
CONFORMITY DETERMINATION OF MAXIMIZE2040 AND THE AMENDED 2016-2019 TRANSPORTATION IMPROVEMENT PROGRAM – 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 2011 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 8A socioeconomic forecasts endorsed by the BRTB on June 24, 2014. Also, the travel demand model has been updated, and now is validated to a 2010 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. The Red Line 14.1 mile east-west light rail transit line was removed from the planned transportation network, in line with its removal from the planning process.
	(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.
	(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

<i>Section of 40 CFR Part 93</i>	<i>Requirement</i>	<i>BRTB's Response</i>
§93.111	Is the conformity determination based upon the latest emissions model?	Yes. EPA's latest emissions model, Motor Vehicle Emissions Simulator (MOVES) 2014 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?	[Section to be complete in the Final Appendices.]
§93.106(a) (1)	(1) Are the transportation plan horizon years correct?	Yes. The first modeled horizon year is 2017 , the last full ozone season prior to the attainment date for the 2008 ozone NAAQS, for moderate nonattainment areas. The second two horizon years are 2025 and 2035 , test scenarios set so that there are no more than 10 years between horizon years. The fourth horizon year is 2040 , 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 8A 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 long-range plan: <i>Maximize2040</i> .
§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 Amended 2016-2019 Transportation Improvement Program and Maximize 2040 took place at the following meetings:

- August 25, 2015 Interagency Consultation Group – results presented with support to release for public review
- November 3, 2015 Technical Committee – recommends BRTB approval of the Conformity Determination and *Maximize2040*
- November 4, 2015 Interagency Consultation Group – Review of any public comments and then BRTB approval recommended
- November 4, 2015 Public Advisory Committee – review and comment opportunity on the Conformity Determination and TIP
- November 24, 2015 BRTB Meeting – approval of the Conformity Determination and *Maximize2040*

Appendix C-1: Conformity Status of Projects from Maximize2040

Appendix C-1: List of *Maximize2040* Plan Projects (Exempt/Non-exempt Status)

Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
MD 175	Anne Arundel County	Project: From AA County line to MD 295 go from 2 to 3 lanes. From MD 295 to MD 170 go from 4 to 6 lanes Justification: To improve the existing capacity, traffic operations, intermodal connectivity, and vehicular and pedestrian safety on MD 175, while supporting existing and planned development in the area.	N	2025
U.S. 50/301	Anne Arundel County	Project: Bridge reconstruction/widening; movable barrier on bridge	N	2020
Bayview MARC and Intermodal Station	Baltimore City	Project: New station Justification: Provide other transportation options besides single-occupant vehicle. Improve access to a major activity center. Improve intermodal connectivity.	N	2025
Moravia Road	Baltimore City	Project: Roadway, curb & sidewalk rehabilitation on Moravia Road between Belair Road and Sinclair Lane. ADA Improvements and basic streetscape elements will be part of this project. Justification: Improved accessibility, improved access to jobs, amenities and improved accessibility to wider range of transportation modes. This project is also located in disadvantaged communities area. It will help in land use changes that might bring destinations closer and increase in property values. This project will help in reduction of emissions as a result of smoother surface and synchronized signal timings.	Y	2022
West Baltimore MARC Station	Baltimore City	Project: Station upgrades Justification: Provide other transportation options besides single-occupant vehicle. Improve access to a major activity center.	Y	2020
I-83 Bridge over Padonia Road	Baltimore County	Project: Reconstruct I-83 bridge and make necessary pedestrian and bike improvements to Padonia Road. Justification: Replace aging facility. Improve accessibility and safety on roadway beneath the bridge.	Y	2025
MD 140 / Painters Mill Road	Baltimore County	Project: Intersection improvements, additional left turn lane, and parallel access roads. Justification: Improve mobility through the corridor and improve safety conditions.	N	2025
MD 26	Baltimore County	Project: Roadway, curb, sidewalk, bicycle, ADA, pedestrian improvements as part of an enhanced streetscape. Justification: Improve accessibility and safety for all modes. Support growth in an existing community.	Y	2025
MD 26	Carroll County	Project: Widen from 4 to 6 lanes, addition of pedestrian and bicycle facilities Justification: Improve access to major employment and commercial centers on Liberty Road (MD 26) and Sykesville Road (MD 32). Support growth in the existing Freedom community. Improve access to one of the County's most used park and ride lots.	N	2025
MD 31 (New Windsor Main Street/ High Street)	Carroll County	Project: Infrastructure improvements and pavement rehabilitation Justification: Improve access to employment and commercial uses along New Windsor's Main Street and High Street. Improve pedestrian and bicycle connectivity of the transportation network. Support growth in the existing New Windsor community.	Y	2020
MD 851 (Sykesville Main St/Springfield Ave)	Carroll County	Project: Infrastructure improvements and pavement rehabilitation Justification: Improve access to employment and commercial uses in downtown Sykesville and the Warfield Complex. Support growth in the existing Sykesville community.	Y	2025

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Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
Westminster Transit Hub	Carroll County	Project: The Westminster TrailBlazer transportation hub will be a centrally located facility to enable transfers for TrailBlazer riders, provide a Mobility Manager office space and travel-training classroom and offices. This facility will include vending, ticketing, & restrooms. Justification: This hub will decrease pedestrian traffic along major roads and improve transportation awareness. Pedestrians without private transportation or reliable transportation can utilize this hub. Improving connectivity through scheduling is the first phase Carroll County is implementing. Having this improved location will benefit the riders currently relying on the fixed routes through improved time points. Supporting our bike riders and pedestrians with this facility will enable them to place their bikes on the buses to connect to other locations served by the fixed routes. Improved awareness of the services available and coordination with carpools will reduce the number of vehicles on Carroll County roads. The energy consumption will be greatly reduced as well as the congestion within the area.	Y	2020
MD 24	Harford County	Project: Widening from 4 to 6 lanes; includes sidewalks and bicycle accommodations where appropriate Justification: Increased traffic volumes continue to stress the roadway network in and around the town of Bel Air. The MD 24 corridor links the Town of Bel Air, Forest Hill and communities in northern Harford County with I-95 and the U.S. 40 corridor.	N	2025
MD 24 (Section G)	Harford County	Project: MD 24 will be resurfaced and reconstructed including slope repair and guardrail replacement Justification: The project will improve access, mobility and safety for passenger and freight traffic.	Y	2020
MTA Commuter Service	Harford County	Project: Additional MTA Commuter Bus Service from Harford County to Downtown Baltimore, to Harbor East, and a reverse commute route from Baltimore that will serve Aberdeen Proving Ground. Project will also include installing shelters and extending the U.S. 40 Commuter service to connect with Harford Transit Justification: This project will improve service and mobility for current and future riders by addressing capacity, frequency and reliability.	N	2025
I-70	Howard County	Project: Widen from 4 to 6 lanes, including noise walls. Includes reconstruction of I-70 / Marriottsville Road interchange to provide adequate 2040 capacity and traffic flow and upgrading of I-70 / U.S. 29 interchange to allow widening of I-70 to 6 lanes and for U.S. 29 northbound to westbound movement. Justification: This project will benefit roads as far away as the very congested segment of I-66 east of Leesburg, VA . Closer to I-70, arterials and collectors currently utilized by local commuters will experience reduced congestion. It will improve access to less costly housing markets in areas more distant from the Baltimore and Wash DC job markets.	N	2025
Snowden River Parkway Widening	Howard County	Project: Widen from 4 to 6 lanes, including auxiliary lanes, pedestrian, bicycle and transit improvements on both sides of the road. Justification: This project, to add a third lane in each direction to Snowden River Parkway, from Oakland Mills Road to Broken Land Parkway, will enhance capacity and safety but will also include significant pedestrian, bicycle and transit improvements. This project will reduce diverted traffic using the local road network.	N	2022
I-695	SHA	Project: Widen corridor from 6 lanes to 8 lanes. Justification: Increase mobility. Improve freight movement.	N	2025
MD 140	SHA	Project: Widen from 4 to 6 lanes. NB 3rd lane drops north of Owings Mills Boulevard. Justification: Increase mobility. Improve access to a major activity center.	N	2025
MD 100	Anne Arundel County	Project: Widen roadway from 4 to 6 lanes to accommodate additional traffic Justification: This is a major route connecting Howard County, Anne Arundel County, Arundel Mills and the BWI Airport.	N	2035

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Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
MD 198	Anne Arundel County	Project: Widen MD 198 from 2 to 4 lanes Justification: Improve the existing capacity and traffic operations, enhance access to Fort Meade and to increase vehicular and pedestrian safety along MD 198, while supporting existing and planned development in the area.	N	2030
MD 295	Anne Arundel County	Project: Widen from 4 to 6 lanes	N	2030
U.S. 50 Bus Rapid Transit	Anne Arundel County	Project: Bus Rapid Transit on U.S. 50 from proposed Annapolis-Parole Intermodal Center to Prince George's County line.	N	2030
Green Line	Baltimore City	Project: Extension of Metro line, including two new stations (at Amtrak line and North Avenue) Justification: Improve access to a major activity center. Provide transportation option besides single-occupancy vehicle. Support growth in an existing community.	N	2035
Broening Highway / I-695	Baltimore County	Project: Construct a full interchange at Exit 44 of I-695 to adequately support redevelopment at Sparrows Point	N	2035
I-695	Baltimore County	Project: Safety and capacity improvements. Widen from 6 to 8 lanes. Justification: To accommodate increases in traffic volumes along I-695 and to enhance traffic operations and safety.	N	2035
I-795	Baltimore County	Project: Widening from 4 to 6 lanes including addition of auxiliary lanes to Owings Mills Boulevard; includes new interchange at Dolfield Boulevard. Justification: Relieve congestion	N	2026
MD 140	Carroll County	Project: Widen from 6 to 8 lanes, full interchange at MD 97 (Malcolm Drive), Continuous Flow Intersection (CFI) at Center Street and Englar Road, addition of pedestrian and bicycle facilities Justification: Improve access to major employment and commercial centers on Baltimore Boulevard (MD 140), Malcolm Drive (MD 97S), Railroad Ave./Manchester Road (MD 27), and Littlestown Pike (MD 97N).	N	2035
MD 140 at MD 91	Carroll County	Project: Widen from 2 to 4 lanes; divided highway with interchange at MD 91 and intersection improvements, addition of pedestrian and bicycle facilities Justification: Improve access to major employment and commercial centers on Baltimore Boulevard (MD 140) and Gamber/Emory Road (MD 91). Support growth in the existing Finksburg community. Improve freight movement.	N	2035
MD 32	Carroll County	Project: Widen from 2 to 4 lanes, addition of pedestrian and bicycle facilities Justification: Improve access to major employment and commercial centers on Sykesville Road (MD 32) and Liberty Road (MD 26) and to the Warfield Complex. Support growth in the existing Freedom community and Town of Sykesville. Improve access to one of the County's park and ride lots.	N	2030
MD 97 North	Carroll County	Project: Widen from 2 to 5 lanes, including interchange at Meadow Branch Road, addition of pedestrian and bicycle facilities Justification: Improve access to major employment and commercial centers on Littlestown Pike (MD 97) and Baltimore Boulevard (MD 140). Support growth in the existing City of Westminster and surrounding community. Improve access to the Carroll County Regional Airport.	N	2035

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Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
MD 22	Harford County	Project: Widening of existing 2- and 3-lane section to 4 and 5 lanes and include an HOV lane from Old Post Road to APG gate, bicycle and pedestrian access and transit queue jump lanes where applicable Justification: The MD 22 corridor is a major east-west arterial in Harford County connecting the municipalities of Bel Air and Aberdeen. The road has an interchange with I-95 and with U.S. 40 and currently has direct access to the main APG gate.	N	2035
U.S. 1	Harford County	Project: Widen from 4 to 6 lanes, including bicycle and pedestrian accommodations Justification: Increased traffic volumes continue to stress the roadway network in and around the Town of Bel Air. U.S. 1 is a major transportation corridor linking Bel Air with northeast Baltimore County.	N	2030
U.S. 1 Bypass	Harford County	Project: Widen from 2 to 4 lanes and improve the U.S. 1 @ MD 24 and U.S. 1 @ MD 924 interchange Justification: Increased traffic volumes continue to stress the roadway network in and around the Town of Bel Air.	N	2030
Bus Rapid Transit to BWI Airport	Howard County	Project: The Bus Rapid Transit will emulate light rail operations at a lower cost and is designed to link Howard County commuters from Dorsey MARC to Arundel Mills to the BWI car rental center to BWI Airport Justification: The project will benefit the region by linking the Baltimore and Washington region more closely together allow greater economic opportunities and housing, educational and cultural opportunities in each region to be pursued by persons in each region without the excessive interference and impedance of peak hour congestion. The project will provide an effective linkage between the Camden MARC line and BWI.	N	2035
MD 108	Howard County	Project: Widen roadway where needed/possible to four lanes and implement design criteria for 8 to 10 foot pedestrian/bicycle pathways, new signalized intersections including pedestrian actuation, all based on the 2014 Howard County MD 108/Clarksville Design Study. Justification: The existing and newly developing commercial land uses along this segment of MD 108 are negatively impacted by the existing MD 108 road design characterized by lack of ped/bike access, congestion and multiple at-grade access points. Local freight operations will be positively impacted as will access to MD 32, the regional and national highway network.	N	2030
MD 32	Howard County	Project: Widen to 4 lanes (4-lane cross section) per FEIS Preferred Alternative to provide access controlled, divided highway with 34-foot median. Outside shoulders will be 10 feet wide (all paved); inside shoulders will be 10 feet wide (4-foot paved, 6-foot graded). Includes new interchanges at Rosemary Lane and MD 144 and upgrades to I-70 interchange. Justification: This project will reduce inter-County congestion between Howard/Carroll Counties. It will facilitate diversion of commuter traffic off local roads and reduce congestion-related emissions (improves air quality) and energy waste. Access to lower priced housing market in Carroll County will be improved. The project will improve freight and commuting times as well as employment opportunities.	N	2030
MD 32	Howard County	Project: Widen from 2 to 4 lanes; safety, capacity, operational, and access improvements on MD 32 north of I-70 consistent with MD SHA Feasibility Study, MD SHA Access Control Study and Carroll County proposal for widening MD 32 north of this project's limits. Justification: Improve access to lower priced housing in Carroll County as well as commercial operations in both Howard and Carroll Counties. It should be noted that the majority of commuter traffic using this road does not originate in Howard County but in Carroll and Frederick Counties. Improved access to jobs with this project will permit Carroll County PFA development to grow including major re-development projects like Springfield State Hospital. This project will be complementary to Carroll County MD 32 widening proposal.	N	2035

Appendix C-1: List of *Maximize2040* Plan Projects (Exempt/Non-exempt Status)

Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
U.S. 1 / MD 175 Interchange	Howard County	Project: Design and construction of grade-separation at U.S. 1 / MD 175 coordinated with I-95 / MD 175 improvements and consistent with MD SHA "MD 175 Improvement Study". Justification: Economic development and access to affordable housing in the U.S. 1 Corridor and I-95 Corridors will be significantly facilitated with this project. This grade-separation will also improve bicycle and pedestrian access in the U.S. 1 and MD 175 corridors and increase the value of existing Federal/State investment in I-95 by raising the profile of the Interstate's most proximate alternate route, U.S. 1 (especially for freight in Maryland).	N	2030
U.S. 1 Typical Section	Howard County	Project: Widen from 4 to 6 lanes; design/install the U.S. 1 Design Manual typical section as defined in the State/County MOU for U.S. 1 Revitalization. Justification: This U.S. 1 Corridor improvement is integral to the U.S. 1 Revitalization PFA effort. Both new and existing communities will experience improved connectivity of all travel modes as well as increased value of properties.	N	2030
U.S. 29	Howard County	Project: Widen from 4 to 6 lanes, including auxiliary lanes from Middle Patuxent River to Seneca Dr including grade separated access to the Community of Rivers Edge, at approximately Rivers Edge Dr and U.S. 29. Justification: The U.S. 29 widening and addition of access controls at Rivers Edge will facilitate travel and public transportation options as well as improve safety. The project will improve safety, reduce congestion and facilitate more efficient travel along the U.S. 29 corridor. In doing so it will provide economic support for housing and housing values along the U.S. 29 corridor.	N	2030
U.S. 29 Bus Rapid Transit	Howard County	Project: Emulate light rail operations at a lower cost; designed to link Howard County commuters with suburban Montgomery County and Washington DC by connecting to the Montgomery County BRT and then the Silver Spring transportation center for WMATA Metro and MARC. Justification: The project will benefit the region by linking the Baltimore and Washington region more closely together, allowing greater economic opportunities and housing, educational and cultural opportunities in each region.	N	2035
MARC Growth and Investment Phase 1	MTA	Project: Improvements to MARC mainline capacity, maintenance facilities, and station areas Justification: Provide other transportation options besides single-occupant vehicle. Increase mobility in I-95 / U.S. 40 corridor. Improve access to major activity centers. Improve intermodal connectivity.	N	2029
MTA Bus Expansion Program Phase 1	MTA	Project: Purchase of 140 buses over the next 20 years at a cost of \$800,000 per bus. Justification: Maintain and replace aging transit assets. Improve access to major activity centers. Improve intermodal connectivity.	N	2029
MD 713	Anne Arundel County	Project: Widen from 2-4 lanes from MD 175 to Arundel Mills Blvd Widen from 4-6 lanes from Arundel Mills Blvd to MD 176 Justification: Improve access to Arundel Mills, Odenton and BWI, support BRAC activities and the Odenton Town Center	N	2040
Aberdeen MARC Station	Harford County	Project: Transit Oriented Development (TOD); new train station, additional parking, U.S. 40 "Green Boulevard", and Station Square Plaza - new pedestrian underpass and green, terraced plaza/amphitheater Justification: This project will improve service and mobility for current and future riders by addressing capacity, frequency and reliability.	Y	2040
MARC Growth and Investment Phase 2	MTA	Project: Improvements to MARC mainline capacity, maintenance facilities, and station areas Justification: Provide other transportation options besides single-occupant vehicle. Increase mobility in I-95 / U.S. 40 corridor. Improve access to major activity centers. Improve intermodal connectivity.	N	2040

Appendix C-1: List of *Maximize2040* Plan Projects (Exempt/Non-exempt Status)

Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
MTA Bus Expansion Program Phase 2	MTA	Purchase of 140 buses over the next 20 years at a cost of \$800,000 per bus.	N	2040

Appendix C-2: Conformity Status of Amendments to the 2016-2019 TIP

Appendix C-2: List of 2016-2019 TIP Amendments for November 2015* (Exempt/Non-exempt Status)

Project Title	Organization	Description	Exempt (Y/N?)	Year of Operation
East Baltimore Development Inc. (EBDI) Road Reconstruction	Baltimore City	<p>Project: This roadway rehabilitation project includes two phases (Phase 2A and 1D) encompassing Chase Street, McDonogh Street, and Rutland Avenue bound by Broadway to the west, Wolfe Street to the east, Biddle Street to the north and Eager Street to the south. Improvements will include full depth pavement reconstruction and resurfacing, reconstruction of curb and gutter, sidewalks, ADA-compliant pedestrian ramps, driveway and alley reconstruction, landscaping, streetscape elements, lighting, signing, and various utility improvements.</p> <p>Justification: As large development revitalizes the blocks north of Johns Hopkins Hospital, the roadway and infrastructure improvements provided through this Baltimore City Department of Transportation project will replace a deficient network of roads and utilities. The project will provide the necessary infrastructure for the up-and-coming community and new businesses expected within the area.</p>	Y	2017
Citywide Road Resurfacing - Federal Aid Program	Baltimore City	<p>Project: Resurfacing or rehabilitation of various roadways on the Federal Aid system citywide. Work will include removal and replacement of existing asphalt surfaces. It may also include roadway base repairs, minor curb and sidewalk repairs, and other isolated roadway modifications.</p> <p>Justification: To halt the type of physical deterioration that jeopardizes motorist safety and increases maintenance activities. If resurfacing does not occur soon, reconstruction will be necessary.</p>	Y	Ongoing

* The Baltimore Red Line project is not moving forward. The 2016-2019 TIP is being amended to reflect project close-out activities. The only funds in the Red Line project are \$4.5 million in state funds to close out the project.

Appendix D: Round 8A Cooperative Forecasts

**Local Jurisdiction Submissions: Round 8A
Cooperative Forecasts – Population, Household and Employment Controls**

Table 1: Round 8A Population

Jurisdiction	2010	2015	2020	2025	2030	2035	2040
Anne Arundel County	537,656	559,619	580,007	593,595	606,689	618,177	628,048
Baltimore City	620,961	636,722	647,282	656,314	667,210	676,726	680,262
Baltimore County	805,029	823,121	832,393	846,771	858,183	869,523	880,726
Carroll County	167,134	170,549	175,900	179,437	183,258	186,180	189,574
Harford County	244,826	251,991	258,668	265,098	273,127	281,029	291,089
Howard County	287,085	309,043	332,273	346,517	357,094	363,501	366,352
Baltimore Region	2,662,691	2,751,045	2,826,523	2,887,732	2,945,561	2,995,136	3,036,051

Note: Anne Arundel County data includes the City of Annapolis

Table 2: Round 8A Households

Jurisdiction	2010	2015	2020	2025	2030	2035	2040
Anne Arundel County	199,378	206,441	213,504	220,565	227,626	234,647	241,542
Baltimore City	249,903	256,904	261,374	265,100	269,632	273,496	274,976
Baltimore County	316,715	321,983	325,447	331,312	335,749	340,162	344,539
Carroll County	62,406	64,142	66,219	68,025	69,692	71,305	72,853
Harford County	90,218	94,095	97,892	101,689	105,488	109,298	113,090
Howard County	104,749	112,173	123,899	130,948	135,517	138,513	139,497
Baltimore Region	1,023,369	1,055,738	1,088,335	1,117,639	1,143,704	1,167,421	1,186,497

Note: Anne Arundel County data includes the City of Annapolis

Table 3: Round 8A Total Employment

Jurisdiction	2010	2015	2020	2025	2030	2035	2040
Anne Arundel County	323,148	342,011	361,688	376,085	391,312	404,986	424,061
Baltimore City	381,772	388,651	402,534	415,971	428,751	441,346	454,167
Baltimore County	446,250	465,801	484,533	492,436	499,296	504,820	510,565
Carroll County	70,889	73,063	76,107	78,421	80,888	82,996	85,351
Harford County	104,670	115,562	126,040	135,775	146,269	157,191	167,261
Howard County	181,381	196,381	211,381	226,381	241,381	251,710	260,309
Baltimore Region	1,508,110	1,581,469	1,662,283	1,725,069	1,787,897	1,843,049	1,901,714

Note: Anne Arundel County data includes the City of Annapolis

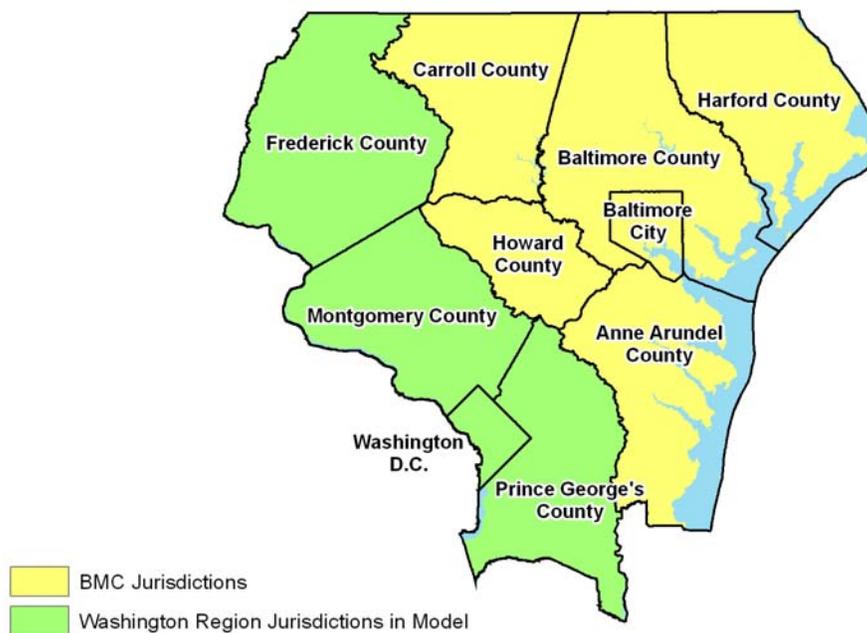
*Appendix E: Excerpt: Introduction,
Baltimore Region Travel Demand Model Version
4.4 – Model Validation for 2010 Base Year*

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 Model¹ 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	Abbreviation	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, <i>e.g.</i> , 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	Abbreviation	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

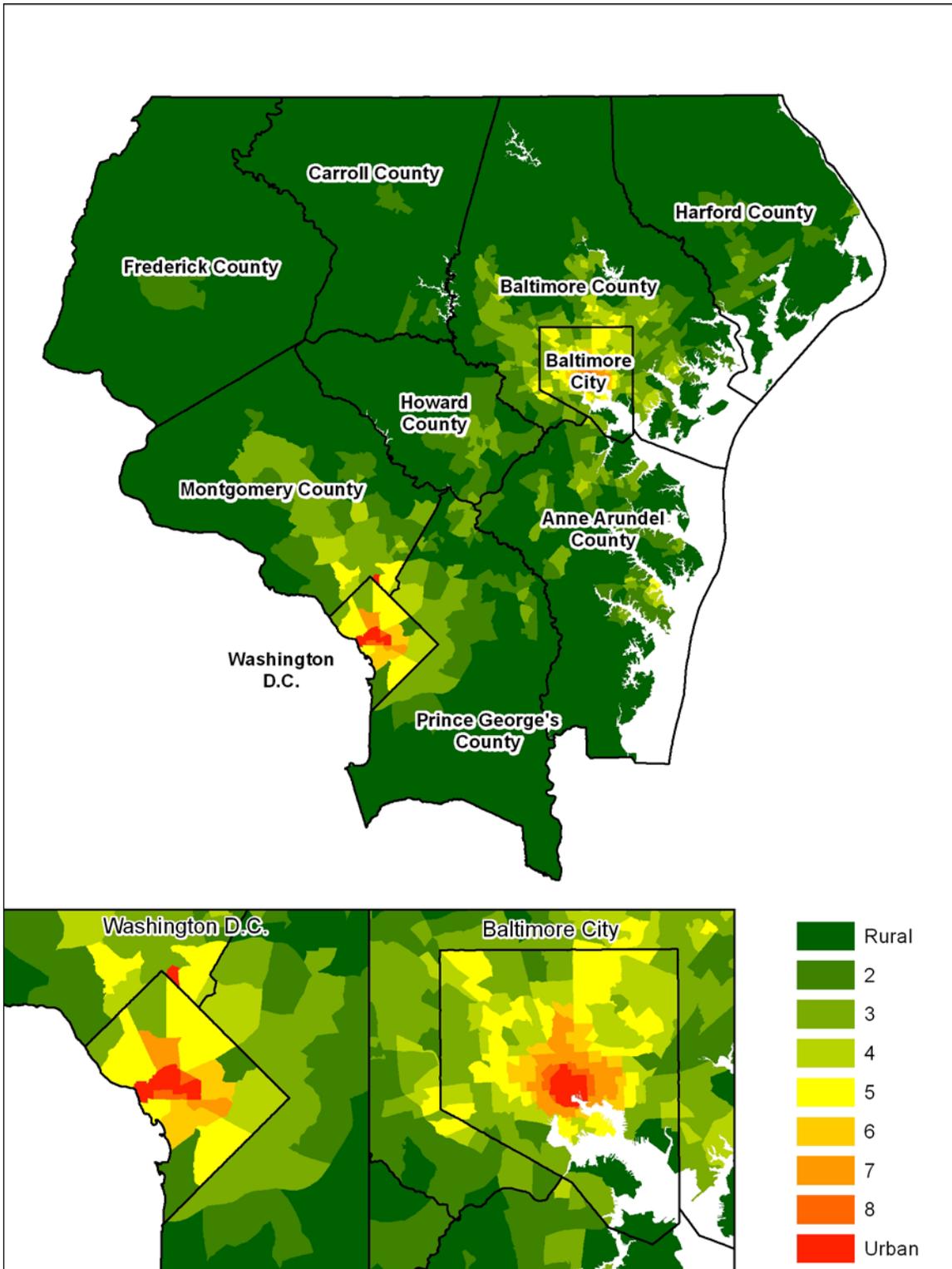
The area type model utilizes employment and household densities to develop a single density factor for each zone. The calculated area type indices are utilized to estimate non-motorized trips, to estimate Mode Choice and to estimate speed-capacity for highway network. To capture the effect of neighboring 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

		<i>Interstate</i>	<i>Freeway</i>	<i>Principal Arterial</i>	<i>Minor Arterial</i>	<i>Collector</i>
Urban	Baltimore City	1.3478	1.2498	1.0398	1.4287	4.6991
	Anne Arundel	0.8978	1.1835	1.0847	1.1684	1.3285
	Baltimore	1.0793	1.2692	0.9734	1.3642	1.4579
	Carroll	0.6718	0.6718	1.1587	0.6408	0.5709
	Harford	1.1253	1.3584	1.3625	1.1830	1.1490
	Howard	0.9169	1.2020	0.9354	1.2103	1.0744
Rural	Baltimore City	1.3478		1.0398	1.4287	4.6991
	Anne Arundel	0.9072		1.0960	1.1798	1.0931
	Baltimore	0.9314		0.9650	0.7537	1.0062
	Carroll	0.6718		0.6384	0.9785	0.8414
	Harford	1.0929		0.9179	0.9140	1.0542
	Howard	0.7065		1.2601	0.6279	0.6278

Local to Non-local Ratios by Jurisdiction

<i>Jurisdiction</i>	<i>Urban</i>	<i>Rural</i>
Baltimore City	0.0779	0.0779
Anne Arundel	0.0769	0.1394
Baltimore	0.07777	0.1387
Carroll	0.07776	0.1272
Harford	0.0775	0.1363
Howard	0.0768	0.1379

Appendix G: Resolutions

BALTIMORE METROPOLITAN PLANNING ORGANIZATION

BALTIMORE REGIONAL TRANSPORTATION BOARD

RESOLUTION #16-9

**APPROVAL OF MAXIMIZE 2040: A PERFORMANCE-BASED TRANSPORTATION PLAN
(MAXIMIZE 2040) AND
THE CONFORMITY DETERMINATION OF MAXIMIZE2040 AND THE AMENDED
2016-2019 TRANSPORTATION IMPROVEMENT PROGRAM (CONFORMITY DETERMINATION)**

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, and Howard, as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, and the Maryland Transit Administration; and

WHEREAS, the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, is required under the Moving Ahead for Progress in the 21st Century Act (MAP-21) to complete a long-range transportation plan every four years for the Baltimore region; and

WHEREAS, the Baltimore Regional Transportation Board has coordinated with Baltimore Metropolitan Council staff to ensure its compliance with MAP-21 requirements and documented in the Metropolitan Transportation Planning regulations (February 14, 2007 *Federal Register*); and

WHEREAS, development of the long-range transportation plan results from a continuous, cooperative, and comprehensive planning process and considers and integrates as appropriate the federal planning factors documented in the Metropolitan Transportation Planning regulations (February 14, 2007 *Federal Register*); and

WHEREAS, the Baltimore Regional Transportation Board, in accordance with MAP-21, developed a list of highway and transit projects, as well as a set-aside for Transportation System Management and Operations , Ladders of Opportunity, Complete Street / Bicycle - Pedestrian, and Transportation Emission Reduction Measures for the Baltimore region, referred to as the Preferred Alternative; and

WHEREAS, the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, is required under Clean Air Act Amendments of 1990 and the U.S. Environmental Protection Agency's Transportation Conformity Rule to conduct analyses to ensure that the region's transportation plans and programs conform with the State Implementation Plan (SIP); and

WHEREAS, the conformity analysis as reported in the “Conformity Determination of *Maximize2040* and the Amended FY 2016-2019 Transportation Improvement Program,” dated November 2015, provides the basis for a finding of conformity to 8-hour ozone SIP Reasonable Further Progress Budgets in addition to motor vehicle emission budgets in the Carbon Monoxide Maintenance SIP and the Fine Particulate Matter Maintenance SIP for the Baltimore region (Attachment I: Tables 1 through 5); and

WHEREAS, opportunities for public comment were provided – including a 45-day public comment period, outreach at community and transportation-related events, six public Town Hall meetings (one held in each jurisdiction), an online Town Call meeting, and regularly scheduled meetings of the Baltimore Regional Transportation Board, Interagency Consultation Group, and Public Advisory Committee – with respect to the Draft *Maximize2040* and the methodology and results of the conformity analysis – and these comments were duly considered by the Metropolitan Planning Organization in this deliberation process; and

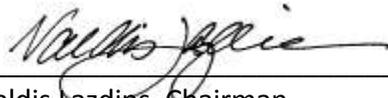
WHEREAS, a range of outreach strategies was employed to share information about *Maximize 2040*, the TIP Amendments, and the Conformity Determination supported by opportunities for public comment, including six Town Hall meetings, one Town Call, and informational on-demand multimedia presentations. A 45-day review was offered and numerous public comments were considered by the BRTB.

NOW, THEREFORE, BE IT RESOLVED that the Baltimore Regional Transportation Board approves the *Maximize2040: A Performance-Based Transportation Plan* and the *Conformity Determination of Maximize 2040 and the Amended FY 2016-2019 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 November 24, 2015 meeting.

11-24-15

Date



Valdis Lazdins, Chairman

Baltimore Regional Transportation Board

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

	2017	2025	2035	2040
Total Emissions Modeled	26.5	18.2	12.0	11.6
2008 Conformity Budget¹	41.2	41.2	41.2	41.2
Conformity Result	Pass	Pass	Pass	Pass

¹ 8-hour ozone SIP Reasonable Further Progress Budgets (Determined “adequate” as published on March 27, 2009.)

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

	2017	2025	2035	2040
Total Emissions Modeled	50.7	25.9	18.2	18.2
2008 Conformity Budget¹	106.8	106.8	106.8	106.8
Conformity Result	Pass	Pass	Pass	Pass

¹ 8-hour ozone SIP Reasonable Further Progress Budgets (Determined “adequate” as published on March 27, 2009.)

Table 3. CO Emissions Test Results (average winter weekday, tons/day)

	2017	2025	2035	2040
Total Emissions Modeled	381.0	271.1	197.1	194.9
Conformity Budget²	1689.8	1689.8	1689.8	1689.8
Conformity Result	Pass	Pass	Pass	Pass

² Carbon Monoxide Maintenance Plan for the Baltimore Attainment Area (December 15, 2003.)

Table 4. Annual NOx Emissions Test Results (tons/year)

	2017	2025	2035	2040
Total Emissions Modeled	19,294	10,002	7,742	7,344
Conformity Budget³	29,892.01	21,594.96	21,594.96	21,594.96
Conformity Result	Pass	Pass	Pass	Pass

³ Baltimore Nonattainment Area PM2.5 Maintenance State Implementation Plan (Approved December 2014.)

Table 5. Annual Direct PM2.5 Emissions Test Results (tons/year)

	2017	2025	2035	2040
Total Emissions Modeled	887	538	448	441
Conformity Budget³	1,218.60	1,051.39	1,051.39	1,051.39
Conformity Result	Pass	Pass	Pass	Pass

³ Baltimore Nonattainment Area PM2.5 Maintenance State Implementation Plan (Approved December 2014.)

BALTIMORE METROPOLITAN PLANNING ORGANIZATION

**BALTIMORE REGIONAL TRANSPORTATION BOARD
RESOLUTION #16-8**

**AMENDMENT TO THE 2016 – 2019 BALTIMORE REGION
TRANSPORTATION IMPROVEMENT PROGRAM**

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, and Howard, as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, and the Maryland Transit Administration; and

WHEREAS, the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approved the 2016-2019 Transportation Improvement Program for the Baltimore region at its July 28, 2015 meeting, with federal approval on October 7, 2015; and

WHEREAS, federal regulations require that all transportation-related projects must be listed in the approved Transportation Improvement Program with accurate funding schedules in order to be eligible for federal funding; and

WHEREAS, the Transportation Improvement Program consists of projects included in, and in support of, the region's long-range transportation plan and ongoing short-range planning efforts; and

WHEREAS, the Maryland Department of Transportation on the behalf of the Maryland Transit Administration has requested approval of an amendment to the 2016-2019 Transportation Improvement Program through the approved Transportation Improvement Program amendment process; and

WHEREAS, the Maryland Transit Administration is requesting to update the Baltimore Red Line project to remove the project. The only funds associated with the project are \$4.5 million in state funds to handle close out; and

WHEREAS, the Transportation Improvement Program, as amended, continues to display financial reasonableness and re-affirms the appropriate project selection criteria whereby all requirements for a Transportation Improvement Program in the Moving Ahead for Progress in the 21st Century Act are met; and

WHEREAS, the Interagency Consultation Group has determined that this project is not exempt, yet as the project is not moving forward it is not included in the regional emissions analysis according to the Conformity Rule (40 CFR Parts 51 and 93); and

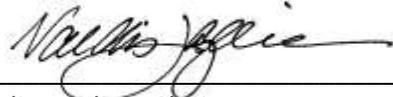
WHEREAS, the proposed Transportation Improvement Program amendment was publicized for a 45-day review from September 1, 2015 to October 15, 2015 with Town Hall meetings on September 15, September 21, September 28, September 30, October 7, and October 8 as well as a presentation to the Public Advisory Committee on November 4, 2015. Several comments were received on this project. The BRTB has responded to these comments.

NOW, THEREFORE, BE IT RESOLVED that the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approves the attached amendment to the 2016-2019 Transportation Improvement Program for the Baltimore region and finds it to conform to the applicable Maryland State Implementation Plan and requirements of the 1990 Clean Air Act Amendments.

I HEREBY CERTIFY that the Baltimore Regional Transportation Board as the Metropolitan Planning Organization for the Baltimore region approved the aforementioned resolution on November 24, 2015.

11-24-15

Date



Valdis Lazdins, Chairman

Baltimore Regional Transportation Board

Baltimore Red Line -ORIGINAL

TIP ID	40-0602-69	Year of Operation	2022
Agency	MTA - Transit	Project Type	Other
Project Category	Transit	Functional Class	NA
Conformity Status	Not Exempt	Physical Data	14.1 Miles
CIP or CTP ID(s)	0862	Est. Total Cost	\$2,650,000,000

Description:

This project encompasses planning, preliminary engineering, final design and construction of a 14.1 mile Light Rail Transit line from Baltimore County Woodlawn area to Johns Hopkins Bayview Hospital in Baltimore City. Alternatives Analysis (AA), the Draft Environmental Impact Statement (FEIS), and Preliminary Engineering (PE) are complete. Final Design of the project is underway and FTS has recommended the project for a Full Funding Grant Agreement. Funding will be available pending approval of the president's proposed budget.

The total cost of the project is \$2.645 billion and includes \$900 million in Federal Aid from the FTA Section 5309 New Starts program through FY 2024.

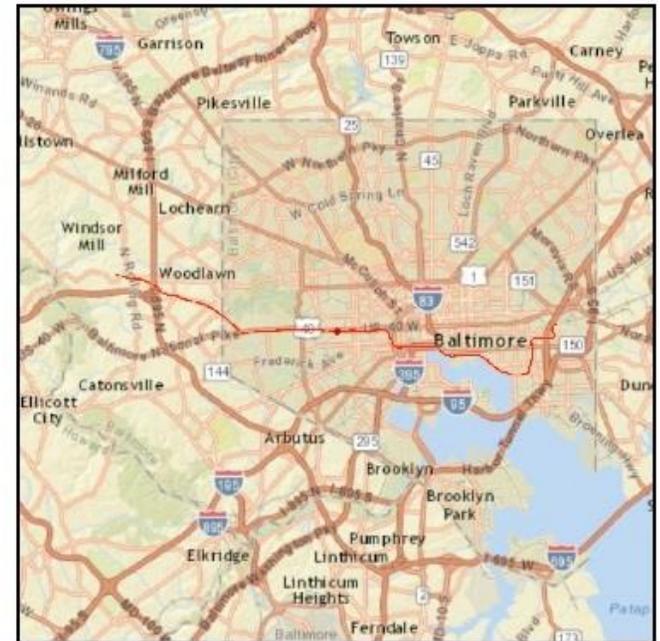
Justification:

The Red Line will improve transit mobility in an east-west corridor of the Baltimore region from the Woodlawn area to Bayview Hospital. This project is intended to help address traffic congestion, provide better connectivity to existing transit service, support new and future transit-oriented economic development and revitalization efforts, and help address regional air quality issues.

Amendment: The Baltimore Red Line project is not moving forward. This amendment updates the TIP sheet to reflect project close out activities. The only funds in the project are \$4.5 million in state funds to close out the project.

Connection to Long-Range Transportation Planning Goals:

- 4.C Increase Mobility – Expand transit service coverage / hours of operation.
- 5.A Conserve and Enhance the Environment -- Provide alternatives to single-occupant passenger vehicles / apply emission reduction technologies.
- 5.D Conserve and Enhance the Environment -- Reduce greenhouse gas emissions in accordance with state and local sustainability and climate change plans.



Baltimore Red Line -UPDATE

TIP ID	40-0602-69	Year of Operation	
Agency	MTA - Transit	Project Type	Other
Project Category	Transit	Functional Class	NA
Conformity Status	Not Exempt	Physical Data	NA
CIP or CTP ID(s)	0862	Est. Total Cost	\$4,500,000

Description:

The TIP sheet shows \$4.5 million in state funds only. The funds will be used to close out the Red Line Project.

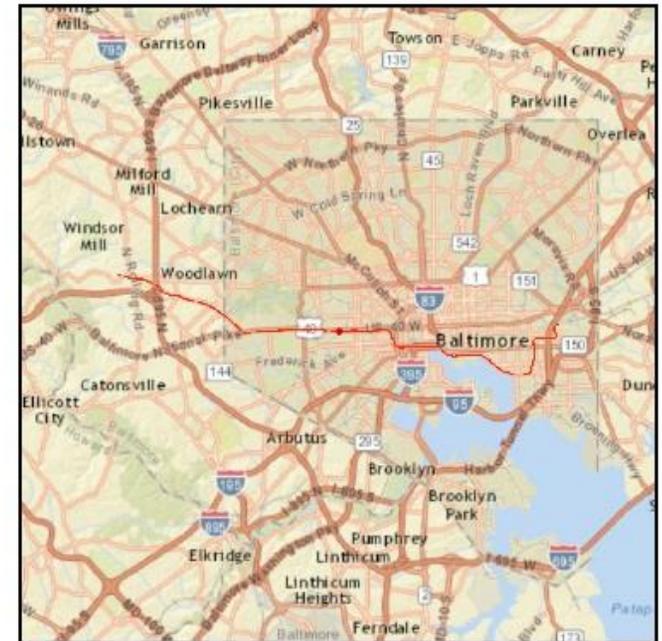
Below is a brief list of items included in the close out:

- *Assemble and archive documents in electronic and hard format.
- *Decommission 150 monitoring wells. This accounts for approximately 50% of the \$4.5 million project cost.
- *Complete an existing contract for environmental mitigation.

Justification:

The Red Line Project is no longer moving forward. At this time the only funds being shown in the TIP are state funds in the amount of \$4.5 million, which will be used to close out the project.

Connection to Long-Range Transportation Planning Goals:



BALTIMORE METROPOLITAN PLANNING ORGANIZATION

**BALTIMORE REGIONAL TRANSPORTATION BOARD
RESOLUTION #16-7**

**AMENDMENT TO THE 2016 – 2019 BALTIMORE REGION
TRANSPORTATION IMPROVEMENT PROGRAM**

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, and Howard, as well as representatives of the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, and the Maryland Transit Administration; and

WHEREAS, the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approved the 2016-2019 Transportation Improvement Program for the Baltimore region at its July 28, 2015 meeting, with federal approval on October 7, 2015; and

WHEREAS, federal regulations require that all transportation-related projects must be listed in the approved Transportation Improvement Program with accurate funding schedules in order to be eligible for federal funding; and

WHEREAS, the Transportation Improvement Program consists of projects included in, and in support of, the region's long-range transportation plan and ongoing short-range planning efforts; and

WHEREAS, Baltimore City has requested approval of an amendment to the 2016-2019 Transportation Improvement Program through the approved Transportation Improvement Program amendment process; and

WHEREAS, Baltimore City is requesting to add the following two (see Attachments) projects: East Baltimore Development Inc. (EBDI) Road Reconstruction to reconstruct roads and make infrastructure improvements on several blocks north of Johns Hopkins Hospital and Citywide Road Resurfacing – Federal Aid Program to resurface and rehabilitate various roadways on the Federal Aid system citywide; and

WHEREAS, the Transportation Improvement Program, as amended, continues to display financial reasonableness and re-affirms the appropriate project selection criteria whereby all requirements for a Transportation Improvement Program in the Moving Ahead for Progress in the 21st Century Act are met; and

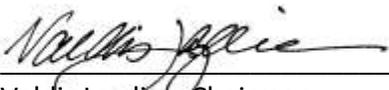
WHEREAS, the Interagency Consultation Group has determined that these projects are exempt according to the Conformity Rule (40 CFR Parts 51 and 93); and

WHEREAS, the East Baltimore Development Inc. Road Reconstruction project in the proposed Transportation Improvement Program amendment was publicized for a 45-day review from September 1, 2015 to October 15, 2015 with Town Hall meetings on September 15, September 21, September 28, September 30, October 7, and October 8. The Citywide Road Resurfacing – Federal Aid Program project in the proposed Transportation Improvement Program amendment was publicized for a 30-day review from October 9, 2015 to November 11, 2015 with a public meeting on November 4, 2015. Both projects were presented to the Public Advisory Committee on November 4, 2015. No comments were received on the East Baltimore Development Inc. Road Reconstruction project. (After the close on November 11 this resolution will be updated to reflect any comments on the Citywide Road Resurfacing – Federal Aid Program project.)

NOW, THEREFORE, BE IT RESOLVED that the Baltimore Regional Transportation Board, as the Metropolitan Planning Organization for the Baltimore region, approves the attached amendment to the 2016-2019 Transportation Improvement Program for the Baltimore region and finds it to conform to the applicable Maryland State Implementation Plan and requirements of the 1990 Clean Air Act Amendments.

I HEREBY CERTIFY that the Baltimore Regional Transportation Board as the Metropolitan Planning Organization for the Baltimore region approved the aforementioned resolution on November 24, 2015.

11-24-15
Date



Valdis Lazdins, Chairman
Baltimore Regional Transportation Board

East Baltimore Development Inc. (EBDI) Road Reconstruction

TIP ID	12-1608-12	Year of Operation	2017
Agency	Baltimore City	Project Type	Road reconstruction
Project Category	Highway Preservation	Functional Class	Local
Conformity Status	Exempt	Physical Data	
CIP or CTP ID(s)		Est. Total Cost	\$6,800,000

Description:

This roadway rehabilitation project includes two phases (Phase 2A and Phase 1D) encompassing Chase Street, McDonogh Street, and Rutland Avenue bound by Broadway to the west, Wolfe Street to the east, Biddle Street to the north and Eager Street to the south. Improvements will include full depth pavement reconstruction and resurfacing, reconstruction of curb and gutter, sidewalks, ADA-compliant pedestrian ramps, driveway and alley reconstruction, landscaping, streetscape elements, lighting, signing, and various utility improvements. A previous phase (Phase 1C) completed construction in the summer of 2015 under the TIP ID # 12-1212-99.

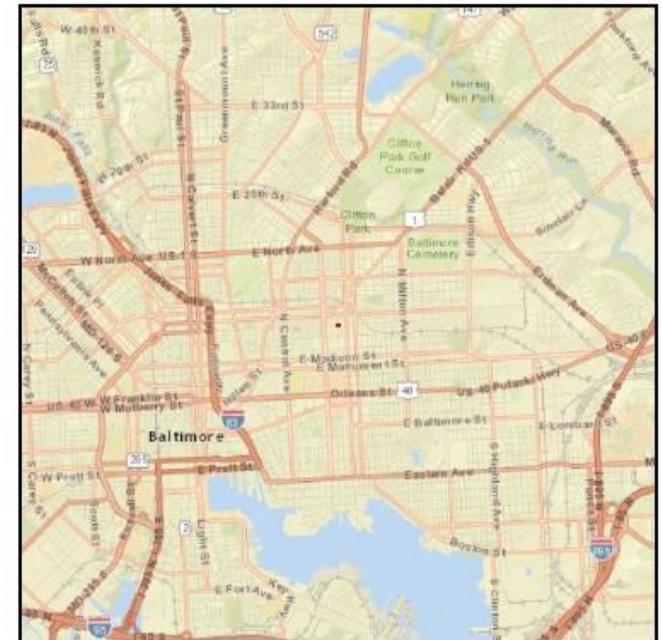
Justification:

As significant development revitalizes the blocks north of Johns Hopkins Hospital, the roadway and infrastructure improvements provided through this project will replace a deficient network of roads and utilities. The project will provide the necessary infrastructure for the up and coming community and new businesses expected within the area.

Amendment: This amendment adds a new project to the 2016-2019 TIP utilizing funds from two SAFETEA-LU earmarks. The fund source is Section 1702 (High Priority Projects). The project allocates construction funds in both FY 2016 and FY 2017 in the amount of \$2.62 million Federal and \$655,000 Matching. It also allocates funds in both FY 2016 and FY 2017 in the amount of \$100,000 Federal and \$25,000 Matching for utility improvements. The total amount of funding is \$6.8 million.

Connection to Long-Range Transportation Planning Goals:

- 1.E Improve System Safety -- Improve safety conditions for pedestrians and bicyclists.
- 2.A Improve and Maintain the Existing Infrastructure -- Improve the condition of roadway systems (pavement, bridges, tunnels).
- 3.B Improve Accessibility -- Improve ADA-related conditions for pedestrians / transit riders.





East Baltimore Development Inc. (EBDI) Road Reconstruction

(Funding in Thousands)

Section 1702 High Priority Project

Phase	FY 2016 Federal Funds	FY 2016 Matching Funds	FY 2017 Federal Funds	FY 2017 Matching Funds	FY 2018 Federal Funds	FY 2018 Matching Funds	FY 2019 Federal Funds	FY 2019 Matching Funds	Total Four-Year Funding Request
CON	\$2,620	\$655	\$2,620	\$655	\$0	\$0	\$0	\$0	\$6,550
OTH	\$100	\$25	\$100	\$25	\$0	\$0	\$0	\$0	\$250
PE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$2,720	\$680	\$2,720	\$680	\$0	\$0	\$0	\$0	\$6,800
Total	\$2,720	\$680	\$2,720	\$680	\$0	\$0	\$0	\$0	\$6,800

Citywide Road Resurfacing - Federal Aid Program

TIP ID	12-0207-11	Year of Operation	Ongoing
Agency	Baltimore City	Project Type	Road resurfacing/rehabilitation
Project Category	Highway Preservation	Functional Class	Varies
Conformity Status	Exempt	Physical Data	Varies
CIP or CTP ID(s)	n/a	Est. Total Cost	\$10,000,000

Description:

Resurfacing or rehabilitation of various roadways on the Federal Aid system citywide. Work is to generally include the removal and replacement of existing asphalt surfaces. It may also include roadway base repairs, minor curb and sidewalk repairs, and other isolated roadway appurtenance modifications.

Amendment: This amendment adds a project to the 2016-2019 TIP utilizing federal STP funds. The project allocates construction funds in FY 2016 in the amount of \$8 million federal and \$2 million matching for a total amount of \$10 million. The project had previously been on hold.

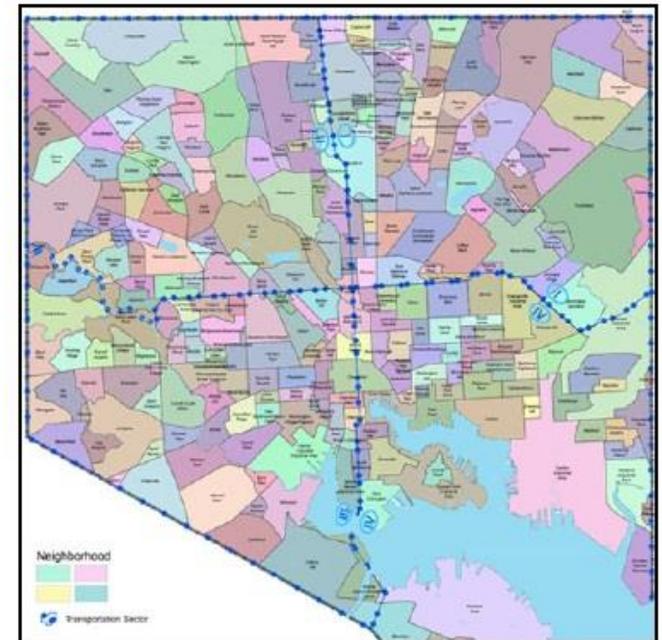
Justification:

It is imperative that these roadways be resurfaced at this time to halt the type of physical deterioration that jeopardizes motorist safety and increases maintenance activities. If resurfacing does not occur soon, reconstruction will be necessary at a cost of 3 to 4 times the existing resurfacing costs.

The City of Baltimore reviews every project throughout the design and engineering process for complete streets and bicycle facilities compatibility. DOT has a complete streets policy whereby projects are evaluated to ensure they meet goals for the corridor and neighborhood. DOT also has a bicycle policy whereby projects are reviewed for compliance with the Bicycle Master Plan and to the extent possible will install appropriate bicycle facilities to create a multi-modal transportation system throughout the City.

Connection to Long-Range Transportation Planning Goals:

- 1.C Improve System Safety – Eliminate hazardous or substandard conditions.
- 2.A Improve and Maintain the Existing Infrastructure – Improve the condition of roadway systems (pavement, bridges, tunnels).





Citywide Road Resurfacing - Federal Aid Program

(Funding in Thousands)

Surface Transportation Program (Surface Transportation, Bridge (Off-System))

Phase	FY 2016 Federal Funds	FY 2016 Matching Funds	FY 2017 Federal Funds	FY 2017 Matching Funds	FY 2018 Federal Funds	FY 2018 Matching Funds	FY 2019 Federal Funds	FY 2019 Matching Funds	Total Four-Year Funding Request
CON	\$8,000	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000
OTH	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$8,000	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000
Total	\$8,000	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000

Appendix H: Public Participation

maximize2040

A PERFORMANCE-BASED TRANSPORTATION PLAN

for a
greater

Baltimore

Region

Maximize2040 is an initiative of the Baltimore Regional Transportation Board that seeks to make the best use of the region's limited resources for our region's residents and businesses.



HELP US SHAPE THE NEXT 20+ YEARS OF TRANSPORTATION

Draft Plan Open For Comment through October 15

Over \$54 Billion in transportation improvements and funding for operating, maintaining, and expanding the region's transportation network are planned in *Maximize2040: A Performance-Based Transportation Plan*.

These investments will shape our region's future for decades to come.

A draft version of *Maximize2040* is open for comment through **Thursday, October 15, 2015**.

Here's how to share your ideas:



Join us at a Town Hall Meeting near you. Check maximize2040.com for dates and locations.



Join us for a Town Call on October 1 from 12 to 1 p.m. by phone: 1-877-309-2070 (Enter Code: 743-489-149) or computer @ bit.ly/Maximize2040TownCall.



Fill out a comment card or write a letter and mail it to us at The Baltimore Regional Transportation Board, 1500 Whetstone Way, Suite 300, Baltimore, MD 21230.

Email us at comments@baltometro.org



Share your ideas on Twitter

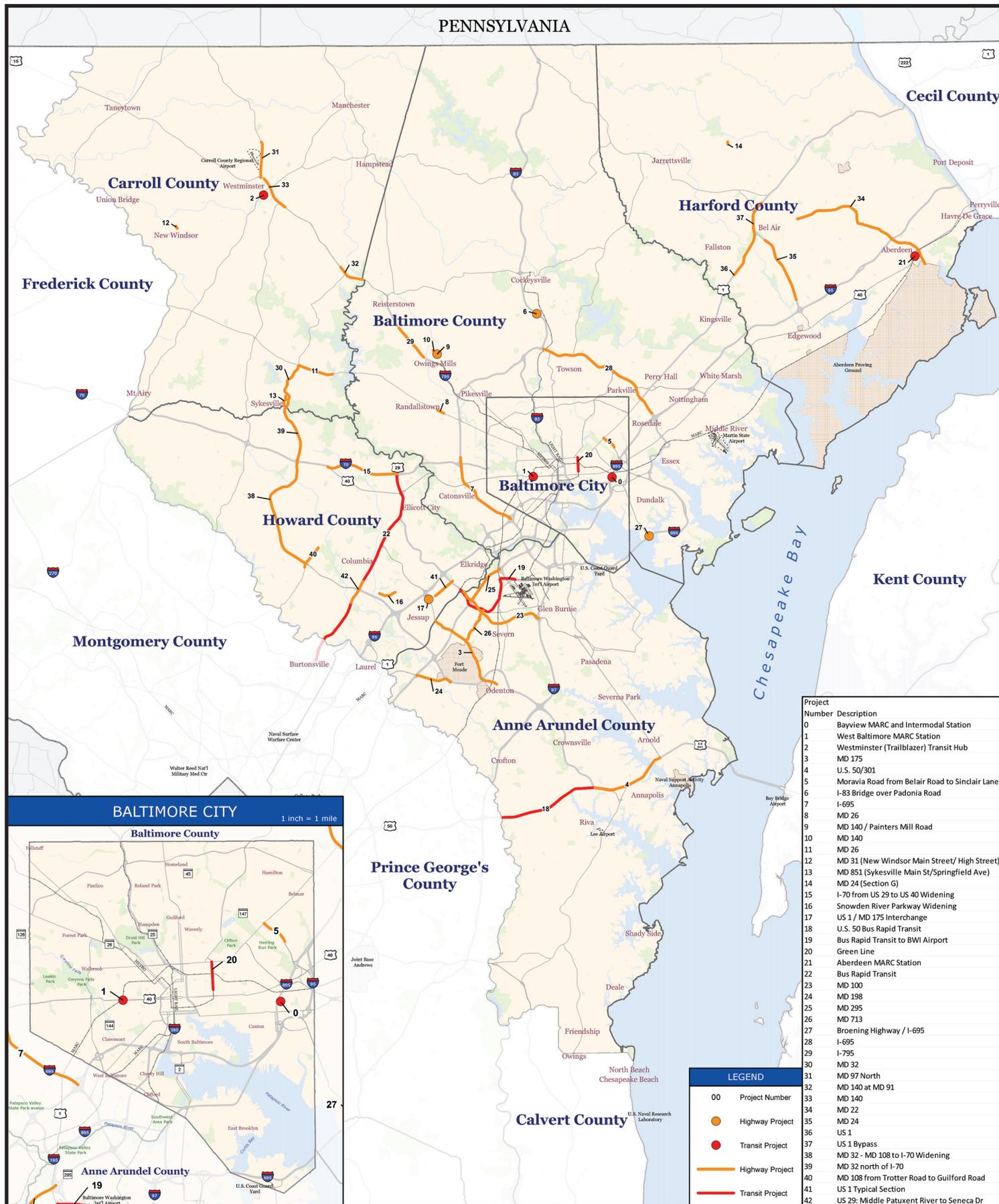
[@Maximize2040](https://twitter.com/Maximize2040)

[@BaltoMetroCo](https://twitter.com/BaltoMetroCo)

[@Bmoreinvolved](https://twitter.com/Bmoreinvolved)

#BRTBlistens

Tell Us What You Think About These Projects @ [surveymonk.com](https://www.surveymonk.com)



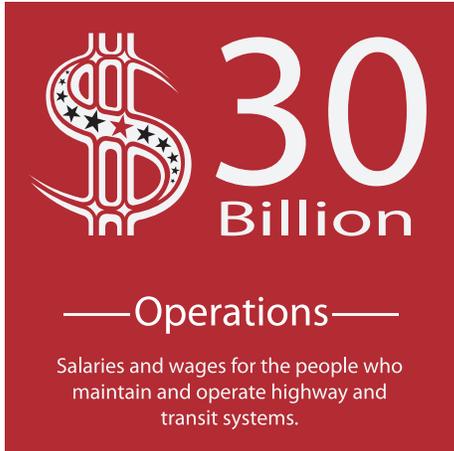
Brief Description of Highway and Transit Projects in *Maximize2040* and Map

0. Bayview MARC and Intermodal Station
 1. West Baltimore MARC Station
 2. Trailblazer Transit Hub in Westminster
 3. Widening MD 175 (County line to MD 170) in Anne Arundel County
 4. Bridge reconstruction and widening on U.S. 50/301 (I-97 to MD 2)
 5. Road, Sidewalk, ADA and Streetscape improvements on Moravia Road (Belair Rd. to Sinclair La.)
 6. Reconstruct I-83 bridge over Padonia Road, including pedestrian and bicycle improvements
 7. Widen I-695 from I-95 to MD 122
 8. Road, Sidewalk, ADA and pedestrian and cyclist improvements on MD 26 (Rolling Rd. to Courtleigh Dr.)
 9. Intersection improvements at MD 140 and Painters Mill Rd.
 10. Widen MD 140 (Garrison View Rd. to Owings Mills Rd.)
 11. Widen MD 26 (MD 32 to Reservoir), including pedestrian/bicycle facilities
 12. Improve infrastructure and pavement on MD 31 (Church St. to Coe Dr.)
 13. Improve infrastructure and pavement on MD 851 (County line to Cooper Dr.) (Sykesville Main St/Springfield Ave)
 14. Reconstruction, resurfacing, and guardrail replacements along MD 24 (South of Sharon Rd. to North of Ferncliff La.)
 15. Widen I-70 (U.S. 29 to U.S. 40); Reconstruct I-70 / Marriottsville Rd. interchange; Upgrade I-70 / U.S. 29 interchange
 16. Widen Snowden River Pkwy. (Oakland Mills Rd. to Broken Land Pkwy.); Add pedestrian/bicycle/transit improvements
 17. U.S. 1 / MD 175 Interchange Improvements
 18. Bus Rapid Transit service on U.S. 50
 19. Bus Rapid Transit service from Dorsey MARC station to BWI light rail station
 20. Green Line Extension from Johns Hopkins Hospital to North Ave, including two new stations
 21. New Aberdeen MARC Station with parking and Transit-Oriented Development
 22. Bus Rapid Transit along U.S. 29
 23. Widen MD 100 (Howard County line to I-97)
 24. Widen MD 198 (MD 295 to MD 32)
 25. Widen MD 295 (I-195 to MD 100)
 26. Widen MD 713 (MD 175 to Arundel Mills Blvd. and MD 176)
 27. Add an interchange at I-695 and Broening Highway
 28. Widen I-695 (I-95 to I-83)
 29. Widen I-795 (Franklin Blvd. to Owings Mills Blvd.); Build interchange at Dolfield Blvd.; Add lanes to Owings Mills Blvd.
 30. Widen MD 32 (MD 26 to Carroll Co. line) and add pedestrian and bicycle facilities
 31. Widen MD 97 North (MD 140 overpass to Bachmans Valley Rd.) with pedestrian/bicycle facilities; Add interchange at Meadow Branch Rd
 32. Build a divided highway on MD 140 (County line to Kays Mill Rd.) with new interchange at MD 91; Add pedestrian and bicycle facilities and make intersection improvements.
 33. Widen MD 140 (Market St. to Sullivan Rd.) with pedestrian/bicycle facilities; Add full interchange at MD 97 (Malcolm Dr.)
 34. Widen MD 22 (MD 543 to APG Gate), add an HOV lane (Old Post Rd. to APG gate), and add bicycle/pedestrian access
 35. Widen MD 24 (U.S. 1 Bypass to South of Singer Rd.) and add sidewalks and bicycle accommodations where appropriate
 36. Widen U.S. 1 (MD 152 to MD 147 / U.S. 1 Bus.) with bicycle/pedestrian accommodations
 37. Widen U.S. 1 Bypass (MD 147 / U.S. 1 Bus. to North of MD 24 / MD 924) and improve interchanges at MD 24 and MD 924
 38. Widen MD 32 (MD 108 to I-70); Add interchange at Rosemary La. & MD 144; Upgrade I-70 interchange MD 32
 39. Widen MD 32 (North of I-70) and add safety, operational, and access improvements
 40. Widen MD 108 (Trotter Rd. to Guilford Rd.); Add 8- to 10-foot pedestrian/bicycle pathways, New signalized intersections
 41. Widen U.S. 1 (Montevideo Rd. north to MD 100); Construct typical section as per U.S. 1 revitalization program
 42. Widen US 29 (Middle Patuxent River to Seneca Dr.)
- ★ Improvements to MARC Service from the MARC Growth and Investment Plan Phases 1 & 2
- ★ MTA Bus Fleet Expansion Phases 1 & 2
- ★ MTA Commuter Bus Service between Harford County and Baltimore City

MAXIMIZE2040 INVESTMENT PLAN

Check out our plan to invest in transportation over the next 20+ years

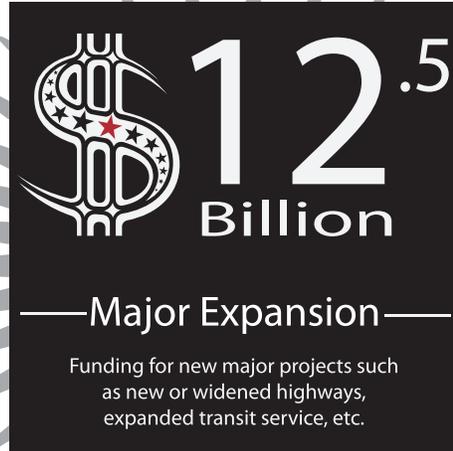
OVERALL FUNDING



30
Billion

— Operations —

Salaries and wages for the people who maintain and operate highway and transit systems.



12.5
Billion

— Major Expansion —

Funding for new major projects such as new or widened highways, expanded transit service, etc.



12
Billion

— Preservation —

Maintenance and repairs of roads and bridges, fixing transit vehicles, lights, signs, and guardrails, etc.

BREAKDOWN OF MAJOR FUNDING



7.7
Billion

HIGHWAYS + BRIDGES



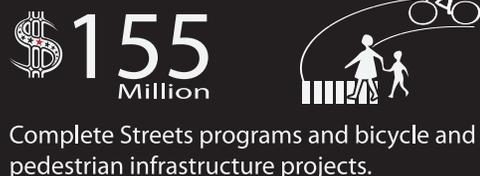
4.2
Billion

TRANSIT + STATIONS



285
Million

Transportation Emissions Reduction
Measures to decrease air pollution.



155
Million

Complete Streets programs and bicycle and pedestrian infrastructure projects.



100
Million

Ladders of Opportunity - Transportation options or links for workers to jobs and career skills training.



85
Million

Transportation System Management and Operations to improve system efficiency (signal timing, real-time traveler info, etc.)

Tell Us What You Think About This Funding Mix for Maximize2040 at surveymonkey.com/r/Maximize2040Plan or fill out a comment card.

maximize2040

A PERFORMANCE-BASED TRANSPORTATION PLAN

.com

for a
greater
**Baltimore
Region**

Maximize2040 is an initiative of the Baltimore Regional Transportation Board that seeks to make the best use of the region's limited resources for our region's residents and businesses.



The Baltimore Regional Transportation Board operates its programs and services without regard to race, color, or national origin in accordance with Title VI of the Civil Rights Act of 1964, and other applicable laws. Appropriate services can be provided to qualified individuals with disabilities or those in need of language assistance who submit a request at least seven days prior to a meeting. Call 410-732-0500.

WE HAVE A PLAN TO IMPROVE TRANSPORTATION FOR YOU

What do you think?

Tell us at a Town Hall Meeting:



Tuesday, September 15 – 6 to 8 p.m.
George Howard Building - Ellicott Room
3430 Courthouse Drive, Ellicott City, MD 21043

Monday, September 21 – 5:30 to 7:30 p.m.
Carroll County Office Building - Room 003
225 North Center Street, Westminster, MD 21157

Monday, September 28 – 5:30 to 7:30 p.m.
Emergency Operations Center
2220 Ady Road, Forest Hill, MD 21050

Wednesday, September 30 – 5:30 to 7:30 p.m.
Annapolis High School - Cafeteria
2700 Riva Road, Annapolis, MD 21401

Wednesday, October 7 – 7 to 9 p.m.
Baltimore County Planning Dept. Hearing Room (Jefferson Bldg.)
105 W. Chesapeake Ave, 1st Floor, Towson, MD 21204

Thursday, October 8 – 5:30 to 7:30 p.m.
Benton Building, Third Floor
417 E. Fayette Street, Baltimore, MD 21202

Join us for a Town Call:



Thursday, October 1 – 12 to 1 p.m.
Computer, tablet or smartphone @ bit.ly/Maximize2040TownCall
Phone: 1-877-309-2070 (Toll-free) and enter Access Code: 743-489-149

Send your thoughts by October 15 to:



E-mail: comments@baltometro.org

Twitter: [@Maximize2040](https://twitter.com/Maximize2040)
[@Bmoreinvolved](https://twitter.com/Bmoreinvolved)

[@BaltoMetroCo](https://twitter.com/BaltoMetroCo)
#BRTBlistens

Mail: The Baltimore Regional Transportation Board
1500 Whetstone Way, Suite 300, Baltimore, MD 21230

The BRTB also welcomes comments on the air quality analysis and two amendments to the short-range Transportation Improvement Program (TIP).



AIR QUALITY-RELATED COMMENTS ON MAXIMIZE2040 AND THE CONFORMITY DETERMINATION

<p>a) The impact on drivers from inactivity and exposure to pollutants should be quantified in health care costs and by Disability-Adjusted Life Year.</p> <p>b) The air quality analysis is based on old standards. Seek greater input from MDE-ARMA.</p>	<p>Ron Hartman, Chairman, Howard County Public Transportation Board</p>	<p>a) The long range transportation plan serves to meet the travel demands of the people of the Baltimore region, and those who travel here. In regard to the “inactivity” comment, while there are health impacts to every activity/or inactivity a person may involve themselves in, the plan does not dictate people’s transportation modes (driving vs. other more active modes). It is the personal decision of everyone how they chose to get where they are going are where they are going to. The BRTB strives to provide an accessible multi-model transportation plan. In regard to the “exposure to pollutants” comment, the exposure would be dependent upon a range of factors such as proximity, traffic level, and time of day. The study you are suggesting is much more in-depth in the area of a public health assessment than is reasonably expected of a transportation plan.</p> <p>b) MDE’s ARMA is highly involved with and an active participant in the BRTB and a number of its subcommittees including the Technical Committee, the Interagency Consultation Group, and the Bicycle and Pedestrian Advisory Committee. The Board will work to clarify the flow of information on this topic with the MDE.</p>
<p>a) Before making any emissions requirements more stringent, maybe everyone in the US of A should be required to do it. The prevailing wind in MD is west to east. Ensure the west is fully included in the testing before you make our emissions requirement tighter.</p>	<p>Online Survey Response</p>	<p>a) Areas in the U.S. that do not attain the national air quality standards are required to perform a conformity assessment comparing projected transportation emissions to a “budget” set by the state. You are correct that not every area of the country is required to perform a conformity assessment with emission budgets. Transport pollution is addressed in the “Good Neighbor” provision of the Clean Air Act. For more information on the “Good Neighbor” provision, visit the U.S. EPA web site at www3.epa.gov/airtransport/index.html</p>



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

Appendix I: Status Report on Implementation of 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. In addition to the narrative provided here in Appendix I-1, Appendix I-2 provides data collected from tracking the status of “emission-friendly” projects in the region. 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 a program administered by the Maryland Transit Administration that provides funding support to local rideshare programs in order to strengthen ride 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 is provided to interested commuters via the Commuter Connections Database.
- TDM information is provided to commuters and employers.
- Commuters and employers are provided assistance with identifying opportunities for alternative commuting strategies such as transit, flexible work hours, and teleworking.
- Printed and electronic information is distributed to both public and private employers.
- Advertisements are placed 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 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 federal and 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 \$50 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, or Vanpooling programs. Carpooling is not an eligible expense under the program. Employers must register annually to participate in the Maryland Commuter Tax Credit program. This feature of Maryland law has the potential to reduce single occupancy vehicle use, increase transit ridership, reduce traffic congestion, and improve air quality. Details are available at www.commuterchoicemaryland.com.

Clean Commuting Outreach

The BRTB teams up with state transportation and air quality agencies and private organizations on an annual basis to promote clean commuting during its Clean Commute Initiative. The program originally began as a week-long initiative, expanded in 2003 to a month-long program, and now covers events throughout multiple months during the “clean commuting season” from May to September. Through the Clean Commute Initiative, residents of the Baltimore region are asked to try an alternative to driving alone for at least one day during “clean commuting season.” In 2014, promotion began in early April, with a number of outreach events throughout the region. Events continued through May, and included Bike to Work Day on May 16th. Participation in Bike to Work Day has increased substantially in recent years and many local businesses and organizations donate prizes for registered participants. Bike to Work Day, a true region-wide initiative, featured rallies in Annapolis, Baltimore City, Baltimore County, Carroll County, Harford County, and Howard County.

The 2014 Clean Commute Initiative also featured a paid media campaign, sponsored by the BRTB, with radio spots running in April, May, and August. In addition, a web site, www.cleancommute.com, provided information about related events, Bike to Work Day, and other commuting issues. The site remains live year-round and is a one-stop-shop for clean commuting information in the Baltimore region. The site also highlights employers who promote clean commuting and hosts information on commuter tax benefits. It is expected that these types of activities will lead to ongoing use of alternative transportation choices.

In addition to the Clean Commute Initiative, BRTB, 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

The Clean Air Partners program is a public/private partnership working to improve air quality in both the Baltimore and Washington regions by motivating individuals to take voluntary actions that reduce emissions. BMC, in cooperation with MDE, MDOT, MWCOG, and numerous other public and private sector entities, works with area employers to develop voluntary programs that both help reduce emissions and educate their employees about the health effects of air pollution. Each participating organization develops an Air Quality Awareness Plan. All plans have educational components, while ones that are more ambitious may include operational actions to reduce emissions, such as shutting down incinerators. Organizations put their plans into action on days of the year when air quality is expected to exceed the EPA health standards.

In FY 2014, Clean Air Partners conducted media campaigns in both the Baltimore and Washington markets, which included drive-time radio spots. Clean Air Partners staff members conducted press interviews in both Baltimore and Washington. The Partnership has worked hard to nurture a relationship with reporters in both markets. This effort has paid off with accurate and positive press coverage, raising awareness of both the problem and the Clean Air Partners organization.

Clean Air Partners produced updated educational materials including information on PM_{2.5} and climate change as well as ground-level ozone, improved its web site, www.cleanairpartners.net, and worked to upgrade the Air Quality Action Days Program, by providing training and better communication with the over 1400 participants in the Baltimore/Washington air shed. Clean Air Partners has also worked with MDE, MWCOG, and BMC on improving air quality forecasting, as well as the communication of those forecasts.

Clean Air Partners continues to be a sponsor of BMC's annual Clean Commute Initiative, which raises awareness of the relationship between transportation choices and air quality and promotes alternatives to single occupant vehicle-commuting.

Telework

The promotion of teleworking is a strategy to reduce traffic congestion and air pollution in the Baltimore region. Building on previous efforts at telework promotion in the region, ***Teleworkbaltimore.com*** was launched in December 2009. Through the program, employers in the region are directed to a branded web site 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, employers are asked to register with BMC for tracking purposes. In addition, registered businesses are able to ask questions. BMC assumes the primary role in responding to telework inquiries with the back-up assistance of a telework consultant retained by BMC. Registered participants also receive periodic updates on topics related to teleworking. BMC is responsible for surveying registered participants. The ***Teleworkbaltimore.com*** web site as well as seminars and webinars promoting the practice of

telework are advertised in regional business publications, such as the *Baltimore Business Journal* and *Smart CEO*.

Guaranteed Ride Home Program

In October 2010 the Washington D.C. metropolitan area Guaranteed Ride Home program was expanded to cover the Baltimore region, St. Mary's County, and Cecil County. This program, provided by Commuter Connections, MDOT, and MTA, provides a free ride home to commuters who carpool, vanpool, bike, walk or take transit to work at least twice a week. Those who register for this program can take advantage of it up to 4 times annually. It can be used for personal illness, sick children, or employer-mandated unscheduled overtime. MTA and local rideshare coordinators provide marketing for the Guaranteed Ride Home.

Reduced Fare Passes

Programs that reduce transit fares help to encourage greater usage of transit, thereby reducing pollution from private automobiles. One of these reduced transit fare programs is MTA's All Access College Transit Pass program. It reduces the cost of a regular monthly pass to \$39 for college students in certain enrolled schools, a savings of \$25 off the regular monthly pass cost. 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 www.mta.maryland.gov.

Car Sharing

Car sharing availability in the Baltimore region is centered on the Zipcar program in Baltimore City. Zipcar offers over 200 vehicles, including 104 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 and other Baltimore neighborhoods. The cars can be reserved online or over the phone. 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, especially if they have access to transit and live in bikeable and walkable neighborhoods. In fact, a 2014 survey of Baltimore Zipcar members showed that the City's relationship with Zipcar has kept 3,000 personally-owned vehicles off Baltimore's streets.

Because of the efficiency of the shared car system, 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 2014, nearly 38 percent of respondents stated that they either got rid of their car or decided not to purchase a vehicle as a result of the availability of Zipcar.

BICYCLE/PEDESTRIAN ACTIVITIES

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. Through these master plans, agencies can work to develop this key part of a multi-modal transportation network.

Agency	Plan Name	Status
Maryland Department of Transportation	<i>2014 Maryland Twenty-Year Bicycle and Pedestrian Master Plan</i>	Completed in 2014
City of Annapolis	<i>Annapolis Bike Plan</i>	Adopted in 2012
Baltimore City	<i>Bicycle Master Plan</i>	Adopted in 2015
Baltimore County	<i>Phase I: Eastern County Bicycle & Pedestrian Plan</i>	Adopted in 2006
	<i>Phase II: Western County Bicycle & Pedestrian Plan</i>	Adopted in 2012
	<i>Phase III: Rural County Pedestrian and Bicycle Access Plan</i>	Future phase
Anne Arundel County	<i>Pedestrian & Bicycle Functional Master Plan</i>	Completed in 2013
Carroll County	<i>Freedom Area Bicycle and Pedestrian Master Plan</i>	Completed in 2013
	<i>Bicycle-Pedestrian-Greenways Master Plan</i>	In process of developing
Harford County	<i>Bicycle & Pedestrian Master Plan</i>	Adopted in 2013
Howard County	<i>Pedestrian Master Plan</i>	Completed in 2007; In process of updating
	<i>Bicycle Master Plan</i>	Draft completed in 2015

In Baltimore City, efforts to improve bicycle access in the City have increased bike use. Bicycle counts indicate a 50% increase in bicycle commuter traffic in the past four years.

As policy, MDOT includes bicycling and walking accommodations in all of its projects, wherever possible. Several programs were recently launched that direct additional funding to walking and biking. In 2012, the Maryland Bikeways program was launched. \$1 million in projects that will benefit the Baltimore region were selected for 2015, the third year of funding. The bikeways program will provide needed funding to implement the Statewide Trails Plan and the 20 Year Bicycle and Pedestrian Master Plan. It will provide missing links in the statewide trails and bikeways network by connecting and extending on-road and off-road bicycle facilities. Another

new program, the Maryland Bikeshare Program, will provide funding to local governments for planning and implementing bikesharing.

MTA has had bicycle racks on all of its transit buses serving the Baltimore region since September 2008. This gives transportation users another option to driving solo as combining bicycling and transit use may provide a reasonable alternative to driving that may not be possible if considering only bicycling or transit as a travel option.

In *Maximize 2040*, the long-range transportation plan for the Baltimore region, 21 of the 46 projects add pedestrian and bicycle improvements to either roadways or to new or existing transit stations. The BRTB has set aside \$155 million for Complete Streets / bicycle-pedestrian projects.

The BMC, on behalf of the BRTB, promotes bicycling and walking through the following mechanisms:

- Informs citizens on bicycling matters through its quarterly *BikePed Beacon*, an e-newsletter.
- Annual Bike to Work Day, a BMC-coordinated region-wide event with over 1,000 registrants. Bike to Work Day “rallies” or “pit stops” are held in each jurisdiction, with additional employer-based events.
- Baltimore Region Street Smart program - An education and enforcement campaign that promotes awareness of pedestrian and bicycle safety laws to both motorized and non-motorized travelers through media, visible street events, targeted police enforcement at high-profile pedestrian crossings, and direct door-to-door outreach in neighborhoods with high rates of pedestrian fatalities and injuries.

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 2014 is estimated at 51 percent across the region. The most parking spaces are provided in Anne Arundel and Howard Counties, where usage is highest. SHA estimates that over 59 million vehicle miles of travel (VMT) were reduced from highways in the Baltimore region as a result of the use of SHA park-and-ride lots in 2014. The

table below displays information on these lots from 2014. SHA lots only account for a portion of park-and-ride lots in the region.

SHA Park-and-Ride Facilities 2014

County	Lots	Spaces	Percent Use
Anne Arundel	8	1,823	57
Baltimore	9	1,134	48
Carroll	7	453	46
Harford	12	1,214	46
Howard	8	1,857	57
Regional Total	44	6,481	51

In Anne Arundel County, there are two lots either recently expanded or scheduled for expansion. The Davidsonville lot at US 50 and MD 424 will expand from 200 spaces to 400 spaces, with construction to be completed fall 2015. The Wayson’s Corner lot at MD 4 and MD 408 expanded from 100 spaces to 175 spaces in summer 2014. Both lots are served by MTA commuter buses. In Baltimore County, the I-83/MD 439 lot expanded from 71 to 121 spaces, with completion in fall 2014.

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 MTA operates a far-reaching system of bus services:

- MTA bus service currently has 57 bus routes, which include 47 local routes, 4 limited stop routes (known as QuickBus), and 4 express bus routes which operate from various suburban locations to downtown Baltimore. The majority of these routes serve areas within the Baltimore beltway, connecting the region’s suburbs to downtown and neighborhoods within the downtown area. Fourteen routes are feeders into Light Rail, Metro Subway, and MARC train stations.
- The size of MTA’s bus fleet is approximately 706 buses, including 230 hybrid electric buses.
- Commuter bus service is provided on 32 lines. 27 operate throughout Central and Southern Maryland and 5 lines operate in the Baltimore region.
- The MTA operates two local shuttles within the Baltimore region: the Hampden Shuttle Bug and the Mondawmin Shuttle Bug.

In addition to the transit services operated by MTA, seven locally operated transit systems exist in the Baltimore region. Locally operated transit systems are funded through a combination of federal, state, and local dollars. 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	City of Annapolis and nearby portions of Anne Arundel County, including Parole, Edgewater, and Arnold	Bike racks, wheelchair accessible
Anne Arundel County LOTS program	Anne Arundel County Department of Aging and Disabilities	Van transportation for older adults and adults with disabilities	Also a taxi cab discount program 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	Free service; hybrid electric buses; GPS bus tracking; (Average daily ridership of 10,890 in April 2013)
Baltimore County CountyRide	Baltimore County Department of Aging	Destinations include medical appointments, shopping and other general purpose trips.	Serves Baltimore county residents that are elderly, disabled, or rural residents.
Carroll Area Transit System	Carroll Area Transit System	Four shuttles operate around the County, serving points of interest such as Westminster, South Carroll, Eldersburg, and Taneytown.	Demand-response service also provided.
Harford Transit	Harford County	Seven local routes link the primary towns and connect with Cecil County, the MARC commuter train, and MTA's commuter bus service to downtown Baltimore.	Demand-response service also provided.

RTA	Regional Transportation Agency (RTA)	Fifteen fixed routes serving Howard County, western Anne Arundel County, and northern Prince George's County.	RTA is the successor agency to Howard Transit and Central Maryland Regional Transit. RTA started service in July 2014.
The Link	BWI Business Partnership	One route connecting BWI Amtrak/MARC station and the BWI Business District light rail stop.	Operates free of charge and open to the public.

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

In addition to MTA bus service, local bus service, and Rabbit Express, 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, the companies, MegaBus.com and Bolt Bus, provide intercity service from Baltimore to the New York City, with MegaBus.com offering service to additional cities in the Northeastern U.S. and Toronto.

To connect rural communities in Maryland, in January 2011 the Maryland Department of Transportation launched an Intercity Bus Program. The Western service operates from Grantsville to Baltimore via the Bay Runner Shuttle. The Central service operates from Elkton to Baltimore via Greyhound and the Eastern service operates from Ocean City to Baltimore via Greyhound.

Automatic Vehicle Location and Next Vehicle Arrival Technology

An automatic vehicle location (AVL) system, being implemented by MTA, will permit better management of transit operations and will assist in improving service. Dispatchers are able to detect the location of buses, monitor on-time performance, and direct service changes to make buses more responsive to changing local traffic conditions. MTA equipped 705 buses with AVL features. This equipment is also being installed on all new buses and light railcars purchased by MTA.

Beginning in late 2006, 200 variable electronic message signs were installed at MTA bus stops, using Next Vehicle Arrival technology. Using a global positioning system, this technology provides bus riders with the knowledge of when the next bus will arrive at a particular bus stop. This will add to the overall experience of transit usage, and could possibly become an incentive for increased usage of transit in the Baltimore region.

Howard Transit has also added AVL technology to their fleet of buses to provide better quality service for Howard County's local bus system. It includes the capability for riders to view transit maps and vehicle movement through wireless internet hardware such as computers and palm pilots, and to receive related information on digital cellular phones with text messaging.

Rail Transit

Rail Transit in the Baltimore region is provided through MTA's Metro Subway, Central Light Rail, and Maryland Rail Commuter (MARC) service.

Metro Subway

MTA's Metro Subway 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 to Johns Hopkins Hospital east of downtown. Connecting bus service is provided with MTA bus routes.

Light Rail

MTA's Central Light Rail Transit provides medium-speed transit 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 north of downtown Baltimore and to Baltimore/Washington International Thurgood Marshall Airport in Anne Arundel County. Light Rail 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 and free parking is provided at 12 of these stations.

All but 2.6 miles of the Light Rail are double-track, which makes service more reliable and increases ridership. The remaining 2.6 miles are single-track due to right-of-way issues. 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.

Maryland Rail Commuter (MARC)

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/Washington corridor. In the Baltimore region, MARC trains operate in two existing rail corridors totaling 112 miles with stations in all jurisdictions except Carroll County. The Penn Line runs between Perryville in Cecil County and Union Station in Washington D.C., and stops at nine stations in the region. The Camden Line runs from Camden Station in Baltimore City to Union Station, and stops at six stations in the region.

MARC commuter rail services have been enhanced through construction activities at several locations throughout the region. In 2013, accessibility was greatly improved with the completion of a new Halethorpe MARC Station, located one quarter mile from the old station. This \$32 million project included high-level platforms and connecting pedestrian bridge with elevator/stair towers, stairs, ramps and concrete walkways. The park and ride lot was also expanded at this station to provide for approximately 1,100 parking spaces in total. This new station serves approximately 1,300 passengers each day.

Parking lot expansion at the Martin State Airport MARC station increased the number of parking spaces from 171 to 326. Lot expansion at the Aberdeen MARC Station, also on the Penn Line, increased from 188 to 215.

MANAGEMENT AND OPERATIONS PROJECTS

Management and operations projects improve the efficiency of the transportation system through the use of strategies, techniques, and tools.

Traffic Flow Improvements

Efforts are continuing by SHA to improve traffic flow, mitigate congestion, and reduce mobile source emissions in major travel corridors and at critical intersections throughout the region. These ongoing efforts include traffic signal retiming projects, roundabout construction, intersection reconstruction, park-and-ride facility construction, improved fixed message and variable message signage, and other traffic management projects implemented in conjunction with the CHART program.

The Coordinated Highways Action Response Team program, operated jointly by MDOT, SHA, MDTA, and Maryland State Police, focuses its operations on non-recurring congestion, such as crashes. The Statewide Operations Center, Authority Operations Center, and the two satellite Operations Centers in the region, survey the state's roadways to quickly identify incidents. CHART also includes traffic patrols, which now operate 24 hours 7 days per week on many of the state highways in the region; the patrols began operating during peak periods in the early 1990s. 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 mission of CHART is 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." Its goals 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.

To achieve its mission and goals, CHART has installed various ITS technologies, such as closed circuit television cameras, dynamic message signs, traffic speed detectors, roadway weather information systems, and highway advisory radio on interstate highways in the Baltimore region and other parts of the state using a combination of federal and state funds. As noted above, CHART also provides roving rapid response teams (emergency traffic patrols) that provide assistance to disabled motorists, assist in clearing incidents from travel lanes, and reroute traffic around incidents. The state also has a 511 traveler information system (www.md511.org) to provide real-time transportation condition information to the public.

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 26 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 2014, 75 percent of vehicles using MDTA facilities paid using electronic toll tags. At the Hatem Bridge, 93 percent of customers pay with E-ZPass, and at the Key Bridge, 77 percent pay with E-ZPass.

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 2014, SHA reviewed 202 signals in 28 systems in the Baltimore region. Timing changes were made in 17 systems, containing 98 signals and reducing 306,430 hours of delay. Fuel consumption was reduced by over 86,000 gallons. It is estimated that NOx, VOC, and CO emissions were reduced 0.64%, 1.0%, and 0.8% respectively for the signal systems.

Traffic Incident Management for the Baltimore Region Committee

Launched in September 2000, the Traffic Incident Management for the Baltimore Region Committee (formerly called the Baltimore Regional Operations Coordination Committee) has

worked to improve coordination of incident management activities to reduce traffic congestion and delay, enhance the safety of responders and the traveling public, 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 modal administrations, Maryland State Police, MDE, FHWA, Maryland Medical Examiner's office, and others. Since the inception of the TIMBR Committee, various projects have been undertaken to improve responder coordination, cooperation, and communication which leads to incidents being cleared more quickly and more safely.

PREFERENTIAL PARKING MANAGEMENT

Parking management is an important strategy for managing transportation demand and a complementary action to increase the effectiveness of the various rideshare programs. This strategy assumes several forms, with preferential parking management being the most basic.

Preferential parking for carpools/vanpools is a traditional ERS 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

In 2013, the Port of Baltimore's Clean Diesel Program reached a major milestone: the 50th dray truck was replaced with a newer, cleaner running version under a program supported by federal and state funds. Dray trucks are large diesel trucks that are used to haul freight from port facilities to nearby local distribution points. Dray trucks are typically older vehicles with high emission rates. The Mid-Atlantic Dray Truck Replacement Program is funded by a grant from the EPA, the Maryland Port Administration (MPA) and MDOT. The grant is administered by the Mid-Atlantic Regional Air Management Association and the University of Maryland Environmental Finance Center. This program, begun in 2012, provides \$20,000 toward the cost of a newer vehicle that meets or exceeds 2007 EPA emission certified engine standards. More information on this program is available at www.efc.umd.edu/cleandiesel.

Planned Emission Reducing Projects

Project Type: *Bike/Ped/Greenway*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
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.
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.
Carroll County	Leister Park (formerly North Carroll Recreational 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	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	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	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 sidewalks 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.

Project Type: *Bike/Ped/Greenway*

Implementing Agency	Project Name	Project Description
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	Gillis Falls Trail	This project provides planned funding to establish a 5,700 foot, 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	Governor Brown Trail	The 7-mile macadam trail will link the Town of Sykesville to various destinations within the Freedom designated growth area, including Liberty Road (MD 26) corridor and Sykesville Road (MD 32) corridor.
Harford County	Nuttal Avenue Park Development	The development of passive community amenities, such as trails, a picnic pavilion and amphitheatre on a vacant site. Additional residential development is anticipated in the Edgewood community due to the increased job opportunities.
Harford County	Havre de Grace Community Center Field	Project proposing the construction of a connection to the Lower Susquehanna Heritage Greenway Trail at the Havre de Grace Community Center. The existing park and undeveloped area will be improved to create a field, practice area and parking. The parking lot can serve the field, community center, and the Lower Susquehanna Heritage Greenway Trail. Additional residential development is anticipated in this area.
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.

Project Type: *Bike/Ped/Greenway*

Implementing Agency	Project Name	Project Description
Harford County	Water and Land Trails (North Park)	Project proposing the engineering, design, acquisition, development, repair and/or maintenance of land and water based trails and facilities. Trails will be constructed along the Lower Susquehanna Heritage trail system, the John Smith National Historic Trail and/or the Star Spangled Banner National trails. Trails will be used for transportation as well as physical fitness.
Harford County	Swan Harbor Farm Improvements	Project proposing renovations and improvements at Swan Harbor Farm. Future projects include the construction of a recreational trail from the City limits of Havre de Grace through Swan Harbor Farm to the waterfront. This hiker/biker trail would connect Swan Harbor Farm to the historic amenities of Havre de Grace and link the park to the Lower Susquehanna Heritage Greenway.
Harford County	Site and Parking Lot Improvements (Harford Comm. College)	Replacement, installation, and/or repair of campus parking lots, roadways, and sidewalks.
Harford County	Abingdon Road (Box Hill S. Pkwy - I 95)	Abingdon Rd. between Box Hill South Pkwy and I-95 is to be improved to adequately handle existing and projected traffic loads. The road will be widened with turn lanes and sidewalk installed. The section of road from MD 924 to Box Hill S. Pkwy is completed. The remaining sections are scheduled for outyears.
Howard County	US 1 Corridor Revitalization	Plan, design, and implement a series of streetscape, pedestrian, bicycle, transportation and public green space improvements.
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. Project includes an evaluation and possible improvements to the Route 29 Pedestrian Bridge and its approaches and connections to the County's borders.
Howard County	Oakland Mills Road Improvements	Project improving Oakland Mills Road from Guilford Road northward to Carters Lane. The improvements would include road widening, sidewalk, curb and gutter and bicycle compatibility.
Howard County	Community Road Revitalization	A project to upgrade streets, curbs and sidewalks in established neighborhoods.
Howard County	Ellicott City Improvements and Enhancements	Project to provide a variety of repairs and improvements to public infrastructure and address other community needs to improve the downtown and historic district.

Project Type: *Bike/Ped/Greenway*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
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	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	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	Long Gate Sidewalk	The project is for the reconstruction of approximately 1,500 LF concrete curb storm drain inlets and sidewalk along Long Gate Parkway, including the bridge over MD 100.
Howard County	Tower Drive Drainage and Sidewalks	A project to design and construct improved drainage and sidewalks along Tower 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.

Project Type: *Clean Technology*

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

MDOT MTA Buses - FY 16/17 87 clean diesel buses will be purchased in FY 16/17.

Project Type: *Congestion Management*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Carroll County	Englar Road Roundabout	Planned funding to construct a traffic roundabout on Englar Rd. and Monroe St.
Carroll County	Traffic Calming	Traffic calming is the use of various measures to alter driver behavior and improve safety conditions for street users. Traffic calming solutions may include the use of roundabouts, traffic circles, speed humps and median barriers. These projects are requested as part of the traffic calming citizen request process which involves extensive public involvement.
Harford County	Bata Blvd. Access Road	Project constructing an access road from MD 543 directly to Bata Blvd. The project will relieve existing and anticipated delays and will be multi-modal in that bicycle lanes and pedestrian access will be considered where possible and appropriate.

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*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Howard County	Transit Operation Repair Facility	A project for site selection, acquisition, design and construction of a multi-jurisdictional transit facility.
MDOT	Replacement of Fare Collection Equipment	Replace existing fare collection equipment on bus, light rail, and metro subway.

Ongoing Emission Reducing Projects

Project Type: *Bike/Ped/Greenway*

Implementing Agency	Project Name	Project Description
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	Waterfront Enhancement	New development and/or capital renovation of water-related facilities at waterfront parks including boat ramps, fishing piers, bulkheads, parking, and trails.
Baltimore County	Curbs, gutters and sidewalks	Replacement and repair of deteriorated curbs, gutters and sidewalks as well as construction of new sidewalks where needed.
Baltimore County	Sidewalk Ramps Program	This project provides funds to construct sidewalk ramps to assist the handicapped.
Baltimore County	Recreation Facility Renovations	Capital improvements and/or capital renovations to existing parks and facilities including comfort stations, plantings, benches, pavilions, lighting, sidewalks, fountains, etc.
Baltimore County	Street Rehabilitation (Countywide)	Among other things, this project provides for regrading, repaving, draining and widening of existing county streets where residents have petitioned for widening, sidewalks, curbs and gutters.
Baltimore County	Regional Park Development	Development of indoor and outdoor regional park facilities throughout the county. Amenities include athletic fields, comfort stations, trails, etc.
Baltimore County	Park & Recreation Center Accessibility	New construction and/or capital renovation of recreation facilities including comfort stations, pavilions, picnic and seating areas, boating areas, parking facilities and pathways in accordance with ADA.
Baltimore County	Countywide Revitalization	Acquisition, demolition, renov., repair, maint., development or redevelopment of res. or comm. properties to foster community open space, recreation, public infrastructure and improvements, economic devel., streetscapes, and community revitalization.
Harford County	Paving - Overlay and Maintenance	Funding to provide bituminous concrete overlay, patching and re-striping on existing driveways and parking lots. Associated work on curbs, sidewalks and inlets as required.

Project Type: *Bike/Ped/Greenway*

Implementing Agency	Project Name	Project Description
Harford County	Sidewalks and Handicapped Ramps	Project to construct sidewalks to interconnect communities, schools, and commercial areas. The project will benefit air quality by encouraging local walking trips and will improve safety by separating pedestrians and motor vehicles.
Howard County	Sidewalk Repair Program	This project is for the repair of deteriorated sidewalks and driveway aprons that are in public rights-of-way.
Howard County	Cedar Villa Heights Sidewalks	A project for the design and construction of sidewalk and curb and gutter along neighborhood roads.
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	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	Sidewalk Retrofit Program	Project to construct improved pedestrian access facilities along State roads. Grant funds available through State Retrofit Sidewalk Program.
Howard County	School Route Pathways or Sidewalks	Installation of sidewalks/pathways to provide safe walking route for school children . Sites next in priority to be evaluated are: Old Frederick Rd., Montgomery Rd.; Crescent Rd. Project continues K-5024.
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	US 40 Corridor Enhancement	A project to plan, design and implement improvements (eg sidewalks, landscaping, street trees, median and gateway enhancements) within public right-of-way and to develop a corridor design manual to guide site design on adjacent properties.
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.

Project Type: *Bike/Ped/Greenway*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Howard County	FY2014 Bicycle Plan Projects	A project for the implementation of the comprehensive Howard County Bicycle Master Plan.
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	Junction Industrial Park Sidewalks	A project for the design and construction of approximately 4,000 LF of walkways to serve the business community.
Howard County	FY 2009 State Roads Sidewalk Retrofit Program	Design and construct improved pedestrian access along State roads.
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: *Clean Technology*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Harford County	Harford County School Bus Replacement	Harford County school buses will be replaced on a cyclical schedule. Replacement buses comply with federal, state, and local regulations and requirements.
Howard County	Howard County Hybrid Buses	This includes 11 hybrid-electric replacement buses for the Howard Transit fleet. (Three included in another entry.)

Project Type: *Commute Alternatives Incentive*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Harford County	Harford County Telework Policy	Harford County has a policy to allow authorized employees to work from a remote workplace to enable employees to be more productive and to reduce employee turnover. The program enhances the County's efforts to employ and accommodate people with disabilities. Air pollution emissions and traffic congestion are reduced as a result.
MDOT	Commuter Choice Tax Benefit Program	Conduct marketing efforts to promote use of state and federal commuter choice tax benefits.
MDOT	Telework Partnership with Employers/ Telework Baltimore	Baltimore region program to assist employers with establishing or expanding teleworking programs for their employees.

Project Type: *Congestion Management*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
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	Community Conservation Rd. Improvements	This project provides the funds to implement community conservation roadway improvement efforts throughout the county.
Baltimore County	Traffic Calming	This project will support a traffic calming program countywide in response to concerns from various communities.
Harford County	Traffic Calming, Bicycle and Road Safety Improvements	Project to construct various "traffic calming" devices aimed at speed reduction, community beautification, and increased safety. Funds are also being provided for bicycle and automobile related safety improvements.
Howard County	Residential Traffic Calming	Project to construct geometric roadway changes to reduce traffic speeding in residential areas.

Project Type: *ITS*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Baltimore County	GPS Routing for County Vehicles	The route optimizer will prescribe an efficient schedule that should increase productivity, while reducing fuel consumption, by minimizing travel time to various locations throughout the workday. Operations involving vehicles with multiple stops per day and those responding to unscheduled maintenance calls will benefit the most from this program.
MDOT	CHART - (Ongoing Listing)	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*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
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*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
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, in conjunction with the Department of Planning and Zoning, will determine the location and extent of these improvements.
MDOT	State Worker Free Transit Program	Provide free service to state employees for MTA bus, light rail, some commuter buses, and Metro subway systems.
MDOT	MARC Coaches - Overhauls and Replacement	Overhaul MARC coaches in accordance with "10-year minor" and "20-year mid-life" schedules
MDOT	MTA All Access College Transit Pass Program	Reduced transit pass for area college students.
MDOT	Hampden Shuttle	Neighborhood shuttle in Hampden, including connection to Woodberry Light Rail Station (Bus Route #98) and MTA bus routes #22 and #27.

Implemented Emission Reducing Projects

Project Type: *Bike/Ped/Greenway*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Anne Arundel County	Bay Head Park	Redevelopment of the 24 acre former US Navy Broadneck Nike Site, acquired under the Federal Lands to Parks Program, as a community park. The site will be reconstructed to include athletic fields, trail facilities and a meeting and performance arts center. Phase I: demolition and removal. Phase II: construction of park facilities.
Anne Arundel County	Freetown Rd. Sidewalk	This project provides sidewalks along Freetown Rd. and Spencer Rd. in the Freetown Community. Phase I is a sidewalk along Freetown Rd. from Freetown Park to Solley. Rd. Phase II is a sidewalk along Spencer Rd. from Freetown Rd. to Pine Way. Phase III is a sidewalk along Spencer Rd. from Howard Manor Dr. to Lincoln Dr.
Anne Arundel County	Kinder Park Development	This project authorizes the preparation of a master plan and the design and construction of Kinder Farm Park. The master plan calls for trails, among other items. (2.2 mile trail)
Baltimore County	Robert E. Lee Park - Bridge Replacement	The bridge that crosses the Jones Falls to provide access to Robert E. Lee Park is severely decayed and is to be completely replaced.
Carroll County	Landon C. Burns Connector Trail Development	Develop a 6-foot wide macadam trail which will extend from an existing concrete sidewalk (at Bishop Street) to Landon C. Burns Park. This sidewalk/walking trail will allow for an alternate means of transportation from downtown Westminster to visit the Ag Center, Landon C. Burns Park, and the Farm Museum.
Harford County	Vale Road	Vale Road (from just west of MD 924 to Grafton Shop Rd.) is to be improved to accommodate future traffic volumes, bicycles and pedestrian traffic. The upgrade will extend from appr. MD 924 to Ipswich Dr.
Howard County	MD 216 Pedestrian Facility	A project to construct roadside improvements along MD 216 between Lime Kiln Rd. and the Howard County Safety complex.
Howard County	Robert Fulton Sidewalks	A project to construct approximately 4,000 LF of sidewalk along Robert Fulton Drive from Solar Walk Way to Columbia Gateway Drive.

Project Type: *Clean Technology*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Baltimore County	Electric Vehicle Charging Stations - Baltimore County Revenue Authority	The Baltimore County Revenue Authority has installed eight electric vehicle (EV) plug-in charging stations in Towson, two in each of the County parking garages. The four parking garages now equipped with charging stations are located at the following addresses in Towson: 100 West Susquehanna Ave., 110 West Susquehanna Ave., 115 Towsontown Blvd., 108 Ware Ave.
Harford County	Harford County School Bus Replacement - FY 10 and FY 12	Replacement of school buses (6 in FY 10, 4 in FY 12)
Howard County	Local Bus Replacement - Howard County Hybrids	This includes three hybrid diesel electric buses, to replace buses in the Howard County transit fleet.
MDOT	Bus Procurement (ARRA) - Item 1	Annual purchase of clean diesel hybrid electric buses to replace those that have been in service for 12 or more years. (41 in 2010/2011)
MDOT	Bus Procurement (ARRA) - Item 2	Annual purchase of clean diesel hybrid electric buses to replace those that have been in service for 12 or more years. (69 in mid-2011 to early 2012)
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.

Project Type: *Commute Alternatives Incentive*

Implementing Agency	Project Name	Project Description
MDOT	Baltimore Region Rideshare Program - (Anne Arundel County)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
MDOT	Baltimore Region Rideshare Program - (Baltimore City)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
MDOT	Baltimore Region Rideshare Program - (Baltimore County)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
MDOT	Baltimore Region Rideshare Program - (Carroll County)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
MDOT	Baltimore Region Rideshare Program - (Harford County)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
MDOT	Baltimore Region Rideshare Program - (Howard County)	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers (Because of its ongoing status, credit is included in the "programmed" section of the results table.)
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.

Project Type: *Congestion Management*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
Harford County	MacPhail Road/Tollgate Road Roundabout	A new roundabout at the intersection of MacPhail Road and Tollgate Road on the southwest edge of Bel Air.
Harford County	Trimble Road/Fort Hoyle Road Roundabout	This project is a roundabout at the intersection of Trimble Road and Fort Hoyle Road.

Project Type: *ITS*

<i>Implementing Agency</i>	<i>Project Name</i>	<i>Project Description</i>
MDOT	Signal Systemization - MD 22	John Carroll High School to MD 543
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.)

Appendix J: MDOT Updated Revenue Projections – July 2014

Financially Constrained Long Range Plan

Year 2010 to 2040 Update

For The

Baltimore Metropolitan Area

Prepared by

Maryland Department of Transportation

August 2013

(Extended to 2040 July 2014)

DOCUMENTATION OF ASSUMPTIONS

Date: August 2013 (Extended to 2040 July 2014)

Subject: Methodology and Assumptions used to derive the 2013 - 2040 Constrained Long-range Transportation Plan.

Total Program Revenues/Expenditures (Operating and Capital):

- FY 1981 to FY 2012 figures are actual expenditures from historical records. FY 2013 to FY 2018 figures are from the FY 2013 Trust Fund Forecast and Consolidated Transportation Plan (CTP).
- The federal funds received directly by WMATA are **not** included in this exercise.
- FY 2019 to FY 2040 projections of state funds use a historical annual average growth rate of 3.89%. A regression model was used to determine the appropriate starting point in FY 2019. Federal fund projections for the same period are based on an average growth rate of 2.75% for Highway and 4.7% for Transit program funds, but also assume an O. A. of 90%.

Operating Expenditures:

- FY 1981 to FY 2012 are actual expenditures from historical records. Expenditures for FY 2013 to FY 2018 are operating budget projections contained in the FY 2013 Trust Fund Forecast.
- FY 2019 to FY 2040 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 econometric firms, Global Insight and Moody's Analytics. A blended average of the forecasts received from the two firms is used. Two percent (2%) is added to the forecasted rate to account for the additional operating costs associated with new capital expansions. The size of this additional factor is decided based on testing to determine what amount, when added to CPI, best approximates the historical trend in operating expenditures.

Capital - Systems Preservation:

- Department records were used to determine the split between systems preservation and expansion for FY 1981 to FY 2012. FY 2013 to FY 2018

represents the current version of the capital program adjusted for the revenue increase passed during the 2013 legislative session.

- An annual growth rate of 2.2% is assumed for systems preservation for the FY 2019 – FY 2040 period. This growth rate is based on a regression analysis of historical system preservation expenditures.

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:

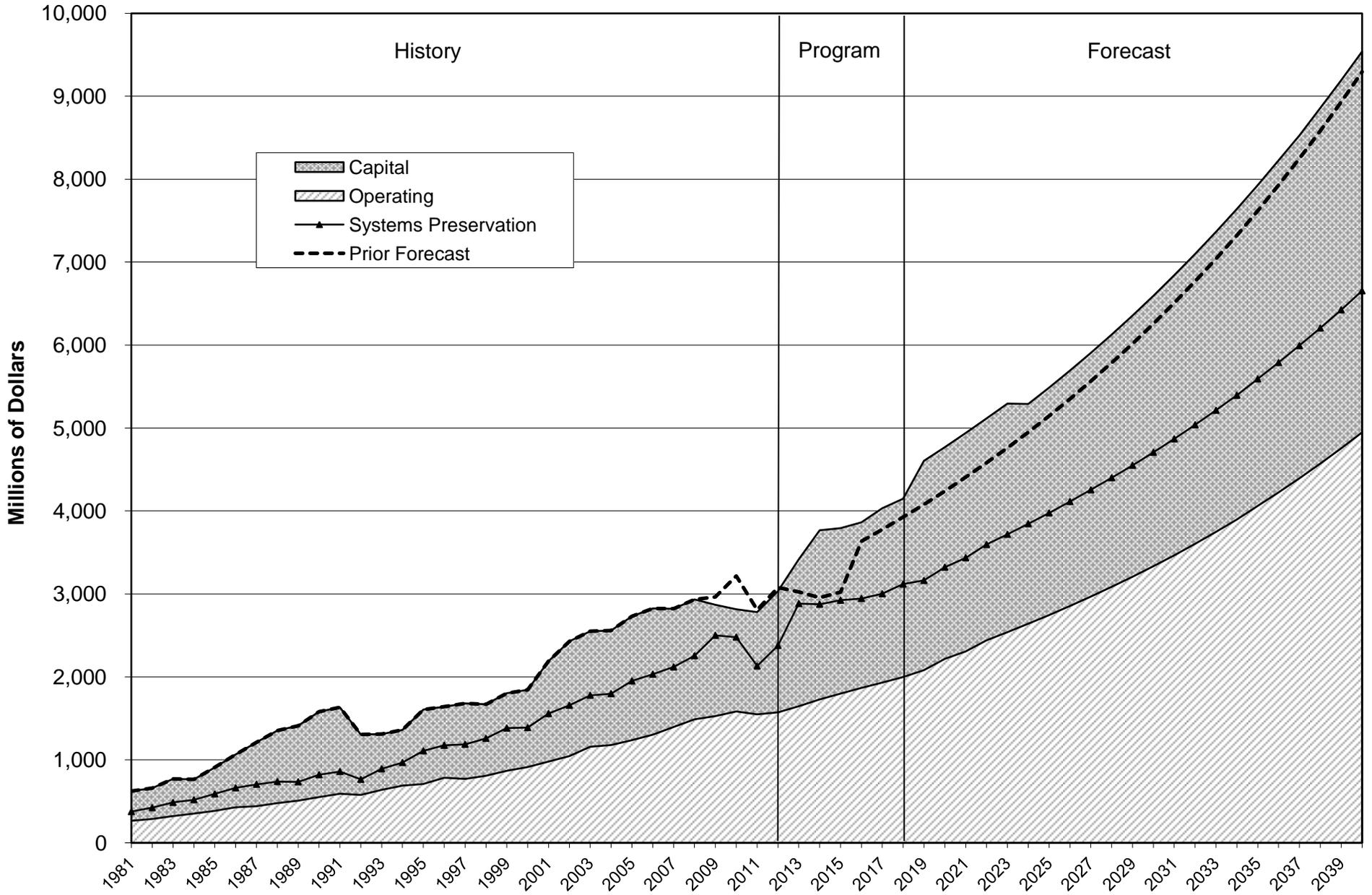
- Total capital figures from FY 1981 to Present were split into surface and non-surface. Surface included highway (SHA) and transit (MTA, MARC, & WMAT) costs. Non-surface included port, aviation, and motor vehicle administrations plus the Secretary's Office expenses.
- The surface / non-surface data 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.

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	896	2,479	336	2,815
2011	1,548	583	2,131	650	2,781
2012	1,572	806	2,378	656	3,034
2013	1,646	1,238	2,884	534	3,418
2014	1,728	1,148	2,876	891	3,767
2015	1,798	1,126	2,924	869	3,793
2016	1,867	1,078	2,945	918	3,863
2017	1,931	1,071	3,002	1,031	4,033
2018	1,998	1,121	3,119	1,029	4,148
2019	2,081	1,081	3,162	1,443	4,605
2020	2,217	1,105	3,322	1,447	4,769
2021	2,307	1,129	3,436	1,504	4,940
2022	2,441	1,154	3,595	1,521	5,116
2023	2,539	1,179	3,718	1,576	5,294
2024	2,641	1,205	3,846	1,444	5,290
2025	2,745	1,232	3,977	1,510	5,487
2026	2,855	1,259	4,114	1,579	5,693
2027	2,968	1,287	4,255	1,651	5,906
2028	3,086	1,315	4,401	1,726	6,127
2029	3,207	1,344	4,551	1,805	6,356
2030	3,334	1,373	4,707	1,887	6,594
2031	3,465	1,404	4,869	1,973	6,842
2032	3,604	1,434	5,038	2,061	7,099
2033	3,748	1,466	5,214	2,151	7,365
2034	3,897	1,498	5,395	2,246	7,641
2035	4,061	1,531	5,592	2,336	7,928
2036	4,224	1,565	5,789	2,438	8,227
2037	4,394	1,599	5,993	2,534	8,527
2038	4,571	1,635	6,206	2,652	8,858
2039	4,755	1,670	6,425	2,767	9,192
2040	4,947	1,707	6,654	2,884	9,538

MDOT Operating & Capital Expenditures - Statewide

History, Program & Forecast



BALTIMORE METROPOLITAN AREA Percentage of Capital Expansion

Surface Enhancement % of Maryland Enhancement:	
1981 - 2012	87.7%

Baltimore Enhancement % of Surface Enhancement:	
1981 - 2012	41.6%



Fiscal Year	Statewide Expansion Funds	Surface Percentage	Private Funds	Total Surface Available	Baltimore Percentage	Baltimore New Starts	Total Balto. Expansion Funds
2010	336						192
2011	650						173
2012	656						229
2013	534						231
2014	891						426
2015	869						250
2016	918						231
2017	1,031						284
2018	1,029						576
2019	1,433	1,257	23	1,280	533	100	633
2020	1,447	1,269	23	1,292	538	100	638
2021	1,504	1,319	23	1,342	559	100	659
2022	1,521	1,334	23	1,357	565	100	665
2023	1,576	1,382	23	1,405	585	97	682
2024	1,444	1,266	24	1,290	537	0	537
2025	1,510	1,324	24	1,348	561	0	561
2026	1,579	1,385	24	1,409	587	0	587
2027	1,651	1,448	24	1,472	613	0	613
2028	1,726	1,514	24	1,538	640	0	640
2029	1,805	1,583	25	1,608	670	0	670
2030	1,887	1,654	25	1,679	699	0	699
2031	1,973	1,730	25	1,755	731	0	731
2032	2,061	1,807	25	1,832	763	0	763
2033	2,151	1,886	25	1,911	796	0	796
2034	2,246	1,969	26	1,995	831	0	831
2035	2,336	2,048	26	2,074	864	0	864
2036	2,438	2,138	26	2,164	901	0	901
2037	2,534	2,222	26	2,248	936	0	936
2038	2,652	2,326	26	2,352	979	0	979
2039	2,767	2,426	27	2,453	1,021	0	1,021
2040	2,884	2,529	27	2,556	1,064	0	1,064
Total 19-40	29,850	26,175	412	26,587	11,072	497	16,470
Total 10-40	36,764						19,062

BALTIMORE METROPOLITAN AREA Percentage of Capital Expansion

Surface Enhancement % of Maryland Enhancement:	
1981 - 2012	87.7%

Baltimore Enhancement % of Surface Enhancement:	
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2022	1,521	1,334	23	1,357	565	0	565
2023	1,576	1,382	23	1,405	585	0	585
2024	1,444	1,266	24	1,290	537	0	537
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2033	2,151	1,886	25	1,911	796	0	796
2034	2,246	1,969	26	1,995	831	0	831
2035	2,336	2,048	26	2,074	864	0	864
2036	2,438	2,138	26	2,164	901	0	901
2037	2,534	2,222	26	2,248	936	0	936
2038	2,652	2,326	26	2,352	979	0	979
2039	2,767	2,426	27	2,453	1,021	0	1,021
2040	2,884	2,529	27	2,556	1,064	0	1,064
Total 19-40	29,850	26,175	412	26,587	11,072	0	15,973
Total 10-40	36,764						18,565