***	***Project Description***
Carroll County	Westminster Evening Demand Response Pilot	This was a temporary pilot project to extend demand response transit service in Carroll County to have evening hours, Monday through Friday (5 to 8 PM). The pilot started December 5, 2016 for 6 months. Rides were available within a 5-mile radius of the Westminster branch of the Carroll County Public Library. Rides were scheduled at least 24 hours ahead of time.
Howard County	Transit Operation Repair Facility	A project for site selection, acquisition, design and construction of a multi-jurisdictional transit facility.

Appendix J: MDOT Updated Revenue Projections – August 2017

Financially Constrained Long Range Plan

Year 2017 to 2045 Update

For The

Baltimore Metropolitan Area

Prepared by

Maryland Department of Transportation

August 2017

DOCUMENTATION OF ASSUMPTIONS

Date: August 2017

Subject: Methodology and Assumptions used to derive the 2017 – 2045 Constrained Long-range Transportation Plan

Total Program Revenues/Expenditures (operating and capital):

- FY 1981 to FY 2016 figures are actual expenditures from historical records. FY 2017 to FY 2022 are from the FY 2017 Transportation Trust Fund Financial Plan and Consolidated Transportation Plan (CTP).
- The federal funds received directly by WMATA are **not** included in this exercise.
- FY 2023 to FY 2045 projections of state funds use a historical annual average growth rate of 5.3%. Federal fund projections for the same period are based on an average growth rate of 3.0% for Highway and Transit program funds.

Operating Expenditures:

- FY 1981 to FY 2016 figures are actual expenditures from historical records. Expenditures for FY 2017 to FY 2022 are the operating budget projections contained in the current Trust Fund Forecast.
- FY 2023 to FY 2045 projections are derived by inflating the previous year with an estimate for the percentage change in CPI-U plus 2%. The Consumer Price Index is a generally accepted measure of inflation. The projected annual change in index figures is based on information received from two economic forecasting firms. Two percent (2%) is added to the forecasted rate to account for the additional operating costs associated with new capital expansions.

Capital - Systems Preservation:

- Department records were used to determine the split between systems preservation and expansion for FY 1981 to FY 2016. Amounts for FY 2017 to FY 2022 represent the current version of the capital program.
- For the period FY 2023 – FY 2045, an annual growth rate of 2.0% is assumed for systems preservation projects, not to exceed 70% of the total program.

Capital - Expansion:

- Expenditures for capital expansion were derived by subtracting both operating and systems preservation expenditures from the total program expenditures for each year.

Baltimore Area – Percentage of Capital Expansion:

- Total capital figures from FY 1981 to present were split into surface and non-surface. Surface included highway (SHA) and transit (MTA, MARC, and WMATA) costs. Non-surface included the Maryland Port, Aviation, and Motor Vehicle Administrations and the Secretary's Office expenses.

- The surface / non-surface data and the system preservation / expansion data were combined, analyzed, and evaluated to produce estimates of the percentage of Maryland expansion associated with surface transportation for the various time periods.

- Surface capital in the Baltimore Region was derived by adding the expenditures for all of MTA (excluding LOTS and non-Baltimore region Park and Ride expenditures), one-half of MARC and that portion of SHA that pertained to the region (Anne Arundel, Baltimore, Carroll, Harford, and Howard counties).

- These Baltimore specific figures were used to derive estimates of Baltimore surface expansion. These figures, when used with the above-mentioned projections, produce the estimates shown for Baltimore as a percent of Total Surface Expansion and as a percent of Total Maryland Expansion.

MDOT Operating & Capital Expenditures - Statewide

History, Program & Forecast

(Millions of Dollars)

Fiscal Year	Operating	Systems Preservation	Operating & Systems Pres.	Expansion	Statewide Total
1981	265	111	376	247	623
1982	287	136	423	236	659
1983	322	164	486	284	770
1984	352	167	519	246	765
1985	385	204	589	319	908
1986	428	234	662	403	1,065
1987	441	264	705	506	1,211
1988	478	260	738	615	1,353
1989	508	227	735	677	1,412
1990	551	270	821	760	1,581
1991	591	268	859	773	1,632
1992	577	187	764	542	1,306
1993	638	254	892	418	1,310
1994	689	279	968	393	1,361
1995	709	400	1,109	497	1,606
1996	784	391	1,175	465	1,640
1997	770	417	1,187	493	1,680
1998	808	451	1,259	411	1,670
1999	868	515	1,383	420	1,803
2000	913	476	1,389	455	1,844
2001	979	578	1,557	632	2,189
2002	1,045	612	1,657	772	2,429
2003	1,158	620	1,778	772	2,550
2004	1,178	619	1,797	762	2,559
2005	1,237	714	1,951	780	2,731
2006	1,303	729	2,032	793	2,825
2007	1,396	724	2,120	701	2,821
2008	1,488	766	2,254	680	2,934
2009	1,527	974	2,501	368	2,869
2010	1,583	957	2,540	275	2,815
2011	1,548	908	2,456	325	2,781
2012	1,572	1,096	2,668	366	3,034
2013	1,638	1,154	2,792	416	3,208
2014	1,843	1,324	3,167	477	3,644
2015	1,859	1,438	3,297	603	3,900
2016	1,917	1,389	3,306	806	4,112
2017	1,947	1,560	3,507	1,123	4,630
2018	2,030	1,580	3,610	1,071	4,681
2019	2,080	1,557	3,637	1,005	4,642
2020	2,131	1,475	3,606	687	4,293
2021	2,181	1,391	3,572	483	4,055
2022	2,264	1,449	3,713	400	4,113
2023	2,454	1,284	3,738	550	4,288
2024	2,592	1,259	3,851	540	4,391
2025	2,696	1,332	4,028	571	4,599
2026	2,811	1,408	4,219	603	4,822
2027	2,924	1,490	4,414	639	5,053
2028	3,043	1,576	4,619	676	5,295
2029	3,176	1,661	4,837	712	5,549
2030	3,313	1,698	5,011	805	5,816
2031	3,451	1,732	5,183	914	6,097
2032	3,597	1,766	5,363	1,030	6,393
2033	3,754	1,802	5,556	1,146	6,702
2034	3,911	1,838	5,749	1,279	7,028
2035	4,079	1,874	5,953	1,416	7,369
2036	4,257	1,912	6,169	1,559	7,728
2037	4,433	1,950	6,383	1,721	8,104
2038	4,633	1,989	6,622	1,879	8,501
2039	4,837	2,029	6,866	2,052	8,918
2040	5,042	2,070	7,112	2,242	9,354
2041	5,268	2,111	7,369	2,444	9,813
2042	5,475	2,153	7,628	2,667	10,295
2043	5,717	2,196	7,913	2,889	10,802
2044	5,963	2,240	8,203	3,131	11,334
2045	6,228	2,285	8,513	3,383	11,896

MDOT - Office of Finance

18-Aug-17

BALTIMORE METROPOLITAN AREA
Percentage of Capital Expansion

Surface Enhancement % of Maryland Enhancement:	
1981 - 2016	86.4%

Baltimore Enhancement % of Surface Enhancement:	
1981 - 2016	40.3%

Fiscal Year	Statewide Expansion Funds	Surface Percentage	Private Funds	Total Surface Available	Baltimore Percentage	Total Balto. Expansion Funds
2014	477					155
2015	603					192
2016	806					282
2017	1,123					90
2018	1,071					90
2019	1,005					107
2020	687					80
2021	483					83
2022	400					69
2023	550	475	23	498	201	201
2024	540	467	23	490	197	197
2025	571	493	23	516	208	208
2026	603	521	23	544	219	219
2027	639	552	23	575	232	232
2028	676	584	24	608	245	245
2029	712	615	24	639	258	258
2030	805	696	24	720	290	290
2031	914	790	24	814	328	328
2032	1,030	890	24	914	368	368
2033	1,146	990	25	1,015	409	409
2034	1,279	1,105	25	1,130	455	455
2035	1,416	1,224	25	1,249	503	503
2036	1,559	1,347	25	1,372	553	553
2037	1,721	1,487	25	1,512	609	609
2038	1,879	1,624	26	1,650	665	665
2039	2,052	1,773	26	1,799	725	725
2040	2,242	1,938	26	1,964	791	791
2041	2,444	2,112	26	2,138	861	861
2042	2,667	2,305	26	2,331	939	939
2043	2,889	2,497	27	2,524	1,017	1,017
2044	3,131	2,706	27	2,733	1,101	1,101
2045	3,383	2,924	27	2,951	1,189	1,189
Total '23-'45	34,848	30,116	571	30,687	12,363	12,363
Total '14-'45	41,503					13,511

MDOT - Office of Finance
18-Aug-17

MDOT Operating & Capital Expenditures - Statewide

History, Program & Forecast