BRTB
Baltimore Regional Transportation Board

CONFORMITY DETERMINATION OF THE 2021-2024 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.
§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 **2021**, 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 the appendices 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 2021-2024 TIP.
§93.108	Is the transportation plan fiscally constrained?	Yes. The transportation plan is fiscally constrained. See the Fiscal Constraint section.
§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 2021-2024 Transportation Improvement Program and Maximize 2045 took place at the following meetings:

- February 5, 2020 – Interagency Consultation Group - Review and approval of methodology/assumptions for conformity determination
- April 1, 2020 – Interagency Consultation Group - Review and approval of conformity status of projects
- May 13, 2020 - Interagency Consultation Group – results presented with support to release for public review
- June 24, 2020 - Public Advisory Committee – review and comment opportunity on the Conformity Determination and TIP
- July 9 and 14, 2020 – Virtual Public Meetings on the Conformity Determination and TIP
- August 4, 2020 - Interagency Consultation Group and Technical Committee – Review of public comments and then BRTB approval recommended
- August 25, 2020 - BRTB Meeting – approval of the Conformity Determination and TIP

Appendices C-1 and C-2: Conformity Status of Projects from the 2021-2024 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	Y
Anne Arundel County	Furnace Avenue Bridge over Deep Run	11-1103-13	Reconstruct existing bridge to correct existing deficiencies, substandard approach road and bridge deck geometry. Five foot shoulders planned on both sides of the road. The estimated total cost has increased from the initial program estimate of $1.74 million now that preliminary improvement alternatives have been developed. (2 to 2 lanes)	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.	Y
Anne Arundel County	Hanover Road Corridor Improvement	11-1801-42	This project is to provide design, right-of-way acquisition and construction of a section of Hanover Road on a new alignment between Ridge Road and New Ridge Road in Hanover. (0.4 miles) Engineering funds were programmed in FY 2017. 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
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. (2 to 2 lanes)	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.	Y
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 increased from $4.711 million to $5.809 million due to a revised construction cost estimate as engineering proceeded.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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. (2 to 2 lanes)	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 take the project to 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
Anne Arundel County	Mountain Road Corridor Revitalization - Phase I	11-1802-19	This project will provide improved vehicular, bicycle, and pedestrian facilities and enhancements along the MD 177 (Mountain Road) corridor between Solley Road and Edwin Raynor Boulevard. No additional through lanes are being added.	Y
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. (2 to 2 lanes)	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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 planned on both sides of the road. (2 to 2 lanes)	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. (2 to 2 lanes)	Y
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. (4 to 4 lanes)	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. (4 to 4 lanes)	Y
Baltimore City	Brehms Lane over Herring Run	12-2005-13	The 92-foot long bridge was originally built in 1963, 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. (2 to 2 lanes)	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Bush Street Bike Facility	12-2101-03	The Bush Street Bike Facility involves constructing a 0.6 mile on-street cycle track on Bush Street between Washington Boulevard and Russell Street.	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. 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 surveillance camera expansion, traffic signal replacement and upgrade, fiber optic connections, variable message signs, and traffic detector upgrade, 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 intersections, and traffic signal reconstruction.	Y
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	Eutaw Place Bike Facility	12-2103-03	The Eutaw Place Bike Facility involves installing an on-street cycle track and/or buffered bike lanes on Eutaw Place between Druid Hill Avenue and Druid Park Lake Drive. The facility will be one-way on both sides of the street.	Y
Baltimore City	Frederick Avenue Slope Stabilization Wall	12-2105-39	Construction of a soil-nail wall from Atholwood Lane to Wyndholme Way to arrest current and future landslides from an adjacent hill that is encroaching into the public right-of-way. The project also includes sidewalk work adjacent to the roadway.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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.	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.	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. (5 to 5 lanes)	Y
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. CSX is providing 75% of the construction cost for the project. (4 to 4 lanes)	Y
Baltimore City	Howard Street over I-83, CSX, Amtrak, and Jones Falls	12-2009-13	The 979-foot long bridge was originally built in 1938 and was rehabilitated in 1981, but severe deterioration is now evident throughout and the structure must be studied for either rehabilitation or replacement. The estimated total cost of $49.45 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. (5 to 5 lanes)	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.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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.	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. (6 to 6 lanes)	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. (4 to 4 lanes)	Y
Baltimore City	Orleans Street Bridge over I-83 and City Streets	12-1601-13	This work will include but will not be limited to rehabilitating the deteriorated bridge with structural improvements, cleaning and painting of the steel elements, replacing and reconfiguring the storm drain system and other repairs in order to correct the deteriorated components of the bridge. The sidewalk along the south side of the bridge will remain in place. (6 to 6 lanes)	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. Construction funds are proposed for this project in FY 2026, beyond the timeframe covered by this TIP. (4 to 4 lanes)	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. (4 to 4 lanes)	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Perring Parkway Ramp and Hillen Road Bridge	12-1215-13	This project includes replacement of the Perring Parkway ramp over Herring Run and the Hillen Road bridge over Herring Run. (4 to 4 lanes)	Y
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 project was authorized in FY19. 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. The two bridges are in close proximity to each other and will advertise for construction as one project in FY 2024. (2 to 2 lanes)	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. (2 to 2 lanes)	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. (2 to 2 lanes)	Y
Baltimore City	Transportation Management Center Upgrade	12-1701-04	System integration and facility equipment upgrade citywide. This project will upgrade the central computer system or Advance Traffic Management System (ATMS) which controls and communicates with traffic signals in the field. The system includes software and computer hardware (servers and switches). The current system, known as an i2 System, is more than ten years old and replacement is not available since the vendor has discontinued the system. Replacement with a new system requires a complete upgrade of hardware and software, installation of communication equipment for fiber optics, and a copper cable network and camera control system to complete the functions of the ATMS.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore City	Waterview Avenue over Ramp to 295	12-2015-13	The 75-foot long bridge was originally built in 1950, 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 $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. (4 to 4 lanes)	Y
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. (4 to 4 lanes)	Y
Baltimore City	Wolfe/Washington Street Bike Facility	12-2104-03	The Wolfe/Washington Street bike facility will be a protected cycle track on Wolfe Street or Washington Street depending on the results of a planning study currently being conducted.	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 includes replacement of the existing bridge. The new structure will have one 3 foot shoulder and one 6 foot shoulder. (2 to 2 lanes)	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. (2 to 2 lanes)	Y
Baltimore County	Gunpowder Road Bridge No. B-0409	13-1005-13	This project includes replacement of the existing bridge. The new bridge will have minimum 2 foot wide shoulders on both sides. Lanes, shoulders and sidewalks will be evaluated during preliminary design. (2 to 2 lanes)	Y
Baltimore County	Hammonds Ferry Road Bridge No. B-0100 over CSX Railroad	13-1012-13	This project includes deck replacement and rehabilitation of Bridge No. B-100 on Hammonds Ferry Road over CSX railroad. The existing bridge has two 5 foot wide sidewalks and two 6 foot striped shoulders. The new structure will have sidewalks and shoulders of the same width. (2 to 2 lanes)	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
Baltimore County	Lansdowne Boulevard Bridge No. B-0113 over CSX Railroad	13-1105-13	This project includes rehabilitation of the steel girder bridge carrying Lansdowne Boulevard over CSX railroad tracks. The current structure has two lanes of traffic each way and two 5 foot sidewalks. The project is still in planning, but any proposed structure will maintain the existing cross section. (4 to 4 lanes)	Y
Baltimore County	Mohrs Lane Bridge No. B-0143 over CSX Railroad	13-0803-13	This project includes replacement of the existing bridge to include sidewalks and wider lanes as well as the approaches necessary to accommodate the future Campbell Boulevard. The new structure will have 8 foot shoulders on both sides. (2 to 2 lanes)	Y
Baltimore County	Old Ingleside Avenue Bridge No. B-0096 over Dead Run	13-1202-13	This project includes rehabilitation or replacement of the bridge carrying Old Ingleside Avenue over Dead Run. The existing bridge is a historic arch structure. Preliminary design will include evaluation of rehabilitation versus replacement. The proposed bridge will have at least one 5 foot wide sidewalk along the north side of the deck. Exact lane and sidewalk widths will be determined during preliminary design. (2 to 2 lanes)	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. (4 to 4 lanes)	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 conditions. (4 to 4 lanes)	Y
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. (4 to 4 lanes)	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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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' travel lanes with 2' shoulders on each side of the road. Engineering funds totaling $280,000 were approved in FY 2016 and FY2018.	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. (2 to 2 lanes)	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. (2 to 2 lanes)	Y
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. (2 to 2 lanes)	Y
Carroll County	McKinstrys Mill Road over Little Pipe Creek	14-2103-13	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. (2 to 2 lanes)	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. (2 to 2 lanes)	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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 piers and abutments. The new structure will consist of two 12' travel lanes with 2' shoulders on each side of the road. (2 to 2 lanes)	Y
Carroll County	Stone Chapel Road Bridge over Little Pipe Creek	14-1103-13	This project includes rehabilitation 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. (2 to 2 lanes)	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. (2 to 2 lanes)	Y
Harford County	Bridge Inspection Program	15-9411-14	This federal program provides funding for the inspection of bridges in Harford County.	Y
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). (2 to 2 lanes)	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. (2 to 2 lanes)	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. (2 to 2 lanes)	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. (2 to 2 lanes)	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. (2 to 2 lanes)	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). (2 to 2 lanes)	Y
Howard County	Bridge Repairs and Deck Replacement	16-0436-13	This project is to repair/replace bridge decks at the following locations with a mix of county match and federal funding. The project also includes emergency structure reconstruction. 1. River Road bridge over Rockburn Branch. Local funds (~2.5 foot shoulders) 2. Henryton Road bridge over a tributary to the Patapsco River (~2.5 foot shoulders). Federal funds and local match 3. Pindell School Road bridge over Hammond Branch (~6 foot shoulders). Local funds 4. Daisy Road bridge over Little Cattail Creek (~6 foot shoulders). Federal funds and local match 5. Pfefferkorn Road bridge over Middle Patuxent River (shoulders TBD: in design). Local funds 6. Carroll Mill Road bridge over Benson Branch (shoulders TBD: in design). Federal funds and local match	Y
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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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) Procure Riverside Maintenance Facility: CSX has offered to sell this facility to MTA. Maintenance activities for equipment on the MARC Camden Line would then be under direct control of MARC. MTA and CSX are jointly working with MDE to remediate hazardous material contamination at this site. 2) MARC Martin State Airport: Purchase private property and construct two additional storage tracks. 3) MARC BWI Garage Facility: Identify and prioritize needed repairs for design and construction. 4) Riverside Heavy Maintenance Facility: Construction of a building with maintenance slots for locomotives.	Y
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; system-wide parking lot improvements; the design, procurement, and installation of an ADA compliant public address system at all MARC stations on the Brunswick, Camden, and Penn lines; installation of an audio/visual warning system for approaching MARC trains; uninterruptible power supply and lighting protections; the design and construction of a new Martin Airport station on the MARC Penn Line; and the collaborative cost-sharing arrangement to advance development of the Northeast corridor infrastructure. In addition to the matching funds listed, MTA has committed $25.2 million in state dollars.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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.	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, bridge and subway inspection, a system network migration and upgrade, system-wide elevators and escalators, and an upgrade to the fare collection system software.	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 clean diesel 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 25 small cutaway vehicles and 75 large cutaway 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 $42.9 million in state dollars.	Y
MTA - Transit	Bus and Rail Preventive Maintenance	40-1204-64	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.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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 - July 2020 (FY 2021).	Y
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 railcar fleet will provide passengers with enhanced comfort, conveniences, and ensure 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.	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.	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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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). Planned purchases include 2 small bus replacements for Baltimore County.	Y
MTA - Transit	Rural Transit Systems - Operating Assistance	40-9204-61	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
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 provides 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 3 small bus replacements.	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). Planned purchases include 3 heavy duty bus replacements, a feasibility study, replacement tablets and docks, and 4 small bus replacements.	Y

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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
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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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. This project also includes a program that replaces older drayage trucks serving the Port of Baltimore with newer trucks that meet or exceed 2007 EPA emissions certified engine standards.	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. This program also includes National Recreational Trails projects.	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
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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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-foot lanes and include 6-foot bicycle-compatible shoulders with 5-foot-8-inch sidewalks on both sides of the bridge. (2 to 2 lanes)	Y
SHA	I-83: Bridge Replacement over Padonia Road	63-1701-13	Replace bridge no. 03062 along I-83 over Padonia Road which carries both northbound and southbound traffic. (3 to 3 lanes)	Y
SHA	I-95: Active Traffic Management	66-1801-41	This project (formerly CTP# HONEW2) will construct facilities to accommodate peak hour shoulder use on I-95 between MD 32 and MD 100 in Howard County. This project is currently funded for partial preliminary engineering to the 30% design milestone only and would result in part-time capacity improvements. The estimated total cost includes projected funding that will be required to construct this project. No schedule or funding for construction have been determined.	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. Construction funding for this project increased from $20 million to $30 million to accommodate increased truck loads, additional fill needed to avoid significant settlement, and the treatment and disposal of hazardous soils. In addition, bridge no. 0335000 transitioned from a deck replacement to a full replacement. (4 to 4, 2 to 2, and 1 to 1 lanes)	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.	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. (2 to 2 lanes)	Y
SHA	MD 45: Padonia Rd to Wight Ave	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
SHA	MD 86: Bridge Replacement over Gunpowder Falls	64-1701-13	The project will replace bridge no. 06019 along MD 86 (Lineboro Road) over the South Branch of Gunpowder Falls. A 5-foot minimum shoulder is planned on both sides of the road. (2 to 2 lanes)	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

Agency	Project Title	TIP ID	Description	Exempt? (Y/N)
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. (4 to 4 lanes)	Y
SHA	US 40: Bridge Replacements over Little & Big Gunpowder Falls	63-1706-13	This project will replace and widen the superstructure on bridges #0303403 and #0303404 along eastbound and westbound US 40 over Little Gunpowder Falls and bridges #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. (4 to 4 lanes)	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. Construction funds are proposed for this project in FY 2026, beyond the timeframe covered by this TIP. A mixed use trail and pedestrian accommodations will be added to the north side of Patapsco Avenue. Engineering funds through NEPA approval were authorized in FY 2020. FY 2021 engineering funds are to complete final design. **Reduction:** 6 to 4 lanes **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 where needed along these routes.	N	2028	2035
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, but the need for sidewalks will be evaluated during preliminary design. **Widening:** 1 to 2 lanes **Justification:** The bridge is classified as structurally deficient and is load restricted. The current structure is in need of total replacement. The bridge is currently owned and maintained by CSX with bridge inspection conducted by Baltimore County. Bridge ownership will be transferred from CSX to Baltimore County before engineering begins.	N	2031	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. **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	2023	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
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). **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
16-1403-41	Howard County	Dorsey Run Road: MD 175 to CSX Railroad Spur	This project is to study, design, and reconstruct Dorsey Run Road to four lanes from MD 175 south to the CSX railroad spur crossing; a distance of 6,000 linear feet. The project will incorporate sidewalks, and bike facilities (paved shoulders), 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). **Widening:** 2 to 4 lanes **Justification:** The existing road is substandard with varying width and limited capacity. Dorsey Run Road is classified in the Plan Howard 2030 as a major collector and four lanes are needed to accommodate the increasing volumes of traffic.	N	2024	2025
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	2024	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
16-2101-41	Howard County	Marriottsville Road and I-70 Bridge Improvements	This project is to design and widen Marriottsville Road from just south of US 40 to MD 99 from two to four lanes, including replacing the existing two lane bridge on Marriottsville Road over I-70 with a four lane section. The proposed bridge will also include six feet wide bicycle lanes and ADA compliant sidewalks on both sides of the proposed bridge. The project is divided into four phases: *Phase I includes the widening of Marriottsville Road from I-70 to MD 99 (complete) *Phase II includes improvements to the ramp for I-70 eastbound (complete) *Phase III includes the widening of Marriottsville Road from US 40 to the I-70 bridge *Phase IV includes the construction of the I-70 bridge **Widening:** 2 to 4 lanes **Justification:** Increasing traffic and new development will necessitate the improvement of the roadway as well as the bridge.	N	2022	2025
16-1407-46	Howard County	MD 175 at Oakland Mills Road Interchange	This project involves construction of a grade-separated bridge with ramps at MD 175/Oakland Mills Road extended. It will provide access to and from Howard County Blandair Park. The project will incorporate sidewalks and bike facilities to increase transportation alternatives. Once the design is finalized, more information will be provided. This project is funded through local funds (bonds and excise tax backed bonds). Phase I involved improvements in Blandair Park and was completed in 2018. Phase II includes the grade-separated bridge with ramps at MD 175/Oakland Mills Road and will be complete in 2023. **New Interchange** **Justification:** MD 175, an 8-lane principal arterial from I-95 to US 29, has significant regional peak hour traffic. The proposed interchange with Oakland Mills Road will ensure future capacity, level of service, and acceptable operating conditions, as well as improved access to Blandair Park.	N	2023	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
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 **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
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. **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

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
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 walls will address community needs.	N	2026	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 2020. 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. **Capacity:** 7 miles, 8 lanes **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

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. **Widening:** 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	2024	2025
43-2101-67	MTA - Transit	Towson Circulator	The Towson Circulator will provide vehicles for a new fixed route service that serves the geographic areas bounded by Charles Street, I-695, Loch Raven Boulevard, and the northern boundary of Baltimore County. Additionally, funding will be used to provide bus stop signage and project management. Baltimore County will operate the Towson Circulator. **Transit Capacity** **Justification:** This project will increase reliability, access, and mobility to a service area that encompasses two universities (Towson University and Goucher College) and three hospital facilities (Greater Baltimore Medical Center, Sheppard Pratt Health Systems, and St. Joseph Medical Center). The Towson Circulator will promote transit usage in a densely populated region.	N	2021	2021

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. This project includes reconfiguration of the I-695 and I-70 interchange and adaptive ramp metering. This project uses 100% federal funding in FY 2021 through FY 2024 due to toll credits. **Widening:** 6 to 8 lanes **Justification:** This project will address capacity, safety, and operations concerns along I-695.	N	2024	2025
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 estimated total cost has increased from $105.5 million to $131.323 million due to project change orders related to additional excavation and pile driving work for retaining walls. 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 **Justification:** This project will provide additional capacity and improve safety and operations on this segment of I-695.	N	2021	2021
63-1203-41	SHA	MD 140: Garrison View Road to Painters Mill Road - Phase 1	Improvements include widening northbound MD 140 to provide a third through lane (lane is 16-foot wide bicycle-compatible) and 5-foot raised median, constructing 5-foot ADA-compliant sidewalks, resurfacing the roadway, landscaping, and utility relocations. Southbound improvements are to be provided by a developer. This is Phase 1 of the MD 140 project. Phase 2 is the MD 140: North of Painters Mill Road to Owings Mills Boulevard project (TIP ID #63-0802-41). **Widening:** 2 to 3 lanes **Justification:** This project will enhance motorist, bicycle and pedestrian safety, and reduce congestion along the corridor. Traffic is expected to increase as a result of proposed development in the area, including the transit-oriented development at the Owings Mills Metro Station and Foundry Row.	N	2020	2021

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
63-0802-41	SHA	MD 140: Painters Mill Road to Owings Mills Boulevard - Phase 2	Capacity and safety improvements to MD 140 from north of Painters Mill Road to Owings Mills Boulevard including; an additional through lane on northbound and southbound MD 140, addition of left and right turn lanes, and added width for bicycle compatibility. This results in three through lanes on northbound MD 140 and three through lanes on southbound MD 140. The Estimated Total Cost includes projected funding that will be required to construct this project. No schedule or funding for construction have been identified. This is phase 2 of the MD 140 corridor improvements. Phase I - MD 140: Garrison View Road to Painters Mill Road, including the intersection, has TIP ID #63-1203-41. **Widening:** 4 to 6 lanes **Justification:** This project will provide additional capacity and access for the planned development in Owings Mills, including the Owings Mills Town Center, the Owings Mills Metro Station and the MD 140 business corridor.	N	2025	2025
61-1601-41	SHA	MD 175: Disney Road to Reece Road	This project is Phase 2 of the MD 175: MD 295 to MD 170 corridor project, which had TIP ID #61-0605-41 in previous TIPs. It will widen MD 175 from Disney Road to Reece Road, from the existing two lane roadway to a six lane roadway. Bicycle and pedestrian facilities will be provided. The project will be open to traffic in spring 2020. The remaining funding for this project will complete right-of-way acquisition. Phase 1, widening MD 175 through the MD 295 interchange from National Business Parkway to McCarron Court, has TIP ID #61-1701-41. **Widening:** 2 to 6 lanes **Justification:** This project will improve safety and operations along MD 175 and ease growing congestion related to BRAC expansion at Fort Meade.	N	2020	2021
61-1402-39	SHA	MD 175: Mapes Road and Reece Road Intersection Reconstruction	Construct intersection capacity improvements at Mapes Road/Charter Oaks Boulevard and Reece Road (MD 174) (BRAC intersection improvement). This project also includes the construction of a new security fence and tree buffer along Fort Meade's property. This project opened to service in 2019. The remaining funding for this project will complete right-of-way acquisition.	N	2019	2021

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
61-1701-41	SHA	MD 175: National Business Parkway to McCarron Court	This project will widen MD 175 from National Business Parkway 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 was significantly delayed due to BGE utility realignment which resulted in the termination of the project contract. Project re-advertisement is scheduled for December 2020 once utility issues are resolved. The estimated total cost has increased by $3.9 million due to additional engineering, ROW, and utility needs. This project is Phase 1 of the improvements identified in the MD 175: MD 295 to MD 170 corridor project (TIP ID #61-0605-41). Phase 2, MD 175: Disney Road to Reece Road, has TIP ID #61-1601-41. **Widening:** 2 to 6 lanes **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
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, has TIP ID #66-1602-41. Road improvements are anticipated to be completed in 2022. The remaining funds in FY 2023 will complete right-of-way acquisition. This project uses 100% federal funding for construction in FY 2021 and FY 2022 due to toll credits. **Widening:** 2 to 4 lanes **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	2025

TIP ID	Agency	Project Title	Description	Exempt? (Y/N)	Year of Op	First Analysis Year
66-1602-41	SHA	MD 32: MD 108 to Linden Church Road	This project will widen MD 32 in both directions, from two lanes to a four lane divided roadway, from MD 108 to Linden Church Road. Howard County is contributing $16.5 million in funding for construction of this project. The remainder of the project is state funded. The project opened to service in summer 2019. Right-of-way acquisition will be complete in fiscal year 2021. This project is segment 1 of the MD 32: MD 108 to I-70 corridor project that had TIP ID #66-1405-41 in previous TIPs. **Widening:** 2 to 4 lanes **Justification:** This project will address congestion and safety problems experienced as a result of increasing traffic volumes on the existing two lane roadway.	N	2019	2021

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%

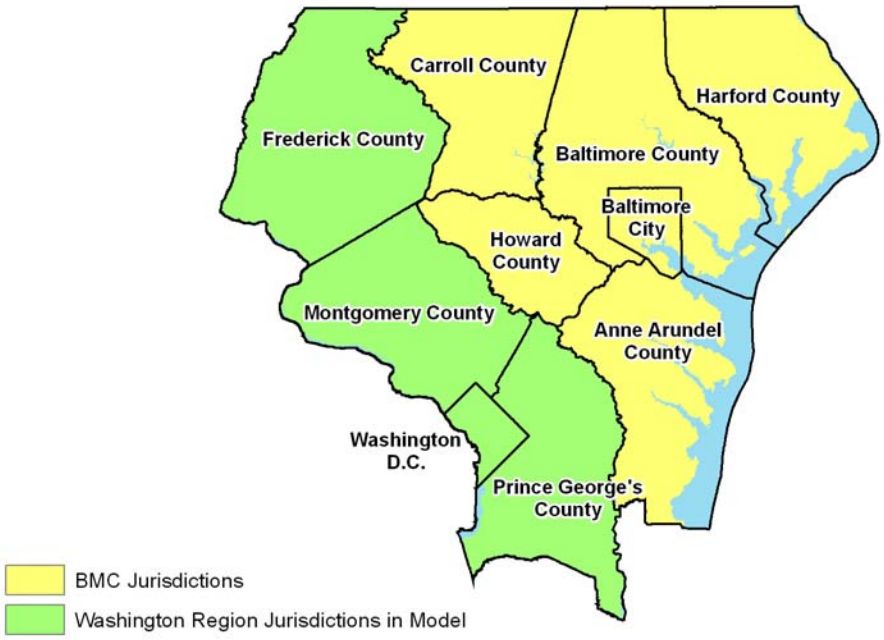
Appendix E: *Excerpt: Introduction, Baltimore Region Travel Demand Model Version 4.4 – Model Validation for 2010 Base Year*

1 Introduction

1.1 Model Overview

The Baltimore Metropolitan Council (BMC) had been charged by the Baltimore Regional Transportation Board (BRTB), the designated Metropolitan Planning Organization for the Baltimore region, to develop a computerized transportation model which can simulate person transportation demand and vehicle flows on the regional highway and transit system. The region consists of Baltimore City and the counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard, all in the State of Maryland. Also included in the model, although in less detail, are the Maryland counties of Prince George's, Montgomery, and Frederick as well as the District of Columbia. See Exhibit I-1 for a map of the Baltimore region and the model area.

Exhibit I-1
The Baltimore Region and Model Region



This report documents the results of the completed model revalidation procedure. The updated model validation year is 2010 and is based on Version 4.4 Baltimore Region Travel Demand Model[1] with the validation year 2000.

The year 2010 was chosen as the validation base year because:

- Household Survey Data were available for year 2007-2008
- Transit on-board survey were available for year: 2008
- Traffic Counts were available for 2009-2011
- Decennial Census and American Community Survey data were available for 2010

The Baltimore region travel model is a "four step" trip-based model that utilizes demographic and travel data aggregated to the traffic analysis zone level. The model is applied using the Cube Voyager software package, specifically version 08/05/2014 [6.1.1] of Cube Voyager. The entire model is controlled by one setup file (a.k.a. "driver" or "script" file). A specific file naming convention and directory structure have been established to facilitate applying the model to different scenarios, and for creating new scenarios. A user interface has been created in Cube to assist the end user in starting and running the model.

1.2 Trip Purposes

To represent different travel characteristics throughout the model, trips are divided into various purposes. Table I-1 illustrates the trip purposes defined in the BMC model.

[1] *Travel Demand Model Calibration Report, Prepared for Maryland Transit Administration (MTA), Baltimore, MD, Prepared by William G. Allen, August 2006*

Table I-1
Trip Purposes

Purpose	Abbre-viation	Description
Home-based Work	HBW	Direct trips between home and work locations
Home-based School	SCH	Direct trips for students between home and school (grades K-12)
Home-based Shop	HBS	Direct trips between home and shopping locations
Home-based Other	HBO	All other trips having one end at the home location
Journey to Work	JTW	Trips with one end at the tripmaker's work location which is part of a chain of trips that start or end at a location other than the work location
Journey at Work	JAW	Trips with one end at the tripmaker's work location which is part of a chain of trips that start or end at the same work location
Other-based Other	OBO	Trips of a personal nature within the region not covered by the above categories
Commercial Vehicles	CV	Trips by passenger car, van, or pickup trip that are of a commercial or service nature, *e.g.*, plumbers, police cars, taxicabs, repair services
Medium Trucks	MT	Trips by vehicles with two axles and six tires
Heavy Trucks	HT	Trips by vehicles with more than two axles and six tires
Internal-External Work	IXW	HBW or JTW trips that originate within the model region and terminate outside it
External- Internal Work	XIW	HBW or JTW trips that originate outside the model region and terminate within it
Internal-External Non-Work	IXN	SCH, HBS, HBO, JAW, or OBO trips that originate within the model region and terminate outside it
External- Internal Non-Work	XIN	SCH, HBS, HBO, JAW, or OBO trips that originate outside the model region and terminate within it
Internal-External Commercial Vehicles	IXC	CV trips that originate within the model region and terminate outside it

Purpose	Abbre-viation	Description
External-Internal Commercial Vehicles	XIC	CV trips that originate outside the model region and terminate within it
Internal-External Medium Trucks	IXM	MT trips that originate within the model region and terminate outside it
External-Internal Medium Trucks	XIM	MT trips that originate outside the model region and terminate within it
Internal-External Heavy Trucks	IXH	HT trips that originate within the model region and terminate outside it
External-Internal Heavy Trucks	XIH	HT trips that originate outside the model region and terminate within it
Through Trips Passenger Cars	XXPC	Passenger car trips that simply pass through the region without stopping
Through Trips Commercial Vehicles	XXCV	CV trips that simply pass through the region without stopping
Through Trips Medium Trucks	XXMT	MT trips that simply pass through the region without stopping
Through Trips Heavy Trucks	XXHT	HT trips that simply pass through the region without stopping

Trip purposes are generated on the basis of Productions and Attractions (P&A). For home-based purposes, the home end is always the production end of the trip, while the attraction end is always the non-home location. Thus, for a round trip directly from home to work and then directly back home at the end of the work day, there are two trip productions at the home location and two trip attractions at the workplace, despite the different direction of travel between the two trips. These trip productions and attractions are "balanced" and converted to origins and destinations (O&D) only before the trips are assigned to the highway network in the Trip Assignment step. Transit trips remain in P&A format for transit assignment.

JTW, JAW, and OBO trips are often called Non-Home-Based (NHB) trips. While these trips are produced at the home end, that zone is often not where the trip starts

and stops. Trip attractions are scaled to match the productions, but then productions are set equal to the scaled attractions as these trips become O&D.

Persons who do not live in the model region but come to the region for work or other activities can make NHB trips within the region which are not reflected in the Household Travel Survey (HTS). The model has its own procedure for calculating these non-resident NHB trips.

1.3 Area Type

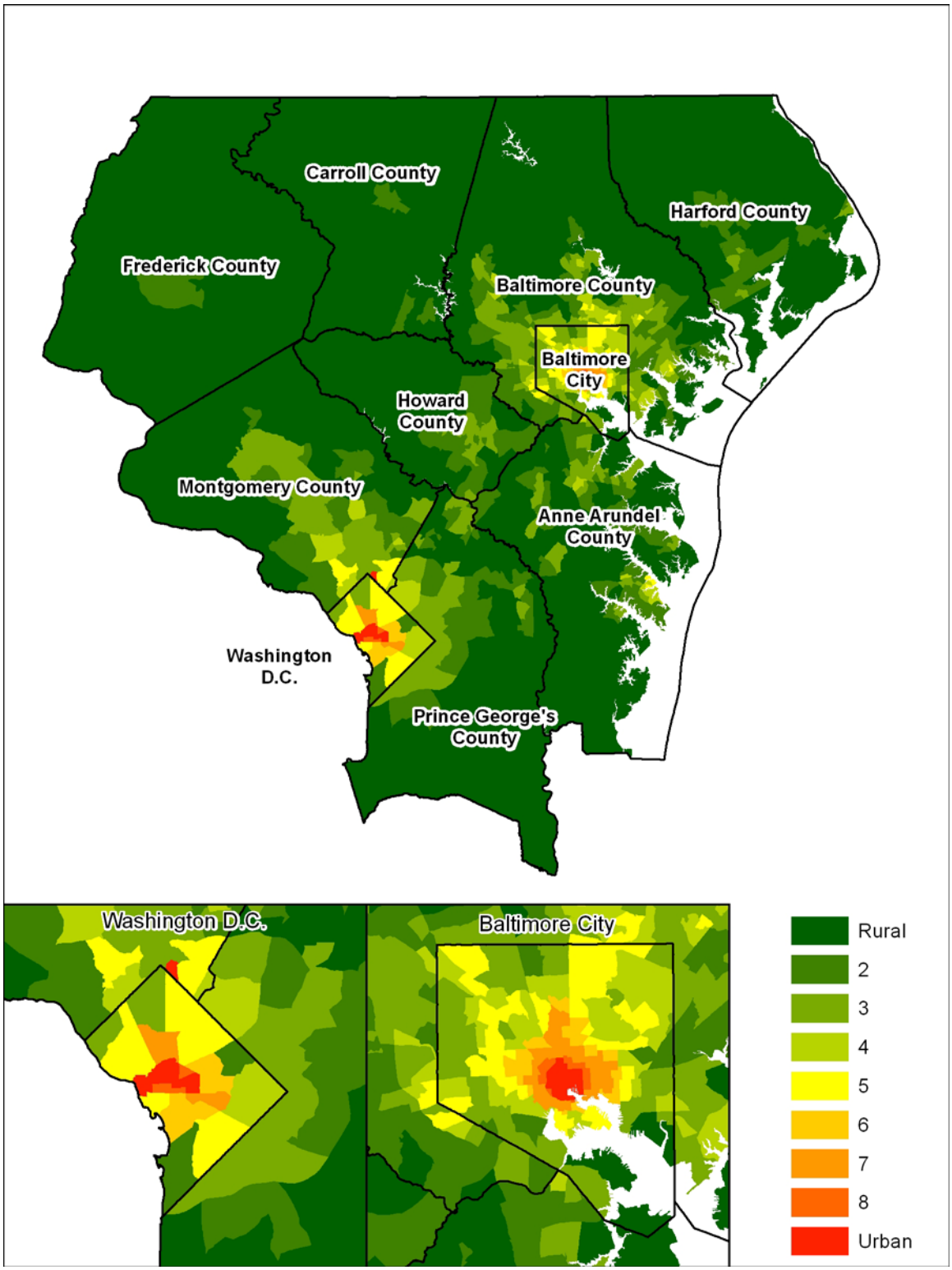
The area type model utilizes employment and household densities to develop a single density factor for each zone. The calculated area type indices are utilized to estimate non-motorized trips, to estimate Mode Choice and to estimate speed-capacity for highway network. To capture the effect of neighboring areas, for each zone, the number of households and employment for that zone plus zones with centroids within a mile of the centroid of the zone in question are aggregated. These totals are then divided by the corresponding number of acres to develop household and employment density. The lookup table shown in Table I-2 is used to develop an overall area type value, ranging from 1 as the most rural to 9 as the most urban.

Table I-2
Area Type Lookup Table

Empl/ Acre	Households/Acre									
	< 0.5	**0.5-1.0**	**1.0-1.5**	**1.5-2.25**	**2.25-3.0**	**3.0-4.0**	**4.0-5.0**	**5.0-7.5**	**7.5-11**	**> 11**
< 1.5	1	1	2	2	3	3	4	4	5	6
1.5-3.5	1	1	2	2	3	3	4	5	6	6
3.5-6.5	1	1	2	2	3	3	4	5	6	6
6.5-12	1	2	2	3	3	4	4	5	6	7
12-20	1	2	3	3	4	4	5	6	7	7
20-30	2	3	4	4	5	5	5	6	7	7
30-45	3	4	4	5	5	6	6	7	7	8
45-70	3	4	4	5	5	6	7	7	8	8
70-110	4	4	5	6	6	7	8	8	9	9
> 110	4	5	6	7	7	8	9	9	9	9

Exhibit I-2 shows the year 2008 area types by zone.

Exhibit I-2
2008 Area Types



1.4 Validation Methodology

When setting a new base year, a model can be validated by using the model's latest set of highway and transit networks and socioeconomic inputs for a particular year and comparing the results to real world data. BMC uses survey data to compare with the results at various stages in the running of the model, while comparisons with actual traffic counts at the end provide an additional check.

A second characteristic of a good model is the ability to forecast future year conditions, with appropriate elasticities, considering the types of policies and investments that will be evaluated using the model. Maintaining the appropriate sensitivities should not be sacrificed to the goal of achieving perfect replication of the base condition.

Model validation requires a thorough examination of model results to ensure travel model ability to replicate the base year travel condition as well as its transferability to forecast future travel scenarios. In general, model validation process is guided by the principle of a balancing act between calibrating model parameters to replicate base year conditions within acceptable range of error and maintaining the models flexibility of forecasting capability.

Once all data have been gathered and the model has been run successfully, the analysis of the results can determine the model's validity.

Appendix F: HPMS Adjustment Factors

HPMS Adjustment Factors by Jurisdiction

		Interstate	*Freeway*	*Principal Arterial*	*Minor Arterial*	*Collector*
Urban	Baltimore City	1.2366	1.6124	1.0250	1.2710	4.3045
	Anne Arundel	0.9834	1.1671	1.1971	1.2030	1.3422
	Baltimore	1.0809	1.5277	0.9731	1.4164	1.5125
	Carroll	0.9293	0.9293	1.1385	0.6929	0.6665
	Harford	1.0808	1.8069	1.3216	1.2534	1.4033
	Howard	1.0059	1.3690	1.0160	1.3529	1.1301
Rural	Baltimore City	1.2366		1.0250	1.2710	4.3045
	Anne Arundel	0.8588		0.7418	0.9178	1.0178
	Baltimore	0.6229		1.0733	0.8633	0.8626
	Carroll	0.9293		0.5882	1.0178	0.7846
	Harford	1.0641		0.9536	0.8318	0.9336
	Howard	0.8959		1.6973	0.7435	0.9390

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

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

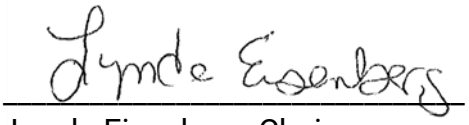
WHEREAS, the Cooperative Forecasting Group has recommended to the Baltimore Regional Transportation Board a set of forecasts termed Round 9A, for use in transportation and air quality planning activities; and

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

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%

BALTIMORE METROPOLITAN PLANNING ORGANIZATION

BALTIMORE REGIONAL TRANSPORTATION BOARD
RESOLUTION #21-3

APPROVAL OF THE BALTIMORE REGION 2021-2024 TRANSPORTATION IMPROVEMENT PROGRAM AND THE CONFORMITY DETERMINATION OF THE 2021-2024 TIP

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 FY 2021-2024 Baltimore Region Transportation Improvement Program was prepared in response to MAP-21's successor, the 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 2021-2024 TIP have been developed in relationship to the regionally adopted *Maximize2045: A Performance-Based Transportation Plan*; and

WHEREAS, the FY 2021-2024 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 current revenue sources; and

WHEREAS, the conformity analysis as reported in the "Conformity Determination of the FY 2021-2024 Transportation Improvement Program and *Maximize2045*," dated August 2020, 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 I: Tables 1 through 2); and

WHEREAS, a range of outreach strategies were employed to share information about the FY 2021-2024 Baltimore Region Transportation Improvement Program including a public review from June 16 to July 17, 2020. The public review included presentations to BRTB subcommittees and two virtual public meetings. The draft FY 2021-2024 TIP document was also supported by an online Storymap, dashboard, and interactive map. More than 40 comments were submitted and considered by the BRTB; and

WHEREAS, the FY 2021-2024 Baltimore Region Transportation Improvement Program uses federal and matching funds for the following project categories: 30.6 percent highway capacity, 25.5 percent highway preservation, 15.8 percent transit preservation, 10.6 percent ports, 8.3 percent emission reduction strategies, 5.5 percent commuter rail preservation, 2.7 percent environmental and/or safety, 0.8 percent enhancement program, 0.2 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 2021-2024 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 August 25, 2020 meeting.

8-25-20

Date

Lynda Eisenberg

Lynda Eisenberg, Chair
Baltimore Regional Transportation Board

Attachment 1

Table 1. VOC Emissions Test Results (average summer weekday, tons/day)

	2021	2025	2035	2045
Total Emissions Modeled	20.2	16.2	10.3	9.5
2012 Conformity Budget[1]	40.2	40.2	40.2	40.2
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**

[1] 8-hour ozone Reasonable Further Progress (RFP) SIP Budget for Baltimore region (motor vehicle emissions budgets determined to be "adequate" by U.S. EPA on February 22, 2016)

Table 2. NOx Emissions Test Results (average summer weekday, tons/day)

	2021	2025	2035	2045
Total Emissions Modeled	40.8	26.3	16.6	16.5
2012 Conformity Budget[1]	93.5	93.5	93.5	93.5
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**

[1] 8-hour ozone Reasonable Further Progress (RFP) SIP Budget for Baltimore region (motor vehicle emissions budgets determined to be "adequate" by U.S. EPA on February 22, 2016)

Appendix H: Public Participation

INVESTING IN THE REGION'S FUTURE

The Baltimore Regional Transportation Board (BRTB) has a

$4.3 BILLION

TRANSPORTATION PLAN

for the region and we want to know what you think!

LEARN MORE ON **JULY 9 & 14** OR VISIT **BALTOMETRO.ORG**

PRESS RELEASE

BALTIMORE METROPOLITAN COUNCIL

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

BRTB SEEKS PUBLIC COMMENTS ON FY 2021-2024 TIP INCLUDING $4.26 BILLION IN TRANSPORTATION PROJECTS

BALTIMORE, MD (Tuesday, June 16, 2020) – The Baltimore Regional Transportation Board (BRTB), as the metropolitan planning organization (MPO) for the Baltimore region, seeks public comments through **Friday, July 17** on two transportation-related documents – the draft *2021-2024 Transportation Improvement Program (TIP)* and the associated *Air Quality Conformity Determination*.

Those interested in learning more about the draft 2021-2024 TIP and Air Quality Conformity may do so during a virtual public meeting on Thursday, July 9th at 6pm or Tuesday, July 14th at 12:30pm. Comments are accepted by email at: **comments@baltometro.org**, Twitter **@BaltoMetroCo**, **@BmoreInvolved**, or #BRTBlistens, or in writing to the Baltimore Regional Transportation Board, Attn: Public Involvement Coordinator, 1500 Whetstone Way, Suite 300, Baltimore, MD 21230.

2021-2024 Transportation Improvement Program (TIP)

The draft *2021-2024 TIP* is the list of regional transportation projects requesting federal funding in the near term. It includes **$4.26 billion** in proposed federal, state and local money 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 local, state, and federal sources. The TIP is fiscally constrained.

Viewers can visit the BRTB's **interactive project map**, where the public can view projects and offer comments.

Analysis of Air Quality Conformity

The Baltimore region has been designated as not meeting National Ambient Air Quality Standards (NAAQS) and, as a result, the BRTB must review its current transportation plan and program to ensure conformity with the state plan to meet these standards, known as the *State 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 2021-2024 TIP.

The conformity results show that implementation of these projects will not worsen the region's air quality or delay the timely attainment of national air quality standards.

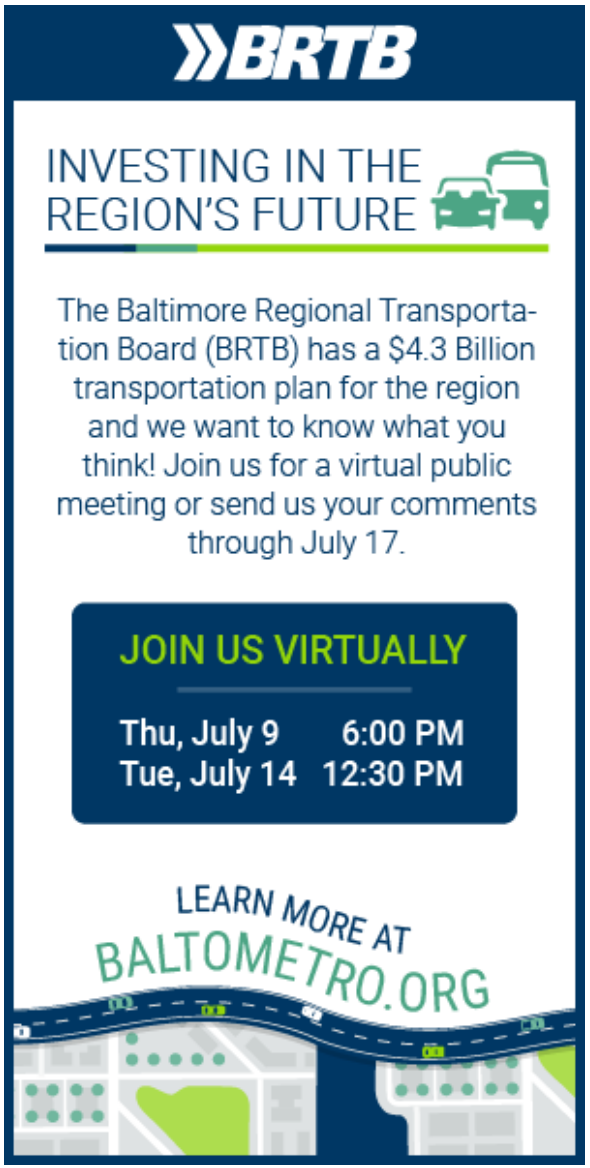
Visit our website to download and learn more about the draft Air Quality Conformity Determination and FY 2021-2024 TIP.

###

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.

ADVERTISEMENTS



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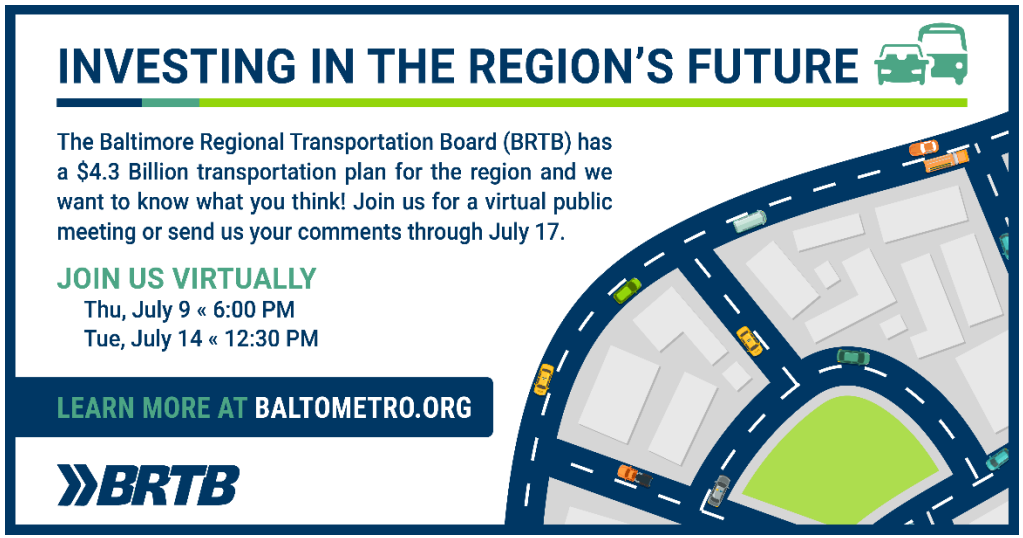
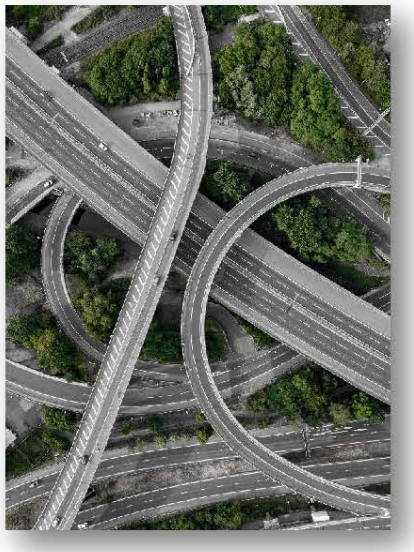


Overview of the Draft 2021-2024 TIP

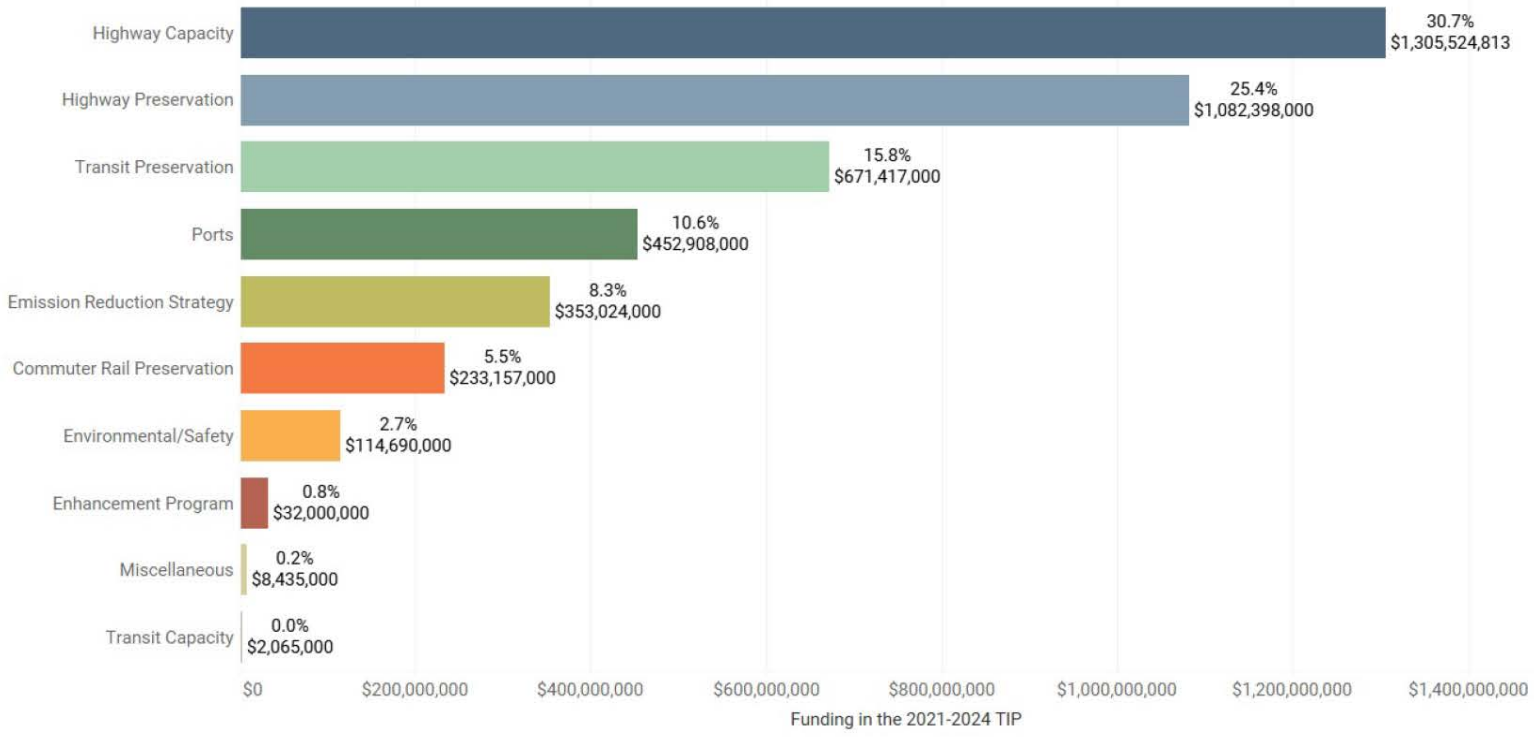
- 140 federally-funded and regionally significant projects
  - 24 are new projects
- $4.26 billion in proposed federal, state and local money
  - $2.46 billion federal; $1.8 billion state/local
  - highway, transit, bicycle and pedestrian projects
  - maintaining, operating and expanding the transportation 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 2021-2024 TIP



BMC

BRTB

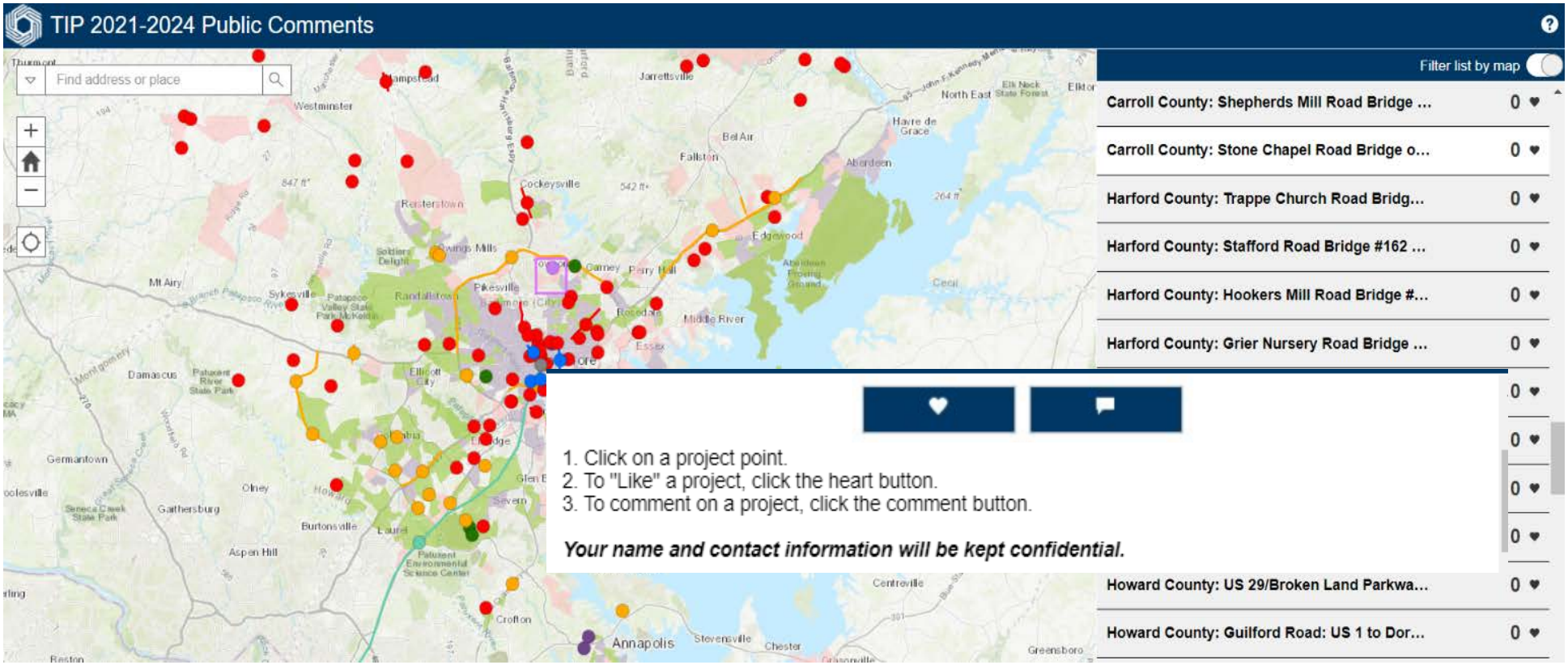
How to Share Your Thoughts

- Comment Period: June 16 through July 17, 2020
- 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, July 9 at 6 p.m.
  - Tuesday, July 14 at 12:30 p.m.

BMC

BRTB

INTERACTIVE MAP OF TIP PROJECTS ON VULNERABLE POPULATIONS INDEX (VPI) MAPPING TOOL



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-1: 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 state-wide program since 1978, is administered by Maryland Department of Transportation Maryland Transit Administration 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 public and private employers.
- Advertisements in newspapers, regional magazines, radio, television, and online to encourage ridesharing.
- Clean Commute activities, Bike to Work Day, and the MTA Commuter Choice discount transit fare program are both organized and promoted.
- 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.

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 375 employers and 18,000 employees. The program provides employers with monthly pass distribution options, which encourage employees to ride 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 50% state tax credit for providing tax-free commuter benefits to an employee and are eligible to receive a maximum tax credit of $100 per month per participating employee. Private, 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 **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 its Clean Commute Initiative. This program includes outreach and 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." Forty three events were held throughout the region for Bike to Work Day. Many local businesses and organizations donated prizes for registered participants.

In addition, the BMC website, **baltometro.org**, provides information about related events, Bike to Work Day, and other commuting issues.

In addition to the Clean Commute Initiative, MDE, 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 - Episodic Control Program

Clean Air Partners is a public-private partnership founded by the Baltimore Metropolitan Council and the Metropolitan Washington Council of Governments. Clean Air Partners seeks to improve public health and the environment by working with businesses, organizations, and individuals throughout the region to raise awareness and reduce air pollution through voluntary actions. The organization serves Northern Virginia, the District of Columbia, and Central Maryland.

In FY 2019, Clean Air Partners had another successful *Breathe Easy* campaign. The campaign included news coverage, paid radio traffic and weather sponsorships, donated transit advertising, digital channels, and grassroots outreach. Clean Air Partners reached new audiences across DC, Maryland, and Northern Virginia with messaging designed to inform, educate, and motivate change to improve public health and the environment across the region.

Clean Air Partners completed its 12th year of implementing *On the Air: Exploring Air Pollution the Sources and Solutions,* an interactive teaching curriculum, in the environmental education sector in the metropolitan Baltimore-Washington area. Clean Air Partners continued to promote the *On the Air* curriculum to educators, curriculum directors, developers, and administrators at the county and state level. The Education Program Manager performed outreach to teachers and co-taught the *On the Air* curriculum to elementary, middle and high schools in public, private, and charter

schools throughout Maryland, Washington D.C., and Virginia. During the school year, over 3,200 students were presented lessons related to air quality.

Clean Air Partners continues to improve its web site, **cleanairpartners.net**, and mobile application to support air quality awareness efforts by providing communication with residents in the Baltimore-Washington region. Clean Air Partners coordinates with MDE, DOEE, VDEQ, and COG to provide daily air quality forecasts to the public.

Clean Air Partners continues to be a sponsor of BMC's annual Clean Commute Initiative, especially Bike to Work Day, 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. BMC directs employers in the region—typically through the Clean Commute program—to a branded website, **Teleworkbaltimore.com**, where they are able to download all of the information and materials needed to launch telework programs within their organizations. In return for gaining access to the information, BMC asks employers to register for tracking purposes.

Guaranteed Ride Home Program (GRH)

This program, provided by Commuter Connections, MDOT, and MTA, provides a free emergency ride home to commuters who carpool, vanpool, bike, walk or take transit to work at least twice a week. Those who register for GRH can take advantage of it up to four times annually. GRH can be used for unexpected personal illness, sick family members, household emergency, or employer-mandated unscheduled overtime. MDOT MTA and local rideshare coordinators provide marketing for GRH.

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 MTA's All Access College Transit Pass program. It reduces the cost of a regular monthly pass to $50 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 **mta.maryland.gov/youth-innovation-all-access-college-transit-pass**.

Another reduced fare program from MTA is the Reduced Fare CharmCard®, available to seniors and persons with disabilities. For more information, visit **mta.maryland.gov**.

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. 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.

Due to 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

Baltimore Region Jurisdictions

In each jurisdiction, local efforts continue to accommodate 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 and Complete Streets policies or guidance. Through these master plans and policies, agencies can work to develop this key part of a multi-modal transportation network.

Agency	Plan Name	Status
Anne Arundel County	*Anne Arundel County Pedestrian and Bicycle Master Plan*	Completed in 2013
	Complete Streets Bill No. 78-18	Adopted in 2018
City of Annapolis	*Annapolis Bike Plan*	Adopted in 2012
Baltimore City	*Bicycle Master Plan*	Adopted in 2015
	Complete Streets Ordinance	Adopted in 2018, manual under development
Baltimore County	*Phase I: Eastern County Bicycle & Pedestrian Plan*	Adopted in 2006
	Phase II: Western County Bicycle & Pedestrian Plan	Adopted in 2012
	Phase III: Rural County Pedestrian and Bicycle Access Plan	Future phase
	Complete Streets Policy	Adopted in 2013
Carroll County	*Freedom Area Bicycle and Pedestrian Master Plan*	Completed in 2013
	Bicycle-Pedestrian Master Plan	Adopted in 2019
Harford County	*Bicycle & Pedestrian Master Plan*	Adopted in 2013, currently being updated
Howard County	*Pedestrian Master Plan*	Completed in 2007; Draft update completed in 2017
	Bicycle Master Plan	Adopted in 2016
	Complete Streets Policy	Adopted in 2019
Maryland Department of Transportation	*Maryland Bicycle and Pedestrian Master Plan*	Adopted in 2014, updated in 2019

Maryland Department of Transportation

MDOT State Highway Administration has had a Complete Streets policy in places since 2012, and includes bicycling and walking accommodations in all of its projects as feasible. MDOT is

currently developing a state level Complete Streets policy that will define the approach across all of MDOT for streets designed and operated to support mobility for all users including accommodation of pedestrians, bicyclists, micro mobility users and public transportation riders.

The Maryland Bikeways program, administered by MDOT, awarded $1,393,000 in the 2020 grants cycle for projects that will benefit the Baltimore region. The bikeways program provides funds needed to implement the Statewide Trails Plan and the 20-Year Bicycle and Pedestrian Master Plan in providing missing links in the statewide trails and bikeways network by connecting and extending on-road and off-road bicycle facilities.

All MTA transit buses serving the Baltimore region have bicycle racks. 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. 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.

Baltimore Metropolitan Council

In *Maximize 2045*, the long-range transportation plan for the Baltimore region, 37 of the 74 projects add pedestrian and bicycle improvements to either roadways or to new or existing transit stations.

The BRTB 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. The 2020 initiatives of the BPAG include a focus on Complete Streets, development of a bicycle project cost estimator tool for use in the region, and developing a practice for conducting baseline pedestrian counts, including a pedestrian report card assessment to inform planning and capital spending projects in the region.

The BMC is currently managing the preliminary design of the Elkridge to Guinness Open Gate Brewery segment of the Patapsco Regional Greenway in Howard and Baltimore Counties. It is anticipated the counties will apply for a grant to complete the design in the 2021 grant cycle. Funding is proposed in the draft UPWP for BMC to manage another trail segment in FY 2021.

Finally, Bike to Work Day is an annual BMC-coordinated region-wide event with approximately 2,000 registrants. Bike to Work Day rallies and pit stops are held in each jurisdiction, with additional employer-based events.

PARK-AND-RIDE PROGRAMS/LOTS

BMC completed the first comprehensive study of park-and-ride facilities in the Baltimore region in June 2002. This study quantified the utilization of the 105 lots throughout the region, and documented the travel behavior characteristics of lot users, including mode of travel as well as travel origins and destinations. The study also defined the service areas of individual lots. Information gathered in the study has permitted the BMC to more accurately estimate the emission reduction potential of existing and planned park-and-ride facilities. Information from this study has also been used to further quantify elements of the regional travel demand model, and to assist in planning future park-and-ride lots.

State/Federal-funded

The Maryland State Highway Administration (SHA) has assessed their park-and-ride facilities. Usage of SHA park-and-ride facilities in 2017 is estimated at 44 percent across the region, compared with 46 percent in 2016. The most parking spaces are provided in Anne Arundel and Howard Counties. Howard County usage is slightly lower from 2016. The percentage drop from 50 to 48 percent. The table below displays information on these lots from 2017. A substantial amount of VMT is reduced every year as a result of park-and-ride lots in the Baltimore region. SHA lots only account for a portion of park-and-ride lots in the region.

SHA Park-and-Ride Facilities 2017

County	Lots	Spaces	Percent Use
Anne Arundel	8	2,060	55
Baltimore	9	1,133	34
Carroll	7	453	44
Harford	12	1,211	39
Howard	8	1,899	48
Regional Total	***44***	***6,756***	**44**

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 due to 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 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, 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. 29 routes operate throughout Central and Southern Maryland and 7 routes operate in the Baltimore region.

- **Locally-Operated Transit Systems:** In addition to the transit services operated by MDOT MTA, eight locally-operated transit systems exist in the Baltimore region. Locally-operated transit systems are funded through a combination of federal, state, and local dollars. MDOT MTA provides financial support for both capital and operating projects as well as technical support for these services. These systems are shown below:

Service Name	Operated by	Service/ Service Area	Highlights
Annapolis Transit	Annapolis Department of Transportation	The service consists of regular fixed routes, shuttle and ADA complementary paratransit. The service area comprises the City of Annapolis and the immediate surrounding areas of Anne Arundel County.	Bike racks, wheelchair accessible. Demand-response paratransit service also provided.
Anne Arundel Transit	Anne Arundel County Office of Transportation/ RTA	Deviated and fixed route service serves inside and outside the corporate limits of the City of Annapolis, Maryland City, Odenton-Severn-Glen Burnie-Crofton and South County area of Anne Arundel County. Demand response (complementary and general para-transit) transportation for persons 65 and older and persons with disabilities.	A taxi cab discount program is also available.
Baltimore City Charm City Circulator	Baltimore City Department of Transportation	Four routes serving downtown Baltimore, including City Hall, Fells Point, Johns Hopkins, Penn Station, Federal Hill, Hollins Market, Harbor East, the Inner Harbor and Fort McHenry. The Harbor Connector is a free water taxi serving Maritime Park, Tide Point, Canton, Waterfront Park, Harbor view and Harbor East.	Free service; hybrid electric buses; GPS bus tracking; the Harbor Connector offers free water taxi service to five points along the waterfront
Baltimore County CountyRide	Baltimore County Department of Aging	Demand-response paratransit service throughout Baltimore County and to Baltimore City partnership hospitals. Destinations include medical appointments, shopping and other general-purpose trips.	Serves Baltimore County residents with disabilities or who are older or rural residents.
Carroll Transit System	Carroll County / Ride With Us	Six shuttles operate around the County, serving points of interest such as Westminster, South Carroll, Eldersburg, Hampstead, and Taneytown.	Demand-response paratransit service also provided.
Harford Transit LINK	Harford County	Six local routes link the primary towns and connect with Cecil County, MARC train, and MDOT MTA commuter bus service to downtown Baltimore.	Demand-response paratransit

			service also provided.
Regional Transportation Agency of Central Maryland	Howard County / RTA	Sixteen fixed routes and demand response serving Howard County, western Anne Arundel County, and northern Prince George's County.	Buses, including some inductive electric buses, provide service for residents in Howard County.
Queen Anne's County County Ride	Queen Anne's County Department of Aging	Three deviated fixed routes, Deviated-fixed routes operate on a time schedule. Drivers may deviate off the route for any rider if the deviation is within 3/4 of a mile.	Door to door services are available to individuals with disabilities. Veterans who need a ride to medically related appointments can ride at no cost.

The *rabbitExpress* commuter bus operated by *rabbittransit* out of York, Pennsylvania has the I-83 South route with seven trips each weekday for roundtrip service from York to Hunt Valley, Timonium, Towson, Maryland stops. It connects with MDOT MTA Light Rail and the Towson University Shuttle. I-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 *rabbittransit*.

In addition to MDOT MTA bus service, local bus service, and *rabbitExpress*, there are private bus companies that offer intercity bus service to the region. The Greyhound bus station at 2110 Haines Street in the Carroll Camden Industrial Park provides a link between intercity and local public transportation. Additionally, numerous companies such as MegaBus and Bolt Bus, provide intercity service from Baltimore to regional destinations such as New York, Richmond, and Pittsburgh.

MDOT MTA launched an intercity bus program in January 2011 to connect rural communities in Maryland. Greyhound operates service in the Elkton – Baltimore corridor with the operation of once daily roundtrip service. The service runs between Washington DC and the MD/DE state line (en route to Wilmington), with intermediate stops at College Park, Laurel, Baltimore, White Marsh Station, Edgewood, Aberdeen, Havre de Grace, Perryville, and North East, and the Eastern service operates from Ocean City to Baltimore via Bay Runner Shuttle.

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 SubwayLink system 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 continuing to Johns Hopkins Hospital east

of downtown. Connecting bus service is provided with MDOT MTA bus routes. Metro SubwayLink will be enhanced with the 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. In addition to the replacement of the railcars and train control system, MDOT MTA is also replacing and upgrading the communication system along with aging cables and guideway components along Metro SubwayLink tunnels and viaducts.

- **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 numerous bus connections at stations.

  All but 2.6 miles of the Light RailLink are double-track, which makes service more reliable and increases ridership. The remaining 2.6 miles are single-track due to right-of-way challenges. There are 10-minute headways through 75 percent of the system from Linthicum to Timonium 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 2018.

- **Maryland Area Rail Commuter (MARC) -** MDOT MTA's MARC service provides high-speed, medium frequency commuter rail service in the Baltimore region and beyond. The 202-mile system is a commuting option for residents of Central and Northeast Maryland, the Baltimore/Washington Corridor, and the Martinsburg, West Virginia/Brunswick/Frederick to Washington corridor. 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.

  MARC commuter rail services is being enhanced through significant renovations to the BWI MARC/Amtrak station, which have provided improved passenger waiting areas, improved ticketing, and the addition of new canopies.

  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 on the horizon 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

In recent years, MDOT SHA has refocused its approach to planning and programming, as noted in the 2018 Transportation Systems Management and Operations (TSMO) Strategic Plan. "Every project has elements of TSMO, and TSMO will drive how we design and implement future programs and projects." TSMO approaches employ technology and coordination, so that the existing transportation system is used as efficiently as possible. TSMO solutions improve transportation operations, traffic incident management, traffic signal coordination, work zone management, transit integration, freight management, and emergency preparedness.

TSMO projects address system efficiency and reliability by improving traffic flow, reducing congestion, and reducing mobile source emissions throughout the region. In addition, MDOT SHA continues traditional approaches to reduce emissions, including roundabout construction, intersection reconstruction, park-and-ride facility construction, and improved fixed message signage.

MDOT's TSMO efforts are led by the Office of CHART and ITS Development. The CHART (Coordinated Highways Action Response Team) program, operated jointly by MDOT, SHA, MDTA, and Maryland State Police, has as its mission to "strive to improve 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, and roadway weather information systems 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, **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. The following table, from the 2018 Performance Evaluation and Benefit Analysis for CHART, shows the air quality-related benefits from the CHART program in 2018:

Reduction due to CHART	Amount
Fuel consumption (M gallons)	6.17
Emissions	
• HC (tons)	428.88
• CO (tons)	4,816.98
• NO (tons)	205.40
• CO2 (metric tons)	56,382.46

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.

In 2019, 80 percent of vehicles using all MDTA facilities paid using electronic toll tags. The table below shows the portion of vehicles that use E-ZPass in the Baltimore region.

Facility	Percent Using E-ZPass
I-95 Express Toll Lanes	95%
William Preston Lane Jr. Memorial (Bay) Bridge	72%
Baltimore Harbor Tunnel	74%
Fort McHenry Tunnel	77%
Francis Scott Key Bridge	80%
Thomas J. Hatem Memorial Bridge	94%
John F. Kennedy Memorial Highway	75%

Starting in October 2019, MDTA began cashless toll collection at the Francis Scott Key Bridge and the Thomas J. Hatem Memorial 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 will be removed by spring 2021, enabling vehicles to maintain highway speeds during toll collection. 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.

Traffic Signal Retiming

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 2018, SHA reviewed 88 signals in ten systems in the Baltimore region. Timing changes were made in seven systems containing 67 signals. Delay was reduced by 229,094 hours and fuel consumption was reduced by 42,463 gallons. It is estimated that NOx, VOC, and CO emissions were reduced 0.3%, 1.0%, and 0.2% respectively for the signal systems.

Also in 2018, an adaptive signal system was activated on US 40 in Catonsville (11 signals) and signal timing was revamped on US 1 to support the Guinness Brewery. As of today, there are nine SHA adaptive signal systems containing 77 signals in the Baltimore region.

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) has worked 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 towing and recovery. 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. The TIMBR Committee has been working closely with MDOT SHA staff and others to train all TIM responders in the state using the national SHRP 2 TIM Training course that has been customized for Maryland. The goal of this training is enhancing safe, efficient incident clearance, which should also reduce congestion due to incidents.

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 tax credit of 40% of the cost of electric vehicle charging equipment and installation (up to $700 for individuals, $4,000 for commercial businesses, and $5,000 for retail service stations). The federal government provides a tax credit of up to $7,500 for all-electric or plug-in hybrid vehicles. Additionally, the State of Maryland also offers a tax credit of up to $3,000 for the purchase of all-electric and plug-in hybrid vehicles.

Dray Truck Replacement

An important program that the Maryland Department of Transportation (MDOT), Maryland Department of the Environment (MDE), and the Maryland Port Administration (MPA) work jointly on is the Port of Baltimore 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 (generally model year 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 216 dray trucks. Funding for this program has largely been through EPA Grants such as the Diesel Emission Reduction Act (DERA) with some state and federal transportation funding. The Port has received approximately $7.8 million in funding for dray truck replacements.

In 2018 and 2019, through the work of this partnership, the Port received approximately $4.4 million dollars in EPA funding under its regional DERA Program. This funding will go toward the replacement of approximately 80 dray trucks, 30 pieces of cargo-handling equipment such as forklifts and yard tractors, and repowering of four marine engines. These replacements and

repowers will result in estimated lifetime emission reductions of approximately 65 tons of particulate matter, 720 tons of nitrogen oxides, 922 tons of carbon monoxide, and 5,323 tons of carbon dioxide. It will also save more than 64,000 tons of fuel. In addition to this 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.

Transit Bus Replacement

Replacement of older model transit buses with newer, cleaner models provides the opportunity to reduce emissions from the bus fleet operating on the region's roadways. The 2021-2024 TIP proposes a planned purchase of 310 forty-foot clean diesel buses.

Planned Emission Reducing Projects

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	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	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	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.
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
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.
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	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.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
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	Mountain Road Corridor Revitalization - Phase 1	Provide improved vehicular, bicycle, and pedestrian facilities and enhancements along the MD 177 corridor between Solley Rd. and Edwin Raynor Blvd.
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	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.
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	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.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
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.
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	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.
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.
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

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
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.
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	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	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	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.
Howard County	School Route Pathways or Sidewalks	Installation of sidewalks/pathways to provide safe walking route for school children.
Howard County	Sidewalk Repair Program	This project is for the repair of deteriorated sidewalks and driveway aprons that are in public
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	North Laurel Road Sidewalk	Design and construction of a sidewalk along the southwest side of North Laurel Road from Linville Ave. to US1.
Howard County	Guilford Rd Pedestrian/Bike Improvements	Project to design and construct a sidewalk on one or both sides of Guilford road between Oakland Mills Road and US1. Significant pedestrian and bicycle activity has been observed on Guilford Road.

Project Type:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
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	FY2014 Bicycle Plan Projects	A project for the implementation of the comprehensive Howard County Bicycle Master Plan.
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	Elkridge Main Street Improvements	Project replacing the curb, gutter, and sidewalks along Main Street from Old Washington Road to Brumbaugh Street in Elkridge.
Howard County	Downtown Columbia Patuxent Branch Trail Extension - Phase I	Phase I of a project connecting Downtown Columbia at Lake Kittamaqundi and extending to the existing Patuxent Branch Trail. The complete project would provide a car-free connection to Downtown Columbia to Savage and will connect to the planned east-west Hospital to Blandair Park multi-use pathway.
Howard County	Clarksville - River Hill Streetscape Improvements	A project to plan, design and construct road and related improvements -- including streetscape, storm water management, pedestrian, bicycle, and public space enhancements -- in the Route 108 corridor.
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.

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	Brighton Dam Road at Highland Road Roundabout	Project designing and constructing a roundabout at the intersection of Brighton Dam Road and Highland Road. The current intersection is a four way stop.

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	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	Sidewalk/ Bikeway Fund	This project includes design and construction of needed sidewalk/bikeway links along County roadways.
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)

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.
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.
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	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	Sidewalk Ramps Program	This project provides funds to construct sidewalk ramps to assist the handicapped.
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:	*Bike/Ped/Greenway*	
Implementing Agency	***Project Name***	***Project Description***
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.
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	Roadside Improvement Program	This project is to repair, replace, or install sidewalks and ramps for handicapped areas, curbs, trees, and guardrails to comply with applicable Federal, State and County codes.
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:	*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.
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***
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	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.
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.

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	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.
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.
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	Vehicle Replacement (Anne Arundel County)	This multi-year project is necessary to maintain and upgrade the school system's vehicle fleet.
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	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	MTA All Access College Transit Pass Program	Reduced transit pass for area college students.
MDOT	MARC Coaches - Overhauls and Replacement	Overhaul MARC coaches in accordance with "10-year minor" and "20-year mid-life" schedules
MDOT	Metro Railcar Overhaul	Overhaul of rail cars at 10 plus years after the midlife, to ensure safe reliable operation of ~ 200 vehicles.
MDOT	State Worker Free Transit Program	Provide free service to state employees for MTA bus, light rail, some commuter buses, and Metro subway systems.

Implemented Emission Reducing Projects

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	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.
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.

Project Type: *Bike/Ped/Greenway*

Implementing Agency	***Project Name***	***Project Description***
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.
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