

**Conformity Determination of the 2004  
Baltimore Regional Transportation Plan and  
the FY 2006-2010 Transportation  
Improvement Program:  
*Fine Particulate Matter***

*Prepared by the Baltimore Regional Transportation Board,  
the Metropolitan Planning Organization  
for the Baltimore Region*

**APPENDICES**

November 2005



## **APPENDIX A**

Additional Information



## Additional Information

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### **Reports**

Access 2000: Bicycle and Pedestrian Access to Rail Transit Stations in Maryland. Prepared for the Maryland Mass Transit Administration, Maryland Department of Transportation by Rummel, Klepper and Kahl, LLP Consulting Engineers. June 1997.

Implementation of the BMC HOV Model. Prepared for the Baltimore Metropolitan Council by URS Consultants, Inc. June 1993.

Baltimore Region Travel Demand Model 1996 Validation – Mode Choice Model. Baltimore Metropolitan Council, Task Report 02-1. August 2001.

Documentation of Air Quality Process and Assumptions in Estimating 1990 and 2005 Mobile Source Emissions for the Baltimore Region. Baltimore Metropolitan Council, Task Report 03-3. June 2003.

Public Involvement Plan and Strategy Guide – Plan and Strategies for Enhancing Public Involvement in the Transportation Planning Process for the Baltimore Region. Baltimore Metropolitan Council, April 2004. Please contact Monica Haines for more information, [mhaines@baltometro.org](mailto:mhaines@baltometro.org) or 410-732-0500 ext. 1047.

The Baltimore Regional Bicycle, Pedestrian and Greenways Transportation Plan. Prepared for the Baltimore Metropolitan Council by Sprinkle Consulting, Inc. October 2001

Baltimore Region Travel Demand Model for Base Year 2000. Baltimore Metropolitan Council, Task Report 04-01. November 2003. Contact Gene Bandy, 410-732-9573, or [gbandy@baltometro.org](mailto:gbandy@baltometro.org).

MAQONE: Maryland Air Quality Off-Network Estimator. User's Guide & Reference Manual. Volume 1, User's Guide. Volume 2, Appendices. Prepared for MDOT by Michael Baker Jr. Inc., September 2003.

*These reports can be obtained by contacting the Regional Information Center, see below.*

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### **Regional Information Center**

The Regional Information Center (RIC) is a library operated as a partnership between the Baltimore Metropolitan Council and the Enoch Pratt Free Library (Baltimore City's public library system). The collection includes regional and urban planning materials with a focus on local demographic information, economic development, transportation planning, land use and

environmental issues. For more detail on the collection, visit the Center's Pratt Website at [www.pratt.lib.md.us/branches/ric](http://www.pratt.lib.md.us/branches/ric)

The Center is open to the public *by appointment only* between 8:30 a.m. and 4:30 p.m. on weekdays. Call 410-732-9570, fax 410-732-9488, or e-mail [mlogan@baltometro.org](mailto:mlogan@baltometro.org) for an appointment. Frequent users include small and large businesses; non-profit organizations and community groups; government agencies; students; and the media.

A telephone reference service is available for readily retrievable data. In many cases, an experienced librarian will have the information you need at hand, or be able to direct you to the proper source. It may take a day or two to research some inquiries and get back to you. For more extensive projects, we ask that you make an appointment to come in and use the materials yourself.

The use of the library and the help of the librarian is without cost, although there are charges for photocopying, faxing and mailing materials, as well as book rental fees and overdue fines when applicable. Fees are also charged to recover costs of customized demographic reports and for accessing some electronic sources.

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## **MPO Committees**

*Please find below a short description of relevant MPO committees. For more information on any of these committees, or to have your name placed on the mailing list (includes agendas), please contact Joan Gorsuch at 410-732-0500 ext. 1043 or email [jgorsuch@baltometro.org](mailto:jgorsuch@baltometro.org). For a regularly updated schedule of meetings, please visit the Calendar of Events on the BMC website ([www.baltometro.org](http://www.baltometro.org), also see below).*

### **Technical Committee**

The Technical Committee (TC) of the Board works on a variety of issues. For air quality, the TC is responsible for reviewing all technical analyses associated with conformity such as modeling assumptions, data collection and accuracy. The TC meets monthly.

### **Interagency Consultation Group**

Interagency coordination is required by the Clean Air Act Amendments of 1990 and the Interagency Consultation Group (ICG) is the group that focuses on air quality issues in the Baltimore region. This group works to promote coordination among the transportation and air quality agencies for the region. Voting membership in the group includes the Maryland Department of the Environment, the Maryland Department of Transportation, and the Board. Additional non-voting membership includes the Federal Highway Administration, the Maryland Department of Planning, the Maryland State Highway Administration, and the U.S. Environmental Protection Agency. ICG meets monthly; typical agenda items include:

- Changes to the mobile source emission budgets
- Presentation of new road projects to determine conformity status
- Commuter choice initiatives & funding
- 8-hour ozone and particulate matter designation

- MOBILE modeling
- Potential amendments to the long-range plan
- Technical inputs to conformity determinations.

ICG meetings are open to the public; participation by citizens and local advocacy groups is steadily increasing. The ICG is another forum for public participation, particularly for comments on issues of methodology for conformity.

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### **Websites**

For more information on the Baltimore Regional Transportation Board or the Baltimore Metropolitan Council, please visit the BMC's website at [www.baltometro.org](http://www.baltometro.org).

For information on clean commuting activities for the Baltimore region, visit CLEAN COMMUTE, at [www.cleancommute.com](http://www.cleancommute.com).

For information on bicycle commuting in the Baltimore region, visit [www.bike2workcentralmd.com](http://www.bike2workcentralmd.com).

For information on telecommuting in the Baltimore region, visit [www.teleworkbaltimore.com](http://www.teleworkbaltimore.com).

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### **Clean Commute Month**

For more information on the annual Clean Commute Month outreach activity, or on participating/sponsoring, please call 410-732-9575 or email [rulrich@baltometro.org](mailto:rulrich@baltometro.org), or visit [www.cleancommute.com](http://www.cleancommute.com).



## **APPENDIX B**

### Public Participation



[Additional public participation materials will be added,  
as available, to the final document.]



## **APPENDIX C**

Review, Test, and Programmatically Conforming  
Projects from the 2006-2010 TIP & 2004 BRTP



**Appendix C:**

**2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2006 - NEW	Dundalk Avenue Streetscape	12-0601-11	Local Project	Dundalk Avenue from Eastern Avenue to the City Line will be resurfaced and enhanced with trees, tree grates, benches, sidewalks and pedestrian lighting.	Programmatically Conforming	Baltimore City	2009	na
2006 - NEW	Reisterstown Road Streetscape	12-0602-11	Local Project	Reisterstown Road will be resurfaced from Northern Parkway to the Baltimore City/County Line. It will be enhanced with trees, tree grates, benches, sidewalks and pedestrian lighting.	Programmatically Conforming	Baltimore City	2010	na
2006 - NEW	Cross Country Boulevard	12-0603-11	Local Project	Cross Country Boulevard from Greenspring Avenue to Falstaff Road will be resurfaced with minor curb and sidewalk repair. Improvements may include an on-street bicycle facility in conformance with Baltimore's Bicycle Master Plan currently under development.	Programmatically Conforming	Baltimore City	2007	na
2006 - NEW	Sinclair Avenue Bridge at CSX	12-0604-13	Local Project	The existing superstructure will be replaced and the substructure will be repaired of the Sinclair Avenue Bridge over the CSX railroad tracks in the vicinity of Sinclair Lane and Edison Highway.	Programmatically Conforming	Baltimore City	2008	na
2006 - NEW	Edmondson Avenue Rehabilitation	12-0605-11	Local Project	Edmondson Avenue will be rehabilitated/reconstructed as needed between Warwick Avenue and Baltimore City/County Line. Work may include new curbs and sidewalks, road paving, utility adjustments, lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2008	na
2006 - NEW	York Road Rehabilitation	12-0606-11	Local Project	York Road is in need of rehabilitation/reconstruction between Woodbourne Avenue and 33rd Street. Work may include new curbs and sidewalks, road paving, utility adjustments, lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2010	na
2006 - NEW	Pratt Street Rehabilitation	12-0607-11	Local Project	Pratt Street is to be resurfaced from Martin Luther King Jr. Boulevard to President Street at the downtown/Inner Harbor area. The work will include roadway base repairs, curb and sidewalk repair.	Programmatically Conforming	Baltimore City	2008	na
2006 - NEW	Lombard Street Rehabilitation	12-0608-11	Local Project	Lombard Street, running parallel to Pratt Street, will be rehabilitated from Martin Luther King, Jr. Boulevard and President Street. The work will include the removal and replacement of road surfaces, installation of trees, tree grates, benches, sidewalks and street lighting.	Programmatically Conforming	Baltimore City	2009	na
2006 - NEW	Park Heights Avenue Resurfacing	12-0613-11	Local Project	Park Heights Avenue will be resurfaced from Druid Park Drive to Garrison Avenue. The work will also include curb and sidewalk repair.	Programmatically Conforming	Baltimore City	2006	na

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2006 - NEW	Druid Hill Park - Pedestrian Access	12-0615-25	Local Project	Druid Hill Park is Baltimore's premier recreational facility, however pedestrian access to the park from surrounding neighborhoods is difficult due to multi-lane, high volume roads that surround the park on the south and west. Pedestrian crossing are difficult requiring park visitors to cross six or more lanes with multiple-turning movements. This project will create safer pedestrian crossings at several locations on the west and southern perimeters.	Programmatically Conforming	Baltimore City	2007	na
2006 - NEW	Traffic Management Center	12-0616-07	Local Project	A traffic management center will be created at 414 North Calvert Street - the location of existing signal equipment and surveillance camera controls.	Programmatically Conforming	Baltimore City	2006	na
2006 - NEW	Bollinger Road Bridge Over Beaver Run	14-0601-13	Local Project	Replacement of the existing Acrow panel truss bridge with a new superstructure. The type of structure will be determined during the preliminary engineering phase.	Programmatically Conforming	Carroll County	2009	na
2006 - NEW	Baltimore City Bicycle Routes - Plan Implementation	12-0614-03	Local Project	Baltimore City is undergoing a master planning effort to identify and plan for bicycle facilities throughout Baltimore City. The Bicycle Master Plan is scheduled for completion in October 2005. The planning effort has identified some locations for on-street bicycle facilities in addition to the Gwynns Falls and Jones Falls Trail projects, currently underway. The first projects may include extending bicycle lanes from the Jones Falls along the Western Run to Fallstaff Road, and along the Herring Run from Walther Avenue to Baltimore City/County Line.	Review	Baltimore City	Ongoing	2010
2006 - NEW	Perryman Access - MD 715	None	Local Project	Amtrak railroad tracks to MD 715 access gate: Lane change = 0 to 3	Test	Harford County	2006	2010
2006 - NEW	Perryman Access - Mitchell Lane	None	Local Project	Intersection improvement at Amtrak and MD 715	Test	Harford County	2006	2010
2006 - NEW	MD 108/Centennial Lane	None	Local Project	Widen from 2 to 4 lanes, from Woodland Rd. to 1200 feet west of Centennial Lane crossing.	Test	Howard County	2009	2010
2006 - NEW	I-95 Widening - Section 100 ( I-95/I-895 (N) Split to north of MD43)	None	MdTA	Widen from 8 to 12 lanes, modify interchanges @ I-895, I-695, MD 43. Out of the 12 lanes, 8 will be general purpose and 4 will be managed lanes.	Test	Regional	2009	2010
2006 - NEW	I-95 Widening - Section 200 (North of MD 43 to north of MD 22)	None	MdTA	From New Forge Road to north of MD 543, widen from 8 to 12 lanes. Eight will be general purpose and 4 will be managed. From north of MD 543 to north of MD 22, it will go from 8 to 10 general purpose lanes. Modify interchanges @ MD 152, MD 24, MD 543, MD 22.	Test	Regional	2012	2020

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2006 - NEW	I-95 Widening - Section 300 (North of MD 22 to Susquehanna R.)	None	MdTA	Widen from 6 to 8 lanes, modify interchanges @ MD 155	Test	Regional	2015	2020
2005	Calvert Street Rehabilitation & Streetscape	12-0512-11	Local Project	Road rehabilitation and streetscape upgrade for Calvert Street from Lombard Street to Baltimore Street.	Programmatically Conforming	Baltimore City	2006	na
2005	Bowleys Lane Resurfacing	12-0513-11	Local Project	Resurfacing of Bowleys Lane from Mannasota Avenue to Moravia Park Drive.	Programmatically Conforming	Baltimore City	2006	na
2005	Exeter Hall Resurfacing	12-0514-11	Local Project	Resurfacing of Exeter Hall from Greenmount Avenue to Aisquith Street.	Programmatically Conforming	Baltimore City	2006	na
2005	Gwynns Falls Parkway Resurfacing	12-0515-11	Local Project	Resurfacing of Gwynns Falls Parkway from Garrison Boulevard to Longwood Street.	Programmatically Conforming	Baltimore City	2006	na
2005	Argonne Drive and 39th Street Resurfacing	12-0516-11	Local Project	Resurfacing of Argonne Drive/39th Street between University Parkway and Hillen Road.	Programmatically Conforming	Baltimore City	2006	na
2005	Traffic Surveillance Camera Expansion	12-0518-04	Local Project	Installation of eleven additional traffic surveillance cameras and evaluate locations for additional cameras.	Programmatically Conforming	Baltimore City	Ongoing	na
2005	Traffic Signal Timing Optimization	12-0519-04	Local Project	Traffic signal timing will be analyzed to develop a new traffic signal timing plan for each of the 1,300 signalized intersections in Baltimore City.	Programmatically Conforming	Baltimore City	2007	na
2005	Park Heights Avenue Streetscape	12-0521-11	Local Project	Park Heights Avenue will be resurfaced from Garrsion Avenue to Northern Parkway. The work will also include curb and sidewalk repair.	Programmatically Conforming	Baltimore City	2006	na
2005	Dunk Freeland Road Bridge #157	13-0501-13	Local Project	Replacement of the deteriorated Dunk Freeland Road Bridge no. 157	Programmatically Conforming	Baltimore County	2006	na
2005	Wakefield Valley Community Trail	14-0502-25	Local Project	Macadam trail extending along MD 31 that will link two municipalities (New Windsor and Westminster); will connect to the Little Pipe Creek Trail in New Windsor (which links to Union Bridge; resulting in a continuous 8-mile long trail).	Programmatically Conforming	Carroll County	2015	na
2005	North Baltimore Collegetown Bike Routes	12-0520-03	Local Project	Designated bike routes will connect colleges and universities, primarily located in North Baltimore to each other and to the Jones Falls Trail, light rail stations, and neighborhood centers. The bike routes will be nearly evenly divided between separate striped bike lanes on existing roadways and "share the road" bicycle friendly streets marked with signage.	Review	Baltimore City	2006	2010

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2005	Little Pipe Creek Trail	14-0501-25	Local Project	Macadam trail that will link two municipalities (Union Bridge and New Windsor); will connect to the Wakefield Valley Community Trail in New Windsor (which links to Westminster; which will result in a continuous 8-mile long trail).	Review	Carroll County	2020	2020
2005	US 40 Corridor Improvements	16-0539-25	Local Project	A project to plan, design and implement a series of streetscape, pedestrian, bicycle and public green space improvements on public property.	Review	Howard County	2009	2010
2005	IdleAire Advanced Truckstop Electrification System	90-0501-09	Office of the Secretary	This project involves the installation of up to 190 Advanced Truckstop Electrification (ATE) units at truck stops in Jessup and Baltimore City. The ATE units provide individual electric service to trucks utilizing parking spaces. A Service Delivery Module at each space houses a heating, cooling, and ventilation units, as well as a delivery mechanism for communications and entertainment packages.	Review	Regional	Ongoing	2010
2004	Wilkins Avenue Bridge Over The Gwynns Fall River	12-0401-13	Local Project	The concrete arch structure of the Wilkins Avenue Bridge over the Gwynns Falls is to be replaced.	Programmatically Conforming	Baltimore City	2008	na
2004	Pennington / Curtis / Birch Reconstruction	12-0402-12	Local Project	Pennington Avenue from Aspen Street to Benhill Avenue; Birch Street between Pennington and Curtis Avenues; and Curtis Avenue from Birch Street to Benhill Avenue are to be reconstructed. Work is to include total reconstruction of the roadways, including new curbs, sidewalks, roadway sub-base, roadway surface, utility adjustments and other roadway appurtenances such as roadway lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2006	na
2004	Russell Street Viaduct At I-95	12-0410-13	Local Project	The bridge structure of the Russell Street Viaduct under I-95 is to be reconstructed.	Programmatically Conforming	Baltimore City	2006	na
2004	Cold Spring Lane Resurfacing	12-0411-11	Local Project	Cold Spring Lane is to be resurfaced from Hillen Road to Harford Road. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2006	na
2004	Monroe Street Resurfacing	12-0412-11	Local Project	Monroe Street is to be resurfaced from Gwynns Falls Parkway to Wicomico Street. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2008	na

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2004	33rd Street Resurfacing & Streetscape	12-0413-11	Local Project	Street resurfacing and streetscape enhancements are to be implemented on 33rd Street from Charles Street to Ellerslie Avenue. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2007	na
2004	Eutaw Street Rehabilitation And Streetscape	12-0414-11	Local Project	Eutaw Street is to be rehabilitated between Fayette and Lombard Streets. Work is to include total rehabilitation of the street, new curbs, sidewalks, roadway sub-base repairs, roadway surface, utility adjustments, roadway lighting, landscaping, signage and lane markings.	Programmatically Conforming	Baltimore City	2006	na
2004	Franklinton Road Bridge Over The Gwynns Falls	12-0416-13	Local Project	The Franklinton Road Bridge over the Gwynns Falls is to be replaced.	Programmatically Conforming	Baltimore City	2008	na
2004	Fort Avenue Bridge Over The CSX	12-0417-13	Local Project	The Fort Avenue Bridge over the CSX is to be replaced.	Programmatically Conforming	Baltimore City	2008	na
2004	Perring Parkway Ramp To W/B Northern Parkway	12-0418-13	Local Project	The Perring Parkway Off-Ramp Bridge over the Herring Run to westbound Northern Parkway is to be replaced.	Programmatically Conforming	Baltimore City	2008	na
2004	Harford Road Reconstruction And Streetscape Improvements	12-0420-12	Local Project	Harford Road is to be reconstructed from Argonne Drive to Bayonne Street. Work is to include total reconstruction of the street, including new curbs, sidewalks, roadway sub-base, roadway surface, utility adjustments and other roadway appurtenances such as streetscape and other landscaping improvements, roadway lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2010	na
2004	Russell Street Rehabilitation And Streetscape Improvements	12-0421-11	Local Project	Russell Street is to be rehabilitated between Alluvion and Bush Streets. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements, and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2006	na
2004	Traffic Signal Led Upgrades	12-0423-04	Local Project	Baltimore City's traditional traffic signal heads at 200 locations are to be replaced with light emitting diode (LED) equipped signal heads on major routes in and out of the City.	Programmatically Conforming	Baltimore City	2008	na
2004	Potee Street Resurfacing And Streetscape Improvements	12-0425-11	Local Project	Potee Street is to be resurfaced from Hanover Street south to the City Line. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2007	na

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2004	Edmondson Avenue Resurfacing	12-0426-11	Local Project	Edmondson Avenue is to be resurfaced from Franklin Street to Bentalou Street. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2006	na
2004	Eastern Avenue Resurfacing And Streetscape Improvements	12-0427-11	Local Project	Eastern Avenue is to be resurfaced from Lehigh Street east to the City line. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2007	na
2004	Russell Street Resurfacing And Streetscape	12-0429-11	Local Project	Russell Street is to be resurfaced from I-95 south to the City line. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2007	na
2004	Charles Street Streetscape Improvements	12-0430-11	Local Project	Street resurfacing, new sidewalks with streetscape amenities to include brick and concrete pavers, tree grates, benches, newspaper corrals, and sidewalk ramps are proposed for Charles Street from Madison Street to North Avenue.	Programmatically Conforming	Baltimore City	2006	na
2004	Saratoga Street Streetscape Improvements	12-0431-11	Local Project	Street resurfacing, new sidewalks with streetscape amenities to include brick and concrete pavers, tree grates, benches, newspaper corrals, and sidewalk ramps are proposed for Saratoga Street between Howard and St. Paul Streets.	Programmatically Conforming	Baltimore City	2007	na
2004	Central Avenue Reconstruction	12-0432-12	Local Project	Central Avenue is to be reconstructed between Monument and Lancaster Streets. This work is to include total reconstruction of the street, including new curbs, sidewalks, roadway sub-base, roadway surface, utility adjustments and other roadway appurtenances such as roadway lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2007	na
2004	Pennington Avenue Drawbridge Over Curtis Creek	12-0433-13	Local Project	The mechanical and electronic control unit of the Pennington Avenue Bridge over Curtis Creek is to be replaced.	Programmatically Conforming	Baltimore City	2007	na
2004	Hanover Street Drawbridge Over The Middle Branch	12-0434-13	Local Project	The control panel and drive motor of the Hanover Street Drawbridge over the Middle River is to be replaced.	Programmatically Conforming	Baltimore City	2011	na

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2004	Paper Mill Road Bridge #502	13-0401-13	Local Project	Baltimore County is pursuing an "Adaptive Reuse" of the older, historic, and no longer used for traffic, Paper Mill Rd Bridge over Loch Raven Reservoir. The "Adaptive Reuse" includes a trail to the bridge from the NCRR Hike and Bike Trail, cleaning and painting of the bridge, and adapting the bridge for pedestrian use, with appropriate railings, walkways, etc.	Programmatically Conforming	Baltimore County	2006	na
2004	Big Falls Road Bridge # 73	13-0404-13	Local Project	Replacement of Big Falls Rd. Bridge No. 73	Programmatically Conforming	Baltimore County	2006	na
2004	Gwynnbrook Avenue Bridge # 202	13-0405-13	Local Project	Replacement of a deteriorated bridge built in 1920 to allow for the unrestricted crossing of fire equipment and refuse collection vehicles.	Programmatically Conforming	Baltimore County	2006	na
2004	Mt. Zion Road Bridge # 65	13-0406-13	Local Project	Replacement of a deteriorated single span bridge built in 1903.	Programmatically Conforming	Baltimore County	2007	na
2004	Mt. Zion Road Bridge # 391	13-0408-13	Local Project	Replacement of a deteriorated two span bridge built in the 1920s.	Programmatically Conforming	Baltimore County	2006	na
2004	Mt. Vista Road Bridge # 225	13-0409-13	Local Project	Replacement of a deteriorated two-span bridge built in the 1920s.	Programmatically Conforming	Baltimore County	2006	na
2004	Trenton Road Bridge # 68	13-0410-13	Local Project	Replacement of a deteriorated and insufficiently narrow bridge built in 1927.	Programmatically Conforming	Baltimore County	2006	na
2004	St. Clair Road Bridge # 99	15-0402-13	Local Project	This bridge carries St. Clair Bridge Road over Deer Creek. The purpose of this project is to rehabilitate the bridge	Programmatically Conforming	Harford County	2007	na
2004	Thomas Run Road Bridge # 34	15-0403-13	Local Project	The purpose of this project is to rehabilitate the bridge that carries Thomas Run Road over Thomas Run.	Programmatically Conforming	Harford County	2007	na
2004	Watervale Road Bridge # 63	15-0404-13	Local Project	This project will replace the bridge that carries Watervale Road over Winters Run.	Programmatically Conforming	Harford County	2009	na
2004	Harford Creamery Road Bridge # 104	15-0405-13	Local Project	This project is to replace Harford Creamery Road Bridge #104 over a tributary of Little Deer Creek.	Programmatically Conforming	Harford County	2008	na
2004	Pleasantville Road Bridge # 67	15-0406-13	Local Project	This project is to replace the bridge that carries Pleasantville Road over Winters Run.	Programmatically Conforming	Harford County	2008	na
2004	Bridge Repairs/Deck Replacement	16-0436-13	Local Project	This project is to repair/replace bridge decks at the following locations: Bethaney Lane at Little Patuxent River, Bonnie Branch Road at Bonnie Branch, Shady Lane over Dorsey Run, Daisy Road at Cattail Creek, Daisy Road B3849, Old Montgomery Road at Deep Run, and Pfefferkorn Rd. Bridge over the Middle Patuxent River.	Programmatically Conforming	Howard County	Ongoing	na
2004	Preventive Maintenance	40-0412-64	MTA - Transit	Provides preventive maintenance on the transit system to improve safety, reliability and passenger comfort.	Programmatically Conforming	Regional	Ongoing	na

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2004	LTR Communications & Signal Upgrades	40-0415-62	MTA - Transit	Provide the light rail signaling and control integration system with a sequence-of-events function which will capture and sequentially time stamp all of the events of LTR (Light Rail) railroad signaling. The capturing function will be local to the wayside signaling shelter. These events consist of the change-of-state of signaling which occur in each of the signaling device relays of all the input, output and processing bits. In addition, mobile and portable video equipment will be provided.	Programmatically Conforming	Regional	2008	na
2004	Jones Falls Trail	12-0409-03	Local Project	The Jones Falls Trail is a multi-use (pedestrian/bicycle) trail connecting the Inner Harbor to Baltimore County along the Jones Falls Valley. The first phase of the trail has been completed from Druid Hill Park to Penn Station. Phase II is undergoing design from Penn Station to the Inner Harbor. Phase III will extend primarily through Druid Hill Park to Woodberry. Phase IV will extend from Woodberry to Coldspring. Phase V will extend from Coldspring to Cylburn. Final phases will extend from Cylburn to Mount Washington and the Baltimore City/County Line.	Review	Baltimore City	2008	2010
2004	Escalator Rehabilitation	40-0405-65	MTA - Transit	Improve reliability of 81 escalators in the Metro system by rebuilding and improving safety features. Provide remote monitoring, protection from weather and snow melt and new security points. Provide new entrance canopies at Charles Center. Modify remaining exposed escalator canopies.	Review	Regional	2007	2010
2004	MD 695	None	MdTA	MD 695/Quarantine Road Interchange	Test	Baltimore City	2007	2010
2004	North Avenue	None	Local Project	US 1 to MD 24: Lane change = 0 to 2	Test	Harford County	2007	2010
2004	Tollgate Road	None	Local Project	Plumtree Road to Bel Air South Parkway: Lane change = 0 to 2	Test	Harford County	2006	2010
2003	Traffic Signal System Integration	12-0310-04	Local Project	The traffic signal system integration project started in 2003 and requires additional funding to complete the work.	Programmatically Conforming	Baltimore City	2006	na
2002	Washington Boulevard Improvements - Phase I	12-0201-24	Local Project	Washington Boulevard is to be resurfaced between Monroe Street and Martin Luther King Boulevard. Work is to include the removal/replacement of existing asphalt surfaces, roadway base repairs, curb and sidewalk repairs, streetscape and other landscaping improvements and other roadway appurtenance modifications.	Programmatically Conforming	Baltimore City	2008	na

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Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2002	Road Resurfacing - Federal Aid Program	12-0207-11	Local Project	Resurfacing or rehabilitation of various roadways on the Federal Aid system. 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.	Programmatically Conforming	Baltimore City	Ongoing	na
2002	Charles Street Reconstruction	12-0208-11	Local Project	Charles Street is to be reconstructed from 25th Street to University Parkway. This work is to include total reconstruction of the street, including new curbs, sidewalks, roadway sub-base, roadway surface, utility adjustments and other roadway appurtenances such as roadway lighting, signage and lane markings.	Programmatically Conforming	Baltimore City	2008	na
2002	Wilkens Avenue Resurfacing And Reconstruction	12-0211-12	Local Project	Wilkens Avenue is to be resurfaced from Pine Heights Avenue to Dukeland Avenue and reconstructed from Fulton Street to Dukeland Avenue. Resurfacing will generally include removal and replacement of asphalt surfaces and may include minor curb and sidewalk repairs as well as other isolated roadway appurtenances such as lighting, signage, and land marking along with new pavement.	Programmatically Conforming	Baltimore City	2007	na
2002	Edmondson Avenue Bridge Over The Gwynns Falls	12-0212-13	Local Project	The structure of the Edmondson Avenue Bridge over the Gwynns Falls is to be repaired and painted as part of the City's Gateway Enhancement Program.	Programmatically Conforming	Baltimore City	2006	na
2002	Annapolis Road Bridge Over The B/W Parkway	12-0214-13	Local Project	The structure of the Annapolis Road Bridge over the Baltimore / Washington Parkway is to be replaced.	Programmatically Conforming	Baltimore City	2009	na
2002	Southampton Road Bridge	15-0201-13	Local Project	Funds are requested for the design and reconstruction of Southampton Road Bridge #47 over Bynum Run. The bridge has been determined to be structurally inadequate through the 1989 Bridge Inspection program. The existing alignment is through an historic district and has poor sight distance at Moores Mill Road.	Programmatically Conforming	Harford County	2007	na
2002	MARC Halethorpe Station Parking Expansion	70-0201-02	MTA - Commuter Rail	Expand surface parking and investigate future parking at the Halethorpe MARC Station. 428 parking spaces will be added. The scope of the proposed work also includes high level platforms, new shelters, improved accessibility for persons with disabilities, lighting and streetscaping.	Programmatically Conforming	Regional	2006	na

**Appendix C:**  
**2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2002	CSX & Amtrak Efficiency Improvements	70-0201-54	MTA - Commuter Rail	In this region a section of track between Carroll Interlocking and St. Denis would be rehabilitated and slower speed tracks would be relocated to provide a third main line high speed track. The additional main line track will reduce conflicts between MARC and CSX trains operating in Baltimore terminal allow MARC to maintain schedules. In the Hyattsville and Anacostia areas similar improvements will be made resulting in less congestion on the Camden Line during rush hour.	Programmatically Conforming	Regional	2010	na
2002	MARC Odenton Parking Expansion	71-0202-02	MTA - Commuter Rail	Project planning activities for expansion of parking at the Odenton MARC Station. Funding will also include ROW acquisition; engineering and construction of a 700-space surface parking lot with pedestrian access under MD 175 to the station platform; and feasibility study of structured parking (garage or parking deck) for 2500 spaces on MTA owned property.	Review	Anne Arundel County	2006	2010
2001	Marlyn Avenue Bridge # 77 Over Deep Creek	13-0101-13	Local Project	Superstructure strengthening and/or replacement of existing bridge.	Programmatically Conforming	Baltimore County	2006	na
2001	Small Urban Transit Systems - Operating Assistance	40-0104-61	MTA - Transit	Operating assistance to small urban transit systems throughout the Baltimore region. Transit agencies eligible for funding include Annapolis Transit, Anne Arundel County and Baltimore County RIDE, Carroll Transit Service, Harford Transit and Howard Transit.	Programmatically Conforming	Regional	Ongoing	na
2001	Areawide Recreational Trails Program	60-0101-38	State Highway Administration	The Recreational Trails Program is intended to develop and maintain recreational trails for motorized and nonmotorized recreational trail users. It includes projects that provide for the redesign, reconstruction, non-routine maintenance, or relocation of recreational trails to benefit the natural environment.	Programmatically Conforming	Regional	Ongoing	na
2001	Pedestrian Overpass Program	16-0101-03	Local Project	A program for pedestrian overpasses in the vicinity of schools.	Review	Howard County	2011	2020
2000	Harford Road Bridge Over Herring Run (Rt. 147)	12-0001-13	Local Project	The Harford Road bridge over Herring Run is to be rehabilitated or replaced.	Programmatically Conforming	Baltimore City	2010	na
2000	Urban Youth Corps Program	12-0002-99	Local Project	A training program in the highway construction/ public works industry.	Programmatically Conforming	Baltimore City	Ongoing	na
2000	Dogwood Road Bridge Over Bens Run	13-0001-13	Local Project	Replacement of existing bridge.	Programmatically Conforming	Baltimore County	2006	na

**Appendix C:**

**2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
2000	Bus & Rail System Preservation & Improvement	40-0015-64	MTA - Transit	Rehabilitate bus, light rail, and Metro facilities, including operating division, MTA offices, park-and-ride lots and bus turnarounds. This is a continuing project.	Programmatically Conforming	Regional	Ongoing	na
2000	Bus Replacement	40-0009-05	MTA - Transit	The project provides for the routine replacement of buses past their useful service life with new 40 foot diesel buses. In FY 06 84 buses will be replaced. All new buses are ADA compatible.	Review	Regional	Ongoing	2010
1999	Frederick Avenue Bridge Over Gwynns Falls	12-9902-13	Local Project	The Frederick Avenue Bridge over the Gwynns Falls will be replaced with a new bridge meeting current standards.	Programmatically Conforming	Baltimore City	2009	na
1999	Hawkins Point Road Bridge Over CSXT	12-9903-13	Local Project	The Hawkins Point Road Bridge over the CSXT tracks is a severely deteriorated structure and is beyond repair. The structure is to be replaced.	Programmatically Conforming	Baltimore City	2006	na
1999	Job Access And Reverse Commute Program	40-9909-69	MTA - Transit	The Job Access and Reverse Commute Program is a regional approach to assist welfare recipients and other low-income individuals access employment opportunities and increase collaboration among key agencies and organizations such as transportation providers and service agencies.	Programmatically Conforming	Regional	Ongoing	na
1999	Areawide Enhancement Projects	60-9903-29	State Highway Administration	Enhancement Program projects include: pedestrian/bicycle facilities; acquisition of scenic easements and historic sites; scenic/historic highway programs; landscaping/beautification; historic preservation; rehabilitation/operation of historic transportation facilities, including railroad facilities and canals; preservation of abandoned railway corridors; archeological planning/research; and mitigation of water pollution due to highway runoff.	Programmatically Conforming	Regional	Ongoing	na
1999	Pedestrian / Bicycle Improvements	16-9901-25	Local Project	A project for the design and construction of pathway and bicycle links to the existing network to facilitate movement between residential areas and retail centers. Installation of complimentary crosswalks, pedestrian indications, pedestrian phases, signing, ADA ramps or advanced warning signals may be required.	Review	Howard County	2008	2010
1999	Ridesharing - Baltimore Region	40-9901-01	MTA - Transit	The ridesharing project covers the activities of the ridesharing program in all jurisdictions in the Baltimore region.	Review	Regional	Ongoing	2010
1999	Metro Railcar Mid-Life Overhaul	40-9908-63	MTA - Transit	Project provides for the mid-life overhaul of Metro's railcar fleet to reach their useful life of at least 30 years. Contract provides for the overhaul of 100 cars.	Review	Regional	2008	2010

**Appendix C:**  
**2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
1998	Forest Park Avenue Bridge Over Gwynns Falls	12-9803-13	Local Project	The seventy year old Forest Park Avenue Bridge over the Gwynns Falls is severely deteriorated and requires complete replacement.	Programmatically Conforming	Baltimore City	2006	na
1998	Argonne Drive Bridge Over Herring Run	12-9805-13	Local Project	The Argonne Drive Bridge over Herring Run is to be rehabilitated. In general, the bridge exhibits progressive deterioration.	Programmatically Conforming	Baltimore City	2007	na
1998	Lafayette Avenue Bridge Over Amtrak	12-9806-13	Local Project	The Lafayette Avenue Bridge over Amtrak is to be rehabilitated. Work will include repairing the deteriorated piers which support the bridge deck, as well as the spans over Amtrak Rail tracks.	Programmatically Conforming	Baltimore City	2007	na
1998	Traffic Signal Detectors - Installation	12-9807-09	Local Project	New traffic signal detection equipment is to be installed in the existing traffic signal system to make it more responsive to changes in traffic volumes.	Review	Baltimore City	Ongoing	2010
1997	Singer Road Bridge # 7	15-9702-13	Local Project	Design and replace Singer Bridge # 7 over Mountain Branch. The bridge has numerous deficiencies which include, but are not limited to low posting, scour under the wingwalls, and poor alignment.	Programmatically Conforming	Harford County	2006	na
1996	Cleaning And Painting Of Bridges	12-9602-19	Local Project	Cleaning and painting of various bridges in Baltimore City.	Programmatically Conforming	Baltimore City	Ongoing	na
1995	Areawide Resurfacing And Rehabilitation	60-9501-11	State Highway Administration	These are non-capacity improvements which include milling, patching, sealing, and resurfacing existing deteriorated state roadways in Anne Arundel, Baltimore, Carroll, Harford, and Howard counties as needed.	Programmatically Conforming	Regional	Ongoing	na
1995	Areawide Safety And Spot Improvements	60-9508-19	State Highway Administration	These are non-capacity highway improvements which include projects dealing with bypass lanes, acceleration and deceleration lanes, turn lanes, rail crossings, safety improvements, pavement markers, and roundabouts. Other improvements such as slope repairs, drainage improvements, and joint sealings may be included incidental to other safety improvements.	Programmatically Conforming	Regional	Ongoing	na
1995	Areawide Urban Reconstruction	60-9511-19	State Highway Administration	These are non-capacity highway improvements which include projects dealing with drainage, curb and gutter, pavement milling and resurfacing, streetscape, signs, and markings and lighting improvements.	Programmatically Conforming	Regional	Ongoing	na
1995	Areawide Congestion Management	60-9504-04	State Highway Administration	These improvements include the employment of variable message signs, video for traffic management (CCTV), traffic movement detectors, signal system coordination and remote timing, permanent congestion monitoring systems employed by the CHART program, deployment of local jurisdiction intelligent transportation system (ITS) projects.	Review	Regional	Ongoing	2010

**Appendix C:**  
**2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
1995	Areawide Environmental Projects	60-9506-38	State Highway Administration	There are non-capacity improvements which include projects dealing with noise abatement, wetlands, reforestation, landscape planting, scenic beautification, and pedestrian or bicycle facilities.	Review	Regional	Ongoing	2010
1995	Rural Transit Systems - Capital	40-9501-05	MTA - Transit	Capital assistance to small transit systems located throughout the Baltimore region to purchase vehicles, equipment and facilities. Baltimore region transit systems include Baltimore County ( Baltimore County Office on Aging), Carroll County (Carroll Transit), Harford County (Harford County Office on Aging), and Howard County (Howard Transit).	Review	Regional	Ongoing	2010
1995	Small Urban Transit Systems - Capital	40-9502-05	MTA - Transit	Capital assistance to small urban transit systems throughout the region to purchase vehicles, equipment and facilities. Baltimore region small urban transit systems include City of Annapolis (Annapolis Department of Public Transportation), Harford County (Harford County Transportation Services) Howard County (Howard Transit) and Carroll County.	Review	Regional	Ongoing	2010
1995	Local Bus Replacement - Baltimore Region	40-9507-05	MTA - Transit	Previously known as "Statewide Descretionary Capital" - Capital assistance to small transit systems located throughout the region to purchase vehicles, equipment and facilities. The match will be a maximum 10% State funds and a minimum 10 % local funds. Transit agencies eligible for funding include Annapolis Transit, Anne Arundel County and Baltimore County RIDE, Carroll Transit Service, Harford Transit and Howard Transit.	Review	Regional	Ongoing	2010
1994	US 40 Terminus Modification	12-9403-41	Local Project	The US 40 West (previously I-170 Expressway) terminus at Pulaski Street is to be modified. Modifications are to include the removal of the abandoned abutment structure, realignment and landscaping of Franklin and Mulberry Streets between Bentalou and Mount Streets.	Programmatically Conforming	Baltimore City	2010	na
1994	Biennial Bridge Inspection Program	14-9401-14	Local Project	This project includes a field inspection of 132 County owned and maintained structures, completion and submittal of inspection reports to county and state agencies for each structure.	Programmatically Conforming	Carroll County	Ongoing	na
1994	Bridge Inspection Program	15-9411-14	Local Project	This federal program provides funding for the inspection of bridges in Harford County.	Programmatically Conforming	Harford County	Ongoing	na
1994	Moore's Mill Road Bridge # 48	15-9418-13	Local Project	Funds are requested for the replacement of Moore's Mill Road Bridge #48.	Programmatically Conforming	Harford County	2006	na

**Appendix C:  
2006-2010 Transportation Improvement Program: List of Projects Conformity Status**

Tip Year	Project Title	Tip ID #	Agency	Description	Conformity Status	Jurisdiction	Year of Operation	First Analysis Year
1993	Areawide Bridge Replacement And Rehabilitation	60-9310-13	State Highway Administration	These are non-capacity improvements which include structural replacements, deck rehabilitation, superstructure replacements, parapet reconstruction, cleaning and painting, and general maintenance on various state owned bridges as needed in Anne Arundel, Baltimore, Carroll, Harford and Howard counties. A portion of this project may be funded using STP for cleaning and painting.	Programmatically Conforming	Regional	Ongoing	na
1993	Boston Street Viaduct	12-9304-44	Local Project	A new Boston Street grade-separated viaduct is to be constructed. The Canton, Conrail/Norfolk Southern and B&O Railroads currently cross Boston Street. In addition, at-grade service devices are to be constructed between Conkling and Newkirk Streets.	Test	Baltimore City	2015	2020
1992	Bridge Inspection Program	12-9209-14	Local Project	Bridges within Baltimore City are to be inspected every two years as required by federal regulations.	Programmatically Conforming	Baltimore City	Ongoing	na
1992	Monroe Street Viaduct Over The B&O Railroad	12-9215-13	Local Project	Replace the deck and repair the substructure of the Monroe Street Viaduct over the Baltimore & Ohio Railroad tracks (Bridge # 5214 over the CSX mainline.)	Programmatically Conforming	Baltimore City	2006	na
1992	Rural Transit Systems - Operating Assistance	40-9204-61	MTA - Transit	Operating assistance to transit system located in the Baltimore region. Baltimore region systems include Baltimore County (Baltimore County Office on Aging), Carroll County (Carroll Transit), Harford County (Harford County office on Aging), and Howard County (Howard Transit).	Programmatically Conforming	Regional	Ongoing	na
1989	Biennial Bridge Inspection	13-8901-14	Local Project	Countywide inspection of all bridges as federally mandated.	Programmatically Conforming	Baltimore County	Ongoing	na

## **APPENDIX D**

Round 6-B Cooperative Forecasts



**Round 6-B**  
**Cooperative Forecast - Population and Household Controls**

<b><u>ROUND 6-B POPULATION</u></b>								
<b><u>Jurisdiction</u></b>	<b><u>1990</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>	<b><u>2015</u></b>	<b><u>2020</u></b>	<b><u>2025</u></b>	<b><u>2030</u></b>
Anne Arundel County	427,239	489,656	511,600	526,800	540,100	551,000	562,100	567,600
Baltimore City	736,014	651,154	646,000	658,700	658,000	659,000	661,000	662,300
Baltimore County	692,134	754,292	790,700	819,700	832,900	841,900	844,300	846,800
Carroll County	123,372	150,897	169,500	179,700	187,000	191,900	194,100	193,200
Harford County	182,132	218,590	234,700	254,700	268,200	276,500	283,000	290,500
Howard County	187,328	250,800	273,500	294,200	308,900	319,300	320,300	321,100
Baltimore Region	2,348,219	2,515,389	2,626,000	2,733,800	2,795,100	2,839,600	2,864,800	2,881,500

<b><u>ROUND 6-B HOUSEHOLDS</u></b>								
<b><u>Jurisdiction</u></b>	<b><u>1990</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>	<b><u>2015</u></b>	<b><u>2020</u></b>	<b><u>2025</u></b>	<b><u>2030</u></b>
Anne Arundel County	149,114	178,670	190,600	201,100	210,500	218,400	224,800	228,100
Baltimore City	276,484	257,996	256,600	266,400	271,800	272,000	272,900	273,400
Baltimore County	268,280	299,877	316,900	330,100	337,000	340,800	344,300	346,700
Carroll County	42,248	52,503	59,500	63,600	66,900	69,500	71,300	71,800
Harford County	63,193	79,667	87,500	96,100	103,200	109,200	113,800	117,200
Howard County	68,337	90,950	100,000	108,700	117,500	124,700	127,100	127,600
Baltimore Region	867,656	959,663	1,011,100	1,066,000	1,106,900	1,134,600	1,154,200	1,164,800

<b><u>ROUND 6-B EMPLOYMENT</u></b>								
<b><u>Jurisdiction</u></b>	<b><u>1995</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>	<b><u>2015</u></b>	<b><u>2020</u></b>	<b><u>2025</u></b>	<b><u>2030</u></b>
Anne Arundel County	258,200	297,000	317,100	334,700	357,100	379,600	401,500	423,300
Baltimore City	452,400	460,600	467,300	479,000	489,000	497,200	505,000	505,000
Baltimore County	409,600	452,500	469,100	493,300	502,300	506,200	509,000	511,800
Carroll County	57,400	68,300	76,300	84,300	86,800	88,300	89,300	90,300
Harford County	80,500	96,000	105,100	111,100	115,500	119,900	124,500	124,500
Howard County	123,600	160,000	180,000	200,000	215,000	230,000	245,000	260,000
Baltimore Region	1,381,700	1,534,400	1,614,900	1,702,400	1,765,700	1,821,200	1,874,300	1,914,900

*Note: Anne Arundel County data includes the City of Annapolis.*



## **APPENDIX E**

Excerpt: Executive Summary & Introduction,  
Baltimore Region Travel Demand Model for Base Year 2000  
*(Task Report 04-01)*



## **Excerpt: Executive Summary & Introduction, Baltimore Region Travel Demand Model for Base Year 2000, Task Report 04-01**

*This Appendix includes the Executive Summary and Introduction to Task Report 04-01. This text provides a general overview of the major enhancements to the regional travel demand model. To request the complete report in draft form, please contact Gene Bandy (BMC) at [gbandy@baltometro.org](mailto:gbandy@baltometro.org) or 410-732-9573.*

### **Executive Summary and Introduction**

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 -1 for a map of the Baltimore region and the model area.

This report documents the model development completed in summer 2003 to simulate person travel and ultimately traffic conditions for the year 2000. It supercedes the 1996 model completed in September 2001. Several enhancements to the model have been made as a result of continuous research and application of enhanced modeling techniques, many of which have been suggested to BMC staff:

- New Base Year of 2000
- 2000 Demographic Data
- 2000 Transportation Analysis Zone (TAZ) Structure
- Transportation Networks in GIS
- Improvements to Model Code Using TP+ Software
- New Truck and Commercial Vehicle Models
- Equilibrium Assignment Methodology
- Network Speed and Capacity Updates
- Drive Access to Transit Trips in Assignment
- BWI Special Generator Update

- Addition of Home-Based Other (HBO), Home-Based School (HBSch), and Work-Based Other (WBO) to Distribution Feedback Loop
- Barrier Penalty Revisions
- Mode Choice for I-X/X-I trips

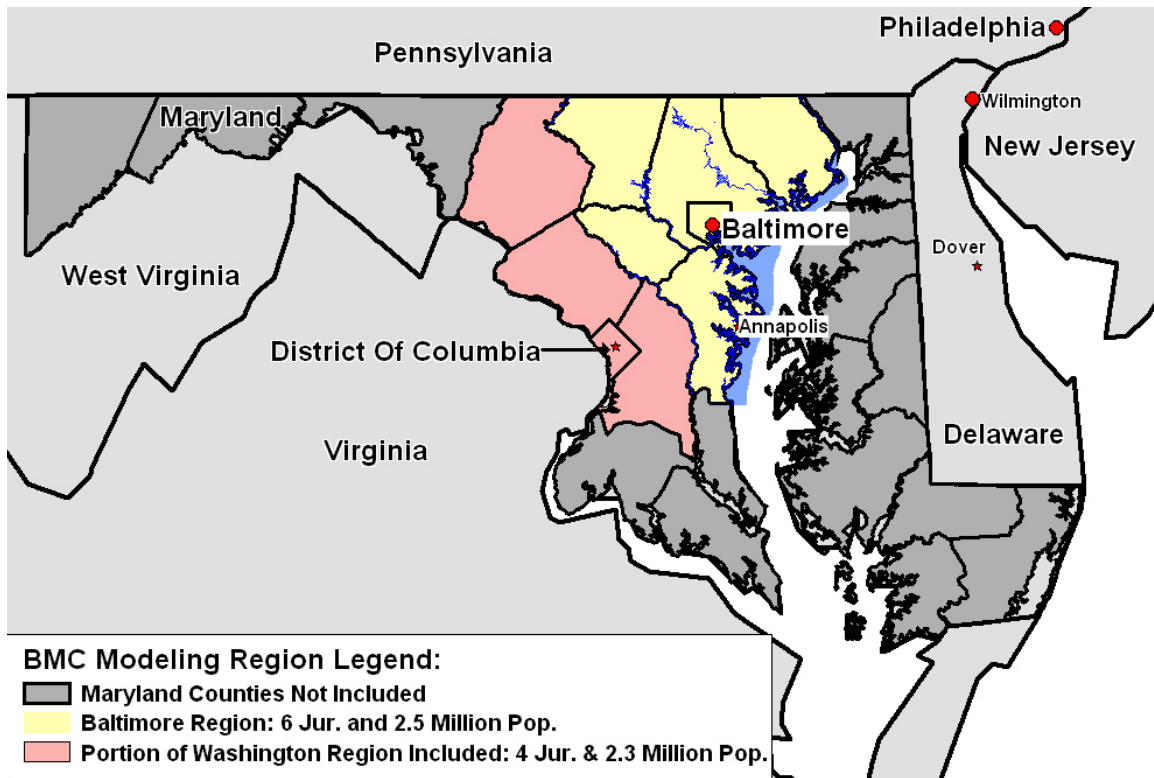
These are discussed in more detail in the next few pages.

A transportation model requires significant data inputs. Chapter III of this report describes, in general terms, the transportation analysis zone (TAZ) structure and input data used by the model.

A more detailed description of the model can be found in Chapter IV, along with details of the changes made for this model run.

The 2000 model base year results are documented in Chapter V.

### Exhibit -1 The Baltimore Region and Model Region



Several enhancements have been made to the 2000 model [henceforth referred to as TR00; TR for the new truck model and 00 for the model year (2000)].

- New Base Year of 2000

A new base year of 2000 was chosen because it is a Census year. Previously, 1996 had been the base year. The 2000 year will remain the base year for the next model update when additional data from the 2000 Census and 2001 Household Travel Survey will be available.

- 2000 Demographic Data

The demographic data used by the model (Round 6) was updated to reflect the 2000 Census. The demographic data projections based on the 2000 Census (Round 5-D and Round 6) showed that there was significantly more population in Baltimore City and other denser areas than had been expected in the previous round of demographic forecasts (Round 5-C). The 1996 model used Round 5-C demographic data based on projections from the 1990 Census.

- 2000 Transportation Analysis Zone (TAZ) Structure

BMC staff developed a new TAZ structure based on 2000 Census geography with 1,151 TAZs in the Baltimore region and 1,463 TAZs in the modeled region. (The 1998 TAZ structure used in the previous model had 1,014 TAZs in the Baltimore region and 1,326 in the modeled region.) Both structures include 270 Washington region TAZs and 42 external stations.

- Transportation Networks in GIS

The software used to run the model, TP+, has a built-in network editing environment known as VIPER. For the past 3 years, BMC modeling staff have worked to transfer the transportation network system from the VIPER environment into a customized program using Geographic Information System (GIS) technology. All highway network editing has been performed using MapInfo GIS since the spring of 2001. The spatial components of transit network editing (park and ride lots and rail stations) have been performed in MapInfo since the spring of 2003. The text component of the transit network editing system, which is still the bulk of the transit network, continues to be performed in VIPER or a text editor due to the difficulty in transferring it to GIS. The customized program in MapInfo is called the Master Network system. Using the Master Network has improved network accuracy by improving network checking, attribute calculation, and spatial representation.

- Improvements to Model Code

The model code contains all the commands necessary to run the BMC travel demand model in TP+. For this model update, version 3.0 of the TP+ software was used along with version 3.0.6 of the TRNBUILD transit module. The 1996 model used version 2.0.3 of TP+. The differences between TP+ version 3.0 and version 2.0.3 were small.

Many changes were made to make the model code more efficient. First, additional parameterization was added to the model code. Parameterization is a process that replaces variables set within the model code, also called the job stream, with variables set at the beginning of the run. These parameters can then be easily changed and, therefore, errors minimized by making all of them visible in one place. While several parameters had been in place for the prior validation, additional parameterization was performed for this effort.

Additionally, steps were taken to reduce the amount of time required for the model to run. The new 2000 TAZ structure has many unused zone numbers, which have been reserved for future use of the Metropolitan Washington Council of Government's (MWCOG) complete TAZ structure, for additional TAZs for local subarea analysis, and additional external stations. However, these unused zone numbers still require processing, which slows down the model run. As a result, two simple lines of code were inserted into each module to skip unused TAZ numbers (other than the transit pathbuilding modules that do not support this). At the beginning of processing, further calculations are skipped for those TAZs that are not used, and this has decreased processing time tremendously.

Lastly, upon recommendation of a BRTB subcommittee reviewing a critique of the Baltimore Region Travel Demand Model, bucket rounding was removed from the model process. Bucket rounding was used to provide conversion to whole numbers of trip tables while avoiding distortions caused by rounding errors that can occur when the more than 2 million active zonal interchanges are converted into integers. Fractional trips are now carried throughout the model chain and then rounded to the nearest whole trip after trip assignment. While the concept of fractional trips is difficult to comprehend, examination of interim model results reveals that their use provides a higher degree of precision in the modeling process.

- New Truck and Commercial Vehicle Model

In year 2002-2003, BMC retained a transportation consultant to develop a new set of truck and commercial vehicle models with three trip purposes: commercial vehicles, medium trucks, and heavy trucks. Commercial vehicles are 2-axle, 4-tire vehicles used for business purposes. Medium trucks are 2-axle, 6-tire trucks, and heavy trucks are vehicles with 3 or more axles. The models were developed using an innovative technique called *adaptable assignment*, which develops a model from classified count data.

- Equilibrium Assignment Methodology

The previous version of the model used the incremental capacity restraint traffic assignment methodology, first assigning through trips, then 10 increments of 10% each of the remaining trips. The equilibrium

assignment technique, used by many large MPOs, assigns traffic to the network by minimizing travel times for all trips. The equilibrium methodology was tested and incorporated into the 2000 model .

- Network Speed and Capacity Updates

Free flow speeds were updated using off-peak data collected in the field by the BMC during the period from 1998 to 2002. Using a Geographic Information System interface, each vehicle's time and position were plotted adjacent to model links representing the highway system that had been traversed. This yielded a data set with hundreds of data points from which new values of speed were statistically compared and extracted. Increases or decreases based on the revised data ranged from 1 to 5 miles per hour, depending on the type of roadway and density of the area. The road capacities used by the model were updated to reflect the 2000 *Highway Capacity Manual* (HCM), which is the most recent version. The 1996 model used capacities based on the 1994 HCM.

- Drive Access to Transit Trips in Assignment

Previously, drive access to transit trips (*i.e.*, trips from home to a park-and-ride lot) were not assigned to the highway network. A methodology was developed to determine which transit stations these trips utilized, and then assigns these trips from the production zone (origin or destination zone for non-home-based trips).

- BWI Special Generator Update

BWI Airport, located in Anne Arundel County, is a special trip generator because of its unique purpose. A special trip table has been used to reflect additional vehicle trips generated by the airport beyond those explained by the model. The BWI trip table used for the 1996 model was developed using BMC's 1995 BWI Airport Parking Survey data. With the changes to TAZ structure, the old BWI trip table was no longer suitable. Therefore, major updates to the BWI trip table were made using the new data sets from BMC's 1999 and 2001 BWI Airport Parking Surveys and Metropolitan Washington Council of Government's 1998 Airport Passenger Survey.

- Addition of Home-Based Other (HBO), Home-Based School (HBSch), and Work-Based Other (WBO) to Distribution Feedback Loop

The process of redistributing a trip purpose after the first assignment onto the transportation network that uses travel times from that assignment is called congestion feedback. In the 1996 Validation, only Home-Based Work (HBW) trips used congestion feedback. In response to a consultant recommendation, BMC staff conducted research to ascertain whether or not additional trip purposes should also use congested feedback. The results indicated that HBO, HBSch,

and WBO trips should also be included in the congested feedback process.

- Revised Barrier Penalties

Barrier penalties add time for travel between selected jurisdictions or areas to simulate the higher perceived travel costs associated with crossing geographical or political boundaries. Modifications were made in the Home-Based Work barrier penalties to increase travel between selected jurisdictions.

- Mode Choice for I-X/X-I trips

The mode choice model, developed in 2001, assumed that all internal to external (I-X) and external to internal (X-I) trips were single occupant autos; all the I-X and X-I person trips were converted to the same number of auto trips. This was in conflict with another part of the model which assumed a specific auto occupancy rate that would mean fewer vehicle trips than person trips. After mode choice, the I-X and X-I trips would be converted to vehicle trips by a FRATAR process meant to hold trips at external stations to a specific value. The change to the model was to factor the I-X and X-I trips to vehicle trips at the mode choice stage, but still run the FRATAR process to ensure that all externally-oriented trips be as close as possible to the fixed value at the external stations. The factors are defined in the model description found in the next chapter.

## **APPENDIX F**

24-Hour Conversion Factors to  
Create Period Trip Tables



## 24-Hour Conversion Factors to Create Period Trip Tables

	Midnight to 6:00 a.m.			6:00 a.m. to 10:00 a.m.			10:00 a.m. to 3:00 p.m.			3:00 p.m. to 7:00 p.m.			7:00 p.m. to Midnight			Total Day
	Percent of Daily	I to J	J to I	Percent of Daily	I to J	J to I	Percent of Daily	I to J	J to I	Percent of Daily	I to J	J to I	Percent of Daily	I to J	J to I	Percent of Daily
HBW	6.21	60	40	39.60	97	3	10.21	51	49	33.31	10	90	10.67	17	83	100
HBSH	1.26	56	44	10.75	79	21	32.62	40	60	35.46	32	68	19.91	29	71	100
HBO	2.52	60	40	20.61	82	18	19.79	52	48	33.86	44	56	23.22	29	71	100
HBSch	0.07	69	31	44.93	97	3	18.55	19	81	29.79	12	88	6.65	28	72	100
WBO	1.44	50	50	24.02	50	50	36.44	50	50	33.94	50	50	4.16	50	50	100
OBO	0.75	50	50	20.47	50	50	37.50	50	50	30.20	50	50	11.08	50	50	100
CV	4.50	50	50	25.10	50	50	28.90	50	50	29.40	50	50	12.10	50	50	100
MT	6.5	50	50	27.3	50	50	36	50	50	22.9	50	50	7.3	50	50	100
HT	13.3	50	50	22.5	50	50	32.6	50	50	18.3	50	50	13.3	50	50	100
BWI	4.88	50	50	19.86	50	50	25.7	50	50	27.52	50	50	22.04	50	50	100
XX	5.00	50	50	24.00	50	50	26.40	50	50	28.80	50	50	15.80	50	50	100



## **APPENDIX G**

Procedures for Determining Regional  
Transportation-Related Emissions



## PROCEDURES FOR DETERMINING REGIONAL TRANSPORTATION-RELATED EMISSIONS

The BMC has maintained a process for a number of years that meets the modeling requirements for a designated severe ozone nonattainment area. Since the revocation of the 1-hour ozone standard on June 15, 2005, the Baltimore region is no longer a severe nonattainment area for 1-hour ozone. It is now a moderate nonattainment area for the 8-hour ozone standard, a nonattainment area for PM<sub>2.5</sub>, and a maintenance area for CO. However, due to persistent air quality issues in the Baltimore region, the region still follows the same procedures. This appendix displays the requirements from final rules in *italics* followed by a brief statement in **bold** type of how the BMC staff has addressed or satisfied the rule.

*(1) By January 1, 1997, estimates of regional transportation-related emissions used to support conformity determinations must be made at a minimum using network-based travel models according to procedures and methods that are available and in practice and supported by current and available documentation. These procedures, methods, and practices are available from DOT and will be updated periodically. Agencies must discuss these modeling procedures and practices through the interagency consultation process, as required by §93.105(c)(1)(i). Network-based travel models must at a minimum satisfy the following requirements:*

**The BMC staff presently employs a 4-step travel forecasting model that is sensitive to changes in land use patterns, transportation infrastructure, and transportation policies. The MPO utilizes the Planning Directors Committee to increase communication between transportation and land use planners. The Planning Directors provide insight in coordinating a regional approach to developing future socioeconomic data estimates.**

*(i) Network-based travel models must be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and compared to historical trends and other factors, and the results must be documented;*

**The present travel model was validated to ground counts for the year 2000 using the Round 6 socioeconomic data. The BMC conducted a household survey to gather travel information, system characteristics, and socioeconomic variables during calendar year 1993. These data were used to update the generation and distribution components of the 4-step process. During FY 1997, BMC conducted an on-board transit survey. Using the two observed data sets and consultant services, a new logit mode choice model was developed. In 2001, the Baltimore region participated as an add-on to the National Household Transportation Survey (NHTS) sampling 3,100 weekday and 380 weekend household travel. This wealth of data will be used in continuing the enhancement of the travel model.**

- (ii) *Land use, population, employment, and other network-based travel model assumptions must be documented and based on the best available information;*

**Socioeconomic data and other model assumptions are documented in reports available from the BMC. Model assumptions are based on observed data collected in recent years in the Baltimore region and from other national data sets. Additional information about the truck model can be found in Task Reports prepared by the consultant.**

- (iii) *Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable;*

**BMC has traditionally met with representatives of local jurisdictions in the development of land use forecasts. Estimates of socioeconomic data are reviewed annually to adjust for changes in policies. BMC staff has also been investigating a formal land use model to assist in the development of future rounds of socioeconomic data. Transportation networks will be key inputs in the execution of the land use model.**

- (iv) *A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes;*

**The assignment of vehicle trips to the highway network is conducted using equilibrium. Vehicle use is projected for five time periods, creating peak and off-peak estimates of volume and speed. Model results are post processed using final assigned volumes and an adjusted Bureau of Public Roads (BPR) volume delay curve to estimate travel speed for each hour of the day. The adjustment to the BPR curve was recommended in the Travel Model Improvement Program, October, 1997 report *Travel Model Speed Estimation and Post Processing Methods for Air Quality Analysis*.**

- (v) *Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits; and*

**Evaluation of travel times used to distribute trips and assign trips revealed reasonable agreement between them. A comparison of travel times using both modes (highway and transit) is used to calculate the number of potential transit users.**

- (vi) *Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.*

**The BMC model considers changes in time and cost during distribution, mode split, and trip assignment. These variables are used to reflect changes in the attractiveness of destinations or choice of mode.**

- (2) *Reasonable methods in accordance with good practice must be used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the network-based travel model.*

**Delay is based on an adjusted BPR volume delay curve. Inputs to the equation are highway capacity and simulated volume. The BMC employs a cross-class capacity lookup table to determine capacity by facility and area type. As simulated volume approaches capacity, travel speed is reduced. Peak spreading is used when hourly volume exceeds 30% of capacity. The redistributed volume is used in the speed estimation.**

- (3) *Highway Performance Monitoring System (HPMS) estimates of vehicle miles traveled (VMT) shall be considered the primary measure of VMT within the portion of the nonattainment or maintenance area and for the functional classes of roadways included in HPMS, for urban areas which are sampled on a separate urban area basis. For areas with network-based travel models, a factor (or factors) may be developed to reconcile and calibrate the network-based travel model estimates of VMT in the base year of its validation to the HPMS estimates for the same period. These factors may then be applied to model estimates of future VMT. In this factoring process, consideration will be given to differences between HPMS and network-based travel models, such as differences in the facility coverage of the HPMS and the modeled network description. Locally developed count-based programs and other departures from these procedures are permitted subject to the interagency consultation procedures of §93.105(c)(1)(i).*

**Emission estimates for BRTP and 2006-2010 TIP are based on VMT projections from the travel model that have been adjusted on a functional and area (urban/rural) type within each jurisdictional basis using an HPMS adjustment factor; an estimate for local VMT, which is not estimated by the travel model; and a seasonal/monthly adjustment.**



## **APPENDIX H**

Methodology, Calculations, and  
ERS Tracking Table



## Methodology, Calculations, and Emission Reduction Strategies Tracking Table

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*This appendix includes several items related to the estimation of emissions reduced by various strategies that cannot be accounted for in the travel demand model, including:*

- ERS Tracking Table for Implemented ERSs (calculated using MAQONE)
- ERS Tracking Table for Programmed ERSs (calculated using MAQONE)
- Emission estimation calculations for CHART
- Description of strategies in the Plan, including the Regional Commuter Assistance Program, Home-based Telecommuting, New Park & Ride Spaces/Lots, and the Bicycle Element of the Plan

# Implemented Transportation Projects

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Anne Arundel County

Anne Arundel Co.

**Year**    **Project Name/Description**

1998 Forest Drive Enhancement

Add center turn lane, correct safety concerns, beautification, widen Forest Dr from Pal Park to Catrina Lane with provisions for a bikeway.

2000 Duvall Hwy Improvements

Provide left turn lane and construct sidewalks along both sides of the widened section (connect to high school )

2002 Odenton MARC Enhancement

-5      -47

Construct sidewalks, street trees and lighting and pedestrian plaza

-0.13

-4.88

-0.13

-1.82

-0.13

-1.4

2003 Andover Park Renovations

Renovations and paving of 1.1 mile trail

2003 West St. Improvement

Provide assistance to City of Annapolis for improvements

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2003	<u>East - West Blvd</u> Two-lane road, hiker/biker trail, and landscaping	-2	-5	-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
2005	<u>Chestnut Tree / Green Holly</u> This project is a Highway Safety Improvement to design and reconstruct the roadway at the intersection of Chestnut Tree and Greenholly Dr., construct sidewalks and relocate underground and above ground utilities to improve sight distance and vehicle circulation.								
2005	<u>Woods Road Bike Path (name change)</u> Provide a bike path from Chelsea Beach Community to the Lake Shore Park and a culvert beneath Woods Road.								
2005	<u>WB&amp;A - West County Trail - Phase I</u> Construct new 3.6 mile trail from the Odenton MARC Station to Patuxent Road. Provides Odenton area with direct link to Patuxent River and Annapolis-Odenton South Shore Trail.	-2	-5	-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
2005	<u>Ferndale Road Sidewalk</u> Install 5 foot wide sidewalk with curb and gutter along the north side of Ferndale Rd. from Hollins Ferry Rd. to Aviation Blvd.			-0.01	-0.49	-0.01	-0.19	-0.01	-0.13
2005	<u>Crestwood Sidewalk, Curb, Gutter</u> This project is for replacement of sidewalks, curb and gutter which no longer function due to deterioration or resurfacing of roads and are beyond repair in the Crestwood Community. This project also includes milling, patching, and resurfacing of the roads as determined by a preliminary engineering study.								

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2005 Idlewilde Road

Provide the connection of Idlewilde Rd. to Jumpers Hole Rd. Construct curb, gutter, and sidewalks on the South side and shoulder on the North side for parking.

2005 Provinces Sidewalk/ Root Guard

This project will remove trees or prevent root protrusion and replace damaged sidewalks that have been raised by shallow tree roots from trees planted in the area between the sidewalks and curbs.

**Baltimore City**

Baltimore City

**Year Project Name/Description**

1999 Gwynns Falls Trail - Phase 1

4.7 mile trail from Leakin Park to Edmondson Avenue

2000 Harris Creek

Create a model urban park with brick ped promenade/path (located at the end of the Anchorage Promenade portion of the Baltimore waterfront)

2001 Dolfield Commercial Area

Acquire deteriorating commercial property to redevelop the shopping center to accommodate expansion of existing businesses and create space for new enterprises adjacent to the Cold Spring Lane Transit Station

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2004 Market Street Improvements

Construct various street improvements and enhancements to the MTA Subway Station lot at Market Place

2004 Druid Lake Jogging Path

Modify Druid Park Drive to provide room for the completion of the walking/jogging path around Druid Lake

2004 Market Place - Public Improvements

Construct various street improvements and enhancements to the MTA Subway Station

2005 Main Street Program: Street/Streetscaping

Sidewalk repairs, street lighting, and street trees are scheduled for various locations in conjunction with the City's Main Street program. FY 2005 funds are for sidewalk improvements on Pennsylvania Ave. and to begin construction on Monument St.

2005 Eutaw Street Streetscape

Work is to include total rehabilitation of the street. new curbs, sidewalks, roadway sub-base repairs, roadway surface, lighting, etc. FY 05 funds are for construction.

2005 Gwynns Falls Trail Phase III

The design for the section of the Gwynns Falls Trail near the Maryland Science Center and the new Visitors Center in the Inner Harbor is to be completed.

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year							
			2010		2020		2030			
			VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2005 <u>Pedestrian Wayfinding Signage Program</u>										
<p>Pedestrian wayfinding signs are to be designed and installed in the Downtown and the Mt. Vernon Cultural District as part of the master plans for these areas. This is the prototype for a City-wide system.</p>										
2005 <u>Traffic Control System Study</u>										
<p>Evaluate traffic command and control system: design and implement new and more responsive system. Replace obsolete equipment that governs 900 traffic lights in the CBD.</p>										
2005 <u>War Memorial Plaza Renovation</u>										
<p>The renovation of the War Memorial Plaza is to include demolishing the sunken interior pavement and replacing it with a large lawn, perennial flower borders, decorative lights, benches and a new fountain. The entire park will also be ADA accessible.</p>										
2005 <u>Gwynn Falls Greenway</u>										
2005 <u>Gwynns Falls Trail - Phase II and III</u>		-13	-34	-0.1	-4.29	-0.1	-1.62	-0.1		-1.23
<p>5.5 miles. Develop a linear park and recreational trail along the Gwynns Falls, linking Leakin Park to Middle Branch Park and eventually Baltimore County and Patapsco State Park. Phase 3 will link Carroll and Middle Branch Parks to the Inner Harbor</p>										

Baltimore Co.

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Baltimore Co.

**Year Project Name/Description**

1999	<u>Church Lane - North</u>								
	Rehabilitate 5000' of roadway to increase vehicular and ped traffic service & safety (McDonogh Road to Old Court Rd)								
1999	<u>Dogwood Road</u>								
	Right of way, curbs, gutters, sidewalks (Rolling Run Drive to Belmont Ave. in association with HCFA site)								
1999	<u>Towson Business District</u>								
	Infrastructure projects adjacent to the commercial core (road improvements, streetscape, pedestrian amenities)								
2000	<u>Cromwell Bridge Road Corridor</u>								
	New structure over Gunpowder Falls and two lane road with sidewalk (Glenarm Road at Cub Hill and Cromwell Br)								
2000	<u>Winters Lane</u>								
	Right of way, curb, gutters, sidewalks (Frederick Road to Edmonson Ave)								
2001	<u>Halethorpe Roads</u>	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
	Repair roads, install curb and gutter, install sidewalks (upon request) on 4 avenues (phase 1 of improvements in Halethorpe community)								
2001	<u>Symington Ave</u>	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
	Install curbs, gutters, sidewalks								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2003	<u>Central Ave</u> Right of way, curbs, gutters, sidewalks	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
2003	<u>Michigan Avenue</u> Right of way, curb, gutters, sidewalks	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
2004	<u>Church Lane - South</u> Right of way, curb, gutters, sidewalks (Reisterstown Road to Greenwood Road)	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
2005	<u>North Point Enterprise Zone</u> Improve roadway, curbs, gutters, sidewalks in North Point Enterprise Zone	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
2005	<u>Alababama Avenue</u> Right of way, curbs, gutters, sidewalks	-5	-3	-0.01	-0.54	-0.01	-0.21	-0.01	-0.15

### Baltimore County

Baltimore Co.

**Year Project Name/Description**

2004 Paper Mill Road Bridge #502  
Reuse Paper Mill bridge (no longer used for traffic) over Loch Raven Reservoir to include a trail to the bridge from the NCR Hike and Bike trail, cleaning and painting of the bridge, adapting the bridge for pedestrian use with railings and walkways.

### Carroll County

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Carroll Co.

**Year Project Name/Description**

2004	<u>Freedom Park Trails</u>	0	-1	0	-0.11	0	-0.04	0	-0.03
	Construct a 6 foot wide macadam multi-use trail that will encompass the perimeter of the park. The trail will also connect to the existing Patapsco Valley Greenway Trail System along the Patapsco River. (p. 57)								

City of Annapolis

Annapolis

**Year Project Name/Description**

2001	<u>A-STEP Map/Brochure</u>								
	Bus, hike, and bike guidelines. First map of public open space and alternative transportation facilities.								
2002	<u>Improved bus stop amenities</u>	-5	-44	-0.13	-4.53	-0.12	-1.7	-0.12	-1.31
	Installation of improved bus stop amenities for shelters and bus stops, including maps.								
2002	<u>Bike Racks on Buses</u>								
	Install bike racks on City's buses to encourage cyclists to take the bus								

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year						
		VT	VMT	2010		2020		2030		
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx	
2004	<u>Popular Avenue Trail Extensions</u>									
	Install a trail from the Parole Areas and the Annapolis Mall to the historic district. Extend from western end of Windel Ave to Admiral Drive.									
2004	<u>Truxtun Park Path</u>									
	Construction of Truxtun Park waterside path as an element of the Citywide path network.									
2004	<u>West Street Revitalization</u>									
	Total reconstruction of West Street from Church Circle to Amos Garrett Blvd, including urban design streetscape on West Street and West Washington Street.									
2004	<u>Bus Shelters</u>	-13	-110	-0.31	-11.33	-0.31	-4.24	-0.31	-3.29	
	Build bus shelters for bus riders with the goal of increasing ridership, may include the purchase of trash receptacles and benches									
2005	<u>Forest Drive Sidewalks</u>									
	Provide and/or improve sidewalks along Forest Drive.									
2005	<u>Annapolis Transit ITS Implementation</u>									
	Implement ITS using global positioning system with 2-way communication, on board displays/enunciators and real time on-site readouts									
2005	<u>Intelligent Transportation Systems</u>									
	Install new technologies to enhance transit, such as automated vehicle location, time of arrival displays, and automated data collection.									

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2005	<u>Recreational Trail at NAAA Stadium</u>	-2	-5	-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
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Construct a paved recreational trail around the perimeter of the Navy stadium to improve pedestrian access around the stadium and connect to adjacent trails in the City of Annapolis.

2005	<u>Edgewood Road Improvements</u>								
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Reconstruction of about 6,600 feet of Edgewood Road, including sidewalks and bike paths.

2005	<u>Church Circle Sidewalks</u>								
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Install new granite curb, brick sidewalks and bollards to prevent vehicle loading on the new sidewalk.

Clean Air and Transportation, Inc.

Regionwide

**Year**    **Project Name/Description**

2001	<u>Commuter Choice Public Education and Marketing Campaign</u>								
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Market research and marketing campaign to provide public education and commuter choice programs

Harford County

Harford Co.

**Year**    **Project Name/Description**

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2002	<u>Ma &amp; Pa Heritage Trail</u>								
	Phase II Blakes Venture Park to Friends Park 1.8 miles								
2002	<u>Singer Road</u>								
	Project to improve 1,850 LF of Singer Rd. between MD 924 and MD 24 to include storm drains and sidewalks.								
2004	<u>Abingdon Rd./Rte. 924/Box Hill S. Pkwy</u>								
	Abingdon Rd. between existing MD Rte.924 and Box Hill South Pkwy. is to be improved to adequately handle existing and projected traffic loads. 4,400 LF of closed section road is to be built. Sidewalks will also be constructed to improve pedestrian access from the communities of Box Hill to commercial sites along MD Rte.924.								
2004	<u>Promenade Restoration</u>								
	Tropical Storm Isabel caused extensive damage to the Havre de Grace Promenade and the adjacent embankment. For FY 04, this project includes the removal of debris from the water, stabilization of the hillside, and engineering for the repair of the Promenade. Reconstruction of the walkway itself will be done in FY 05.								
2005	<u>Whiteford/Cardiff Road &amp; Storm Drain</u>	-2	-1	0	-0.16	0	-0.06	0	-0.05
	Project to rehabilitate Old Pylesville Rd. between MD 136 and the Pennsylvania state line to include roadway, storm drain and sidewalk improvements.								
2005	<u>Red Pump Road/ MD 24</u>	-2	-1	0	-0.23	0	-0.09	0	-0.06
	Project to improve 3,325 LF of Red Pump Rd. between MD 24 and Vale Rd. to include storm drains and sidewalks.								

**Implementing Agency**

**Jurisdiction**

**Vehicles**  
VT VMT

**Vehicle Emissions kg/year**

2010		2020		2030	
Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Howard County

Howard Co.

**Year Project Name/Description**

1999 ColumBus Replacement

A project to purchase new transit vehicles as replacements or new vehicles for the ColumBus fleet- Purchase of 1 new bus as a replacement to an existing bus.

1999 Construction of a connecting bridge at Howard Community College

Construction of a connecting bridge {assume sidewalks included} to connect campus to Hickory Ridge Building at Howard Community College

1999 Guilford Road Sidewalks

A project for the reconstruction of 2,000 LF of narrow and non-handicapped compliant sidewalks along Guilford Rd. from Broken Land Pkway to Kings Contrivance Village Center.

1999 Linkages in the County's pedestrian/bike trail system

A project for construction of improvements for key linkages in the County's pedestrian/bike trail system. This project will improve the overall network of trails and pathways in the County by allowing more effective use of bicycle and walking as visible

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2000	<u>Sidewalk pathway along Broken Land Pkwy</u> Construction of 5,000 LF of sidewalk/pathway along Broken Land Pkwy from Stevens Forest Rd. to Cradlerock Way South.								
2000	<u>ColumBus Replacement</u> A project to purchase 2 new 30 ft. transit coaches and a smaller bus or van as replacements or new vehicles for the ColumBus fleet.	0	0	0	-184.6	0	-184.6	0	0
2002	<u>Sidewalks/pathways for School Children</u> A project to provide a safe walking route for school children. Sidewalk projects awaiting requests include: Font Hill Rd.; Columbia Rd.; Brittany Lane; Worthington Way. Project replaced by K-5035	-2	-1						
2002	<u>Bus Purchases</u> Replace and acquire wheelchair accessible buses and vehicles, bus stop shelters and signage, fixed-route preventative maintenance program for the entire fleet and equipment for technologically enhanced customer service phone system								
2003	<u>North Laurel sidewalk construction</u> Sidewalk construction requested by the public in North Laurel to provide sidewalks along Madison Ave.; Baltimore Ave.; and Decatur Rd.								
2003	<u>Broken Land Pkwy Pedestrian Facilities</u> Project to provide enhanced pedestrian facilities, both at grade and grade separated, along the Broken Land Pkwy.								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2003	<u>Park &amp; Ride at MD 32/MD 108</u> Funds for land acquisition for Park & ride MD 32/MD 108 is included in this project. New roadway construction in Howard County.- Sharing costs with SHA	-84	-1395	-3.97	-137.03	-3.92	-51.21	-3.91	-40.07
2003	<u>Howard County Pathway System</u> A project to develop a 30-mile spinal pathway system linking Alpha Ridge Park, David Force Park, Centennial Park, Lake Elkhorn, King's Contrivance, and follow Little Patuxent River to Savage Park.	-197	-516	-1.47	-62.13	-1.45	-23.31	-1.45	-17.7
2005	<u>Broken Land Pkwy IVHS Corridor</u> Project to construct a traffic responsive signal system from MD 108 along Harpers Farm Rd. and Twin Rivers Rd. tying into the existing signal system along Broken Land Pkwy., continuing to Guilford Rd. to Old Columbia Rd.								
2005	<u>Normandy Lane and US 40 Park-n-Ride lot</u> 50 new spaces	-21	-87	-0.25	-9.7	-0.24	-3.64	-0.24	-2.8

MDOT

Anne Arundel Co.

**Year Project Name/Description**

1997	<u>Nursery Road Park-n-Ride lot</u> 104 new spaces
1998	<u>Signal Systemization - MD 450</u> King George Street/MD 436 to USNA Gate 8

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
1999	<u>Signal Systemization - MD 2</u> Jones Station Road to Earleigh Heights Road								
2001	<u>Signal Systemization - MD 173</u> Riviera Drive to Edwin Raynor Blvd								
2001	<u>Signal Systemization - MD 178</u> MD 450 to Bestgate Road								
2001	<u>Signal Systemization - MD 450</u> MD 2 to MD 178								
2001	<u>Electronic Toll Collection - US 50/301 Bay Bridge</u>	0	0	0	-1.53	0	-0.66	0	-0.55
2002	<u>MARC BWI Rail Station Parking Garage</u> Add 1790 spaces	803	-17824	-50.74	-1570.0	-50.11	-585.16	-49.98	-462.93
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers								
2003	<u>Odenton Road Ped/Bike Enhancement</u> .94 mile trail from Sappington Station Road to Odenton Marc Station	-3	-8	-0.02	-0.91	-0.02	-0.34	-0.02	-0.26
2004	<u>WB&amp;A Trail - West County Trail</u> 2.7 mile trail from Odenton to Strawberry Lake Way	-8	-21	-0.06	-2.48	-0.06	-0.93	-0.06	-0.7
2004	<u>Signal Systemization - MD 2</u> MD 450 to MD 665								

**Implementing Agency**

	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
		VT	VMT	2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2005	<u>MD 295 at MD 175 Park-n-Ride lot</u> add 40 new spaces	-17	-92	-0.26	-9.58	-0.26	-3.58	-0.26	-2.77
	Baltimore City								
<b>Year</b>	<b>Project Name/Description</b>								
1997	<u>Penn Station Light Rail Extension</u> Intercity rail								
1997	<u>Falls Road Park-n-Ride lot</u> 104 new spaces								
1997	<u>Downtown Transit Store</u> Transit sales and information location								
1998	<u>Mount Washington Light Rail Station Access</u> Develop pedestrian connection to Mill development								
1998	<u>Reisterstown Plaza Metro Station Improvement</u> Daycare Center - 100 spaces								
1999	<u>Electronic Toll Collection - I-695 Key Bridge</u>	0	0	0	-2.77	0	-1.15	0	-0.98
1999	<u>Jones-Falls Trail</u>								
1999	<u>Electronic Toll Collection - I-95 Fort McHenry Tunnel</u>								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
1999	<u>Electronic Toll Collection - I-895 Baltimore Harbor Tunnel</u>	0	0	0	-17.83	0	-6.71	0	-5.54
2002	<u>Greyhound Terminal</u> Facility designed to function as intermodal center with access to local and intercity bus service, and Amtrak, MARC, and Light Rail trains.								
2002	<u>Howard Street Parking Garage</u> Construct a parking garage in support of a \$30 million joint development project at the Cultural Center Light Rail								
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers								
2003	<u>Charles Street Improvements</u> Construct sidewalk improvements with bus stop shelters and transit kiosk, lighting at the northbound stop Charles/Fayette Street bus stop and the St. Paul/Fayette Street southbound bus stop	-64	-523	-1.49	-55.32	-1.47	-20.78	-1.47	-16.19
2003	<u>Belair-Edison Community Association</u> Install new bus shelter, paint CSX railroad bridge and make sidewalk improvements to the bus shelter area.	-27	-218	-0.62	-23.05	-0.61	-8.66	-0.61	-6.75
2005	<u>Bus Engine Upgrade</u> Overhaul 150 engines per year								

**Implementing Agency**

**Jurisdiction**

**Vehicles**  
VT VMT

**Vehicle Emissions kg/year**

**2010**      **2020**      **2030**  
**Direct PM2.5**   **NOx**   **Direct PM2.5**   **NOx**   **Direct PM2.5**   **NOx**

2005 Bus Transit Annunciation System

Retrofit 250 (+16) buses with equipment to automatically announce stops, public service, and other messages using GPS technology. In addition, an interior LED sign is provided to aid the hearing impaired.

Baltimore Co.

**Year**    **Project Name/Description**

1998 Signal Systemization - US 40

Middle River Road to Days Cove Road

1998 Lutherville Park-n-Ride lot

120 new spaces

1998 Signal Systemization - MD 542

I-695 to Taylor Avenue

1998 Signal Systemization - MD 166

Bloomsbury Avenue to MD 372

1999 Retrofit sidewalk - US 40

Provide 2000 linear feet of sidewalk from Nuwood Rd to Double T Diner in Catonsville

1999 Retrofit Sidewalk - MD 140

5500 linear feet of sidewalk; High Falcon Rd. to Franklin Blvd.

2000 Retrofit Sidewalk - MD 122 Security Blvd.

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2000	<u>Retrofit Sidewalk - MD 140 Reisterstown Rd</u> Provide sidewalk on eastside only from Owings Mills Blvd to Enchanted Hills Rd. Total length of new sidewalk is 1,500 linear feet								
2001	<u>Catonsville Public Library Access</u> Construct a sidewalk between the public library and the bus stop in conjunction with facility expansion of the library	-1	-1	-0.01	-0.55	-0.01	-0.21	-0.01	-0.15
2001	<u>Signal Systemization - MD 122</u> I-695 to Rolling Road								
2002	<u>Owings Mills/Randallstown Shuttle</u> Neighborhood shuttle in the Owings Mills/Randallstown area of Baltimore County								
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers								
2004	<u>Signal Systemization - MD 122</u> I-695 to Social Security entrance								
2004	<u>Signal Systemization - MD 150</u> Stemmers Run Road to Kingston Rd								
2005	<u>Halethorpe MARC Station Parking Expansion</u> Add new spaces up to 450 + total; may include new shelters, lighting, and streetscaping	196	-3384	-9.63	-297	-9.51	-110.65	-9.49	-87.68

**Implementing Agency**

	Jurisdiction	Vehicles		Vehicle Emissions kg/year						
		VT	VMT	2010		2020		2030		
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx	
2005	<u>Signal Systemization - MD 542</u> Taylor Avenue to Loch Hill Rd  Carroll Co.									
<b>Year</b>	<b>Project Name/Description</b>									
1998	<u>Signal Systemization - MD 140</u> MD 97 to Sullivan Road									
1998	<u>Signal Systemization - MD 30</u> Northwoods Trail to MD 482									
1999	<u>Roundabout</u> MD 194 at Frederick									
1999	<u>Signal Systemization - MD 26</u> Johnsville Road to Monroe Avenue									
2000	<u>Signal Systemization - MD 30</u> York Street to MD 27									
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers									
2002	<u>Wakefield Valley Community Trail</u> .8 mile trail from Long Valley Drive to Takoma Farm Road	-3	-7	-0.02	-0.82	-0.02	-0.31	-0.02	-0.23	

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Harford Co.

**Year Project Name/Description**

- 1997 Signal Systemization - MD 24  
MD 924 to US 1 Business
- 1998 Signal Systemization - US 40  
MD 755 to MD 24
- 1998 Signal Systemization - US 1 Business  
Atwood Road to Tollgate Road
- 1999 Retrofit sidewalk - MD 462  
Hillcrest Dr. to Windemere Rd. - 1,920 linear feet
- 1999 Retrofit sidewalk - MD 924  
Homestead St. to Heighe St., 500 linear feet
- 1999 US 40 at MD 152 Park-n-Ride lot  
146 new spaces
- 1999 MD 22 at Bynum Run Park Park-n-Ride lot  
60 added spaces
- 1999 Ma & Pa Heritage Trail - Phase I  
Rail-to-Trail-Conversion
- 1999 Retrofit Sidewalk - MD 22  
Barnes Street to Maitland Street - 270 linear ft.

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
		VT	VMT	2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2000	<u>Signal Systemization - MD 24</u> Tolgate Road to MD 755								
2000	<u>Signal Systemization - US 40</u> Old Post Road to Ostego Street/MD 155								
2000	<u>I-95 at MD 152 Park-n-Ride lot</u> add 40 spaces								
2000	<u>Retrofit Sidewalk - US 1</u> Tollgate Rd to MD 24, 1000 linear ft.								
2001	<u>I-95 at MD 543 Park-n-ride lot</u> 128 new spaces	-51	-277	-0.79	-28.7	-0.78	-10.74	-0.78	-8.31
2001	<u>Local Bus Replacement</u> Purchase 4 new vehicles	0	0	0	-704.6	0	-704.6	0	0
2002	<u>US 1 at MD 23 Park-n-Ride lot</u> add 60 new spaces	-24	-130	-0.37	-13.45	-0.37	-5.04	-0.36	-3.9
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers								
2004	<u>Signal Systemization MD 24</u> MD 23 to Red Pump Road								

Howard Co.

**Year**    **Project Name/Description**

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
1997	<u>MD 32 at MD 108 Park-n-Ride lot</u> 200 new spaces								
1998	<u>Signal Systemization - MD 175</u> MD 108 to Pocomoke Avenue								
2000	<u>Local Bus Replacement</u> Purchase 1 new vehicle; rehab 6 vehicles								
2000	<u>Howard County Shuttle Service</u> Shuttle service from MARC to BWI employers	0	-3	-0.01	-0.36	-0.01	-0.14	-0.01	-0.11
2001	<u>Signal Systemization - US 1</u> Amberton Drive to Business Parkway								
2002	<u>Howard County Spinal Pathway - Phase III B</u> Construct a bicycle/pedestrian trail from Lake Elkhorn to Savage Park.	-2	-4	-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
2002	<u>Baltimore Region Rideshare Program - 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers								
2004	<u>Bus Shelter Program</u> Expand bus shelter program	-1	-9	-0.03	-0.93	-0.03	-0.35	-0.03	-0.27
2005	<u>Centennial Access Pathway</u> .5 mile trail from Old Annapolis Road to Centennial Road								

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Regionwide

**Year**    **Project Name/Description**

1997 ENDZONE Partners Program - 1997

Public/private partnership working to improve air quality by motivating individuals to take voluntary actions that reduce emissions.

1997 CHART - 1997

Focuses on non-recurring congestion, includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems, and a rapid response team.

1997 Baltimore Region Rideshare Program - 1997

Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers

1998 ENDZONE Partners Program - 1998

Public/private partnership working to improve air quality by motivating individuals to take voluntary actions that reduce emissions.

1998 Baltimore Region Rideshare Program - 1998

Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers

**Implementing Agency**

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year							
				2010		2020		2030			
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx		
VT	VMT										
1998	<u>CHART - 1998</u>										
	Focuses on non-recurring congestion, includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems, and a rapid response team.										
1999	<u>ENDZONE Partners Program - 1999</u>										
	Public/private partnership working to improve air quality by motivating individuals to take voluntary actions that reduce emissions.										
1999	<u>CHART - 1999</u>										
	Focuses on non-recurring congestion, includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems, and a rapid response team.										
1999	<u>Baltimore Region Rideshare Program - 1999</u>										
	Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers										
2000	<u>On-line Transit Store</u>										
	Web site that provide a variety of transit passes, to purchase tickets and provides transit information										
2000	<u>ENDZONE Partners Program - 2000</u>										
	Public/private partnership working to improve air quality by motivating individuals to take voluntary actions that reduce emissions.										
2000	<u>Bus Replacements</u>	0	0	0	-13871	0	-11326	0	0		
	Purchase 67 new buses										

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year							
				2010		2020		2030			
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx		
2000	<u>CHART - 2000</u>										
		Focuses on non-recurring congestion, includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems, and a rapid response team.									
2000	<u>Baltimore Region Rideshare Program - 2000</u>										
		Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers									
2001	<u>MARC New Bi-level Coach Purchase</u>										
		Purchase and use 50 bi-level coaches									
2001	<u>CHART - 2001</u>										
		Focuses on non-recurring congestion includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems, and a rapid response team.									
2001	<u>Baltimore Region Rideshare Program - 2001</u>										
		Provides funding support to local rideshare coordinators to strengthen ridematching and ridesharing coordination services to both commuters and employers									
2001	<u>Light Rail Vehicle Purchase</u>										
		Purchase 18 vehicles									
2002	<u>Chart 2002</u>										
		Focuses on non-recurring congestion includes traffic patrols, video traffic management, variable message signs, permanent congestion monitoring systems and rapid response team.									

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2003	<u>Baltimore Region Rideshare 2003</u> Provides funding support to local rideshare coordinators to strengthen ridematching coordination services to both commuters and employers. Grants provided for rideshare in AA Co., Balt City, Balt Co., Carroll Co., Harford Co., and Howard Co.								
2003	<u>Multi-modal Traveler Information System</u> Collect traffic, transit, and tourism data, consolidate it, and disseminate information to travelers								
2004	<u>LTR Cromwell Maintenance and Layover Facility</u> Staging and management of Light Rail vehicles								
2005	<u>Bus Replacements</u> Purchase 125 buses in Contract Year - 2	0	0	0	-50159	0	-57567	0	0
2005	<u>Bus Replacements</u> Purchase 107 buses in Contract Year - 3 94 - 40ft. Low-floor diesel buses 3 - 30ft. Low-floor diesel buses 10 - 40ft. Hybrid electric buses			0	-42133	0	-48357	0	0
2005	<u>Clean Fuel Vehicle Program</u> Funding incentives for alternative fuel vehicle deployment in taxi, limo, bus fleets	0	0	0	71.21	0	94.69	0	94.69
2005	<u>Bus EPA Engine Upgrades</u> Perform engine overhaul/replacement on 318 MTA buses that includes addition or upgrade of catalytic converters and EPA-approved engines and rebuild kits required to meet the 0.19 bhp-hr emission regulations.								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2005 Congestion Outreach

To be determined

2005 Bus Replacements

Purchase 100 buses in Contract Year - 1

0	0	0	-69204	0	-39564	0	0
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Private - American Lung Association

Regionwide

**Year** **Project Name/Description**

2001 Clean Commuter Club

Promote the use of transit through education, outreach, and incentives (discount a certain retailers).

State Of MD

Regionwide

**Year** **Project Name/Description**

2003 Advanced Technology Vehicles

State of MD CNG Fleet

0	0	0	129.35	0	162.44	0	162.44
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# Programmed Transportation Projects

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Anne Arundel County

Anne Arundel Co.

*Year Project Name/Description*

2006	<u>South Shore Trail</u>			-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
	Acquire property, design and construct a trail (link with Annapolis Pathway System), between Annapolis and Odenton on WB&A								
2006	<u>Odenton MARC Enhancement Phase II</u>								
	Provide a direct sidewalk connection between Odenton Rd. and the Odenton Marc Train Parking Area and a sidewalk extension between Morgan Rd. and MD 170.								
2007	<u>Odenton Rd Sidewalk</u>								
	Pedestrian improvements to Odenton road, recommended in the town plan (includes connection to Marc station)								
2007	<u>Cape St. Claire Rd. Wide</u>			-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
	Design and construct widening of road between Woodland Circle and Hilltop Dr., and provide sidewalks								

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year							
			2010		2020		2030			
			VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2007	<u>Freetown Rd. Sidewalk</u>									
	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.									
2007	<u>Pasadena Road Improvements</u>									
	Based on input from the Citizen's Advisory Committee, funds are requested to address impacts of East-West Boulevard traffic on Pasadena Road. This project will include sidewalks on both sides of the road, two median islands with associated road widening, a raised intersection at Penny Lane, and the relocation of the intersection at Spruce Lane to improve sight distance.									
2007	<u>St. Margaret &amp; Browns Woods Int</u>									
	This project is to study the intersection of MD 179 and Browns Woods Rd. to eliminate the severely skewed intersection angle and to provide sidewalks for pedestrian safety.									
2007	<u>Downs Park Renov</u>									
	This project will provide a number of renovation projects within Downs Park, including repaving of roadways and trails.									
2008	<u>Broadneck Peninsula Trail</u>				-0.01	-0.53	-0.01	-0.2	-0.01	-0.15
	Develop multi-use trail to connect Bay Bridge and Sandy Point State Park with B&A Trail									

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year****2010****2020****2030****Direct PM2.5 NOx****Direct PM2.5 NOx****Direct PM2.5 NOx**

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2009 Odenton Town Center Blvd.

Creation of a roadway and sidewalk from MD 175 through the MD 32 underpass to Town Center Blvd in Seven Oaks.

2009 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.

**Baltimore City**

Baltimore City

**Year Project Name/Description**

2006 Traffic Management Center

Design/build contract to upgrade the existing Traffic Management Center.

2006 Museum Walk Streetscaping Program

A unified streetscape treatment that will guide tourists to the new African-American Museum is to be installed in the vicinity of Pratt and President Streets. FY 2005 funds are for design and construction.

2006 Pleasant Street Streetscape

Resurfacing, sidewalk reconstruction and streetscape improvements are scheduled for Pleasant St. from Charles St. to St. Paul St. as part of the downtown Streetscape Program.

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year****2010****2020****2030****Direct PM2.5****NOx****Direct PM2.5****NOx****Direct PM2.5****NOx**

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2006 Fayette Street Streetscape

Work is to include total rehabilitation of the street, new curbs, sidewalks, roadway sub-base repairs, roadway surface, etc. FY 2004 funds are for construction.

2006 Charles Street Streetscape Improvements

From Madison St. to North Ave. -- Street resurfacing, new sidewalks with streetscape amenities to include brick and concrete pavers, tree grates, benches, newspaper corrals, and sidewalk ramps.

2006 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.

2006 Traffic Signal System Integration

Funds are needed to continue the Traffic Integration Project which was issued a notice to proceed in July, 2003.

2006 Druid Hill Park: Pedestrian Entrance Improvements

Major pedestrian entrances in Druid Hill Park are to be renovated to improve neighborhood access to the park and the Jones Falls Greenway. Improvements will include new walks, new steps, ADA ramps, park lighting and park entrance signs.

2006 Govans Area Streetscape Improvements

Streetscape and sidewalk improvements are scheduled for 5500-5700 York Rd. to Northern Parkway Phase II is from Cording to Northern Parkway including sidewalk construction, curb and sidewalk repairs, street lighting, trees and trash receptacles.

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year****2010**      **2020**      **2030**  
**Direct PM2.5** **NOx**    **Direct PM2.5** **NOx**    **Direct PM2.5** **NOx**

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2006 North Baltimore Collegetown Bike Routes

Designated bike routes will connect colleges and universities, primarily located in North Baltimore to each other and to the Jones Falls Trail, light rail stations, and neighborhood centers. The bike routes will be nearly evenly divided between separate striped bike lanes on existing roadways and "share the road" bicycle friendly streets marked with signage.

2006 Star Spangled Heritage Trail- Phase II

Complete design and installation of Phase II of the Star Spangled Heritage Trail, a system of interpretive kiosk signs, site signs, and sidewalk markers, integrated with the Downtown Pedestrian Wayfinding System, from Monument Square to Penn Station.

2006 W. Baltimore Street Streetscape

Baltimore St. between Charles and Howard streets require pedestrian level lighting, sidewalk base repairs. Some street resurfacing is required from Charles to Greene to complete the "connection" to the Westside Initiative.

2006 Center Plaza Improvements

Center Plaza is to be redesigned and renovated to correct its unsafe and deteriorated surface condition.

2006 Calvert Street Streetscape

Calvert St. from Fayette to Baltimore St. needs pedestrian level lighting, sidewalk repairs and street resurfacing to complete the "connection" between Municipal Center and streetscape improvements completed in the area.

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year****2010****2020****2030****Direct PM2.5 NOx****Direct PM2.5 NOx****Direct PM2.5 NOx**

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2007 Harford Road Modifications and Streetscape Enhancements

Various roadway modifications including traffic calming measures, landscaping, and other streetscape enhancements are to be implemented on Harford Rd. between Argonne Dr. and Bayonne St. FY 05 funds are for construction.

2007 Central Avenue Reconstruction

Total reconstruction of the street between Monument and Lancaster Streets , including new curbs, sidewalks, roadway subbase, roadway surface, utility adjustments, lighting, signage, and lane markings

2007 Signal Timing Optimization Citywide

Funds are to be for a program to analyze existing and develop new traffic signal timing plans for each of the 1,300 signalized intersections in Baltimore.

2007 Druid Hill Park: Jones Falls Greenway Extension

The pedestrian/bicycle path system in Druid Hill Park will be renovated to extend the Jones Falls Greenway through Druid Hill Park. The project is also to include resurfacing existing walks and making new connections for safe crossings at park roads.

2007 West Side Corridor Transportation Improvements

The Westside Intermodal Corridor Study was conducted to identify opportunities in a corridor between Frederick Ave. and Liberty Heights Ave. The study recommends a trail extension and an intersection improvement. FY2005 funds are for construction.

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx

2007 West Side Corridor Study

Reconfigure Franklinton Road Corridor; create hiker/biker trail tie into Gwynn Falls Greenway

2007 Mt. Vernon Cultural District Streetscape Improvements

Street and sidewalk improvements are to be implemented in the Mt. Vernon Cultural District as part of District's Plan to stabilize and enhance the commercial, office, and residential environment of the area. FY 05 funds will construct Mt. Vernon Place.

2007 Charles Street Reconstruction

Total reconstruction of the street between 25th Street and University Parkway , including new curbs, sidewalks, roadway subbase, roadway surface, utility adjustments, lighting, signage, and lane markings.

2008 St. Paul Place Streetscape Phase II

Streetscape improvements are scheduled for the west side of St. Paul St. (Upper St. Paul Place) from Saratoga St. to Centre St. This is a continuation of the Downtown Streetscape program.

2008 Gateways: Preston Gardens Walkway & Stair Restoration

Renovation of Preston Gardens is to include replacement of sidewalks and the restoration of the historic stone stairways in the St. Paul median.

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year****2010****2020****2030****Direct PM2.5 NOx****Direct PM2.5 NOx****Direct PM2.5 NOx**

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2008 Gateways: Mt. Vernon Park Master Plan Implementation - East Panel

Phase II of implementation of the Mount Vernon Master Plan is to include restoration of the walks and gardens of the east square. The sidewalks are to be replaced and planting beds protected from pedestrians. The layout will be adjusted to meet ADA codes.

2008 Lombard St./Light St. Streetscapes

Pedestrian lighting and sidewalk improvements are needed for both sides of Lombard St. between Market Place and Howard as well as the resurfacing of Light St. between Lombard and Redwood with sidewalk reconstruction on west side of the block.

2008 Orleans Street Streetscape

Work is to include total rehabilitation of the street, new curbs, sidewalks, roadway sub-base repairs, roadway surface, lighting, etc.

2008 Inner Harbor Promenade

Install promenade (for particular properties); obtain easements; complete promenade

2008 Saratoga Street Streetscape

Resurfacing and streetscape improvements are scheduled for Saratoga St. to Eutaw St. to St. Paul St. as part of the Downtown Streetscape Program. Elements include new poured sidewalks and curbs, pedestrian lighting, landscaping and furniture.

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx

2008 Dundalk Transportation Study

Evaluate the transportation needs of the heavy industries located in the extreme southeastern sector of the City. Develop truck routing options which meet the needs of the businesses while minimizing the impact on residential corridors.

2008 Union Wharf

This project is for the construction of water front structures at Union Wharf around 760 feet in length and a pedestrian bridge across the waterway at the east end of Thames St.

2008 East Baltimore Redevelopment Area Street Improvements

Various street improvements including: reconstruction, resurfacing, realignment, new streets, new sidewalks, street trees, landscaping, traffic calming, etc.

Baltimore Co.

Baltimore Co.

**Year**    **Project Name/Description**

2006 Regional Park Development

Development of indoor and outdoor regional park facilities throughout the county. Amenities include athletic fields, comfort stations, trails, etc.

2006 Park & Recreation Center Accessibility

New construction and/or capital renovation of recreation facilities including comfort stations, pavillions, picnic and seating areas, boating areas, parking facilities and pathways in accordance with ADA.

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2006 Dundalk Streetscape

Dundalk Ave. provides identifying character to the communities which it serves. This project will enhance and improve the image of Dundalk.

2006 Nunnery Lane

Rehabilitation of existing roadway which includes the reconstruction of curb, gutter, and sidewalk.

2006 Greenways/Stream Valleys/Trails Dvlp.

Acquisition and development of stream valley parks and greenways throughout the county including development of recreational trails.

2006 Recreation Facility Renovations

Capital improvements and/or capital renovations to existing parks and facilities including comfort stations, plantings, benches, pavilions, lighting, sidewalks, fountains, etc.

2006 Tall Trees Park

This park is being constructed on the site of the former Village of Tall Trees Apartment Complex. It will consist of walking paths, athletic fields and picnic areas.

2006 Community Conservation Rd. Improvements

This project provides the funds to implement community conservation roadway improvement efforts throughout the county. FY 05 funds are for a round-about at the intersection of Sollers Point Rd. and Dundalk Ave. in Dundalk.

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**Implementing Agency****Jurisdiction****Vehicles**  
VT VMT**Vehicle Emissions kg/year**

2010		2020		2030	
Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

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2006 Kenwood Avenue

This project will consist of roadway improvements that will include the construction of storm drains, curb, gutter, and sidewalks which will improve pedestrian safety. These improvements will provide a safe place for school children to walk to Golden Ring Middle School.

2006 Grays Road

Funding to rehabilitate and reconstruct an industrial road to improve access to the industrial corridor served.

2006 Traffic Signals

Construction of new traffic signal poles and replacement of existing traffic signal poles, controller/cabinets where necessary. Also included is the installation of video monitors at some intersections.

2006 Church Lane-North

This project will rehabilitate about 5000 feet of roadway to increase vehicular and pedestrian traffic service and safety.

2006 Traffic Calming

This project will support a traffic calming program countywide in response to concerns from various communities.

2006 Curbs, gutters and sidewalks

Replacement and repair of deteriorated curbs, gutters and sidewalks as well as construction of new sidewalks where needed.

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2006	<u>Countywide Revitalization</u>								
	To fund acquisition, demolition, renovation, repair, maintenance, development or redevelopment of residential or commercial properties to enhance and foster community open space, recreation, public infrastructure and improvements, economic development, streetscapes, and community revitalization.								
2006	<u>Street Rehabilitation (Countywide)</u>								
	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.								
2006	<u>Sidewalk Ramps Program</u>								
	This project provides funds to construct sidewalk ramps to assist the handicapped.								
2006	<u>Community Conservation</u>								
	Funds to community conservation efforts throughout county (given to community associations)								
2006	<u>Countywide revitalization</u>			-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
	Provides ped streetscape improvements in commercial revitalization areas								
2006	<u>Dundee-Salt peter Creek</u>								
	Design of additional trail system and marine study facilities (phase II, 1998)								
2006	<u>Community Conservation</u>			-0.01	-0.54	-0.01	-0.21	-0.01	-0.15
	Funds to community conservation efforts throughout county (given to community associations)								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2007	<u>Community/Neighborhood Park Development</u>								
	Various-- including Greenways/Stream Valleys/ Trails Dev (12.309)								
2007	<u>Greenways/Stream Valleys/Trails Dev.</u>								
	Acquisition and development of stream valley parks and greenways, including develop rec trails county wide, Turner Station Park)								
2007	<u>Benjamin Bannecker Historical Park</u>								
	Develop historical/nature study area, construction of visitor's area, expansion of trails and maintenance facilities (Oella Ave and Old Frederick)								
2007	<u>Gwynns Falls Stream Valley Park</u>								
	Construct trail system between Milford Mill Road and Old Court Road								
2007	<u>Owings Mills Joint Development</u>								
	Build a town center that includes a square, main street, road and path network, hotel, library, education center.								
2007	<u>Dundalk Heritage Trail and Park</u>								
	Funds to construct a trail and park that will connect the center of historic Dundalk to Baltimore City and the waterfront.								
2009	<u>Waterfront Enhancement</u>								
	New development and/or capital renovation of water-related facilities at waterfront parks including boat ramps, fishing piers, bulkheads, parking and trails.								

Carroll County

Carroll Co.

**Year Project Name/Description**

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2008	<u>Deer Park Linear Trail</u>			0	-0.13	0	-0.05	0	-0.04
	This project provides planned funding for the development of a six-foot wide, 1.04 mile macadam multi-purpose trail at Deer Park for walking, biking and in-line skating.								
2011	<u>Middlebrooke Community Trail</u>								
	Construct a 1.3 mile, 6-ft wide trail extending from the Health Dept. to the Middlebrook residential development, to the Carroll County Farm Museum, past the Carroll County General Hospital, and finally to the Landon C. Burns Park. Project will interconne								
2013	<u>Sykesville to Piney Run Park Greenway</u>			-0.05	-1.94	-0.04	-0.72	-0.04	-0.55
	Construct a 4-mile greenway trail to link the Town of Sykesville to Piney Run Park. This project will interconnect parks and other high-user areas with surrounding residential and town development.								

City of Annapolis

Annapolis

**Year Project Name/Description**

2006	<u>Smart Bike Program</u>
	Institute a Smart Bike program -- locating computerized bike racks/bikes at key locations throughout the City near bicycle trails, commercial areas, and transit facilities. Registered users will use a smart card to access the bikes.

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year							
				2010		2020		2030			
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx		
2008	<u>Coordinated Traffic Signal Control System</u>										
	A coordinated traffic control system for all City owned traffic signals to optimize traffic flows by real time cycle adjustments as detected by the monitoring system.										
2008	<u>Gateway Enhancements</u>										
	Extend the theme of the Naval Academy View Bridge to the King George Street Bridge and connecting to West Annapolis with the use of street lighting, stone walls, brick accent sidewalks, bicycle trail, decorative iron fencing and a traffic circle at the Rte. 450 / King George Street intersection.										
2008	<u>Poplar Avenue Trail (Admiral Dr. from Poplar to Jennifer Rd.)</u>			-0.01	-0.53	-0.01	-0.2	-0.01		-0.15	
	Extend the trail system along Admiral Dr. to make connections from the existing Poplar Trail to the South Shore Trail in AACo. near Annapolis Mall.										
2010	<u>Taylor Avenue Bike/Ped Facilities</u>										
	Build a new bike/ped trail along Taylor Avenue										
2010	<u>Transit Center</u>										
	Feasibility study followed by design, land acquisition, and construction of a multi-modal transit plaza. Current design is an open air plaza with shelters, information displays, and passenger amenities.										

Harford County

Harford Co.

*Year Project Name/Description*

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2007	<u>Tollgate Road/W. Ring Factory - Plumtree</u>			0	-0.16	0	-0.06	0	-0.05
	Project to widen this section of Tollgate Rd. to 30 feet to provide the ability/potential to accommodate a large percentage of bicycles as well as vehicles.								
2007	<u>Bike Trails/Linear Park Development</u>								
	Project to acquire and develop bike trails, greenways and linear parks. Greenways and linear parks are to be acquired and constructed as connections between parks and centers of population.								
2007	<u>Edgeley Grove Farm</u>								
	Development of the site will include active recreation facilities and construction of a hiker/biker trail crossing Winters Run to Heavenly Waters Park.								
2008	<u>Southampton Road Bridge</u>								
	Design and reconstruct bridge #47 over Bynum Run. Will increase capacity for the roadway, make approaches safer, allow for bicycle traffic and provide safer intersection at Moores Mill Road.								
2010	<u>Singer Road Improvements</u>								
	Singer Rd. from Winters Run Bridge east to Beaver Dam Rd. is to be upgraded to safely handle the capacity of the road segment as well as add sidewalks or a hiker/biker trail to access the Winters Run stream valley area.								

Howard County

Howard Co.

**Year Project Name/Description**

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2006	<u>Centennial Park Access Pathway</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
	Project to develop a pathway along Little Patuxent River from Old Annapolis Rd. to MD 108 and connecting with the existing pathway system in Centennial Park.								
2006	<u>High Ridge Park Sidewalks</u>			-0.01	-0.62	-0.01	-0.24	-0.01	-0.17
	A project for the installation of approximately 2,500 LF of sidewalks to provide for safe walking on All Saints Rd. and near MD 216 bridge.								
2006	<u>North Laurel Sidewalks</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
	Sidewalk construction requested by the public in North Laurel to provide sidewalks along Madison Ave.; Baltimore Ave.; and Decatur Rd.								
2006	<u>Hickory Ridge Roadside Improvements</u>								
	A project for the design and construction of various walkways along neighborhood roads.								
2007	<u>Sidewalk Repair Program</u>								
	This project is for the repair of deteriorated sidewalks and driveway aprons that are in public rights-of-way.								
2007	<u>Broken Land Pkwy IVHS Corridor</u>								
	Project to construct a traffic responsive signal system from MD 108 along Harpers Farm Rd. and Twin Rivers Rd. tying into the existing signal system along Broken Land Pkwy., continuing to Guilford Rd and run along Guilford Rd to Old Columbia Rd. Project								
2007	<u>Broken Land Parkway Sidewalks</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14
	A project for the design and construction of a sidewalk along the east side of Brokenland Parkway between the two intersections with Cradlerock Way.								

Implementing Agency	Jurisdiction	Vehicle Emissions kg/year							
		Vehicles		2010		2020		2030	
		VT	VMT	Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2007	<u>Junction Industrial Park Sidewalks</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14
	A project for the design and construction of approximately 4,000 LF of walkways to serve the business community.								
2007	<u>Construction of traffic response signal system along 4 roadways</u>								
	Construct a traffic responsive signal system to interconnect existing signals along Snowden River Pkwy, Harpers Farm Rd., Cedar Lane, Oakland Mills Rd and Twin Rivers Rd.								
2007	<u>Roadway Emergency Management and Information System</u>								
	Project to create a computerized database built on the County's GIS system. This system would allow all county agencies to access the operational status of all roads, bridges and drainage systems.								
2007	<u>Hunt Club Sidewalk</u>			-0.01	-0.77	-0.01	-0.29	-0.01	-0.21
	Construction of approximately 4,000 LF of sidewalk along Hunt Club Rd. from US 1 to Bauman Dr.								
2007	<u>Construction of pedestrian access along State roads.</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
	Project to construct improved pedestrian access facilities along State roads. Grant funds available through State Retrofit Sidewalk Program. Design underway for projects along US 1 and MD 103.								
2007	<u>Walkways along neighborhood roads for internal sidewalk system</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
	A project for the design and construction of various walkways along neighborhood roads to complete an internal sidewalk system. Project locations: Owen Brown Rd; Cardinal Lane, Freetown Rd.; Martin Rd.; Cedar Lane ; Audobon Drive, and Harriet Tubman.								

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year					
				2010		2020		2030	
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx
2007	<u>St. John's Lane Sidewalk</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14
	Project to construct sidewalk and pathway improvements along St. Johns Lane to link Mt. Hebron High School to Misty Woods Lane.								
2008	<u>Sidewalks for Guilford Elementary School</u>								
	Installation of sidewalks/pathways to provide safe walking route for school children . Projects awaiting requests include: Montgomery Rd.; Oakland Mills Rd.; Stevens Rd.; Guilford Elementary School Pedestrian Network. Project continues K-5024.								
2008	<u>Robert Fulton Sidewalks</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14
	A project to construct approximately 4,000 LF of sidewalk along Robert Fulton Drive from Solar Walk Way to Columbia Gateway Drive.								
2008	<u>Port Capital Sidewalks</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14
	A project for the construction of approximately 1,200 LF of sidewalk along Port Capital Drive from US1 to New Colony Boulevard.								
2008	<u>FY02 Bus Stop Improvements</u>			-0.25	-9.3	-0.25	-3.48	-0.25	-2.7
	Implement a series of improvements to Howard Transit bus stops, including approach sidewalks, shelters, signs, and map holders.								
2008	<u>Columbia - 100 Parkway Area Sidewalks</u>			-0.01	-0.77	-0.01	-0.29	-0.01	-0.21
	Construction of approximately 4000 ft. of pedestrian sidewalks to connect residential communities along Columbia 100 Parkway to restaurant/shopping areas and Howard High School .								

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year						
				2010		2020		2030		
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx	
2008	<u>MD 216 Pedestrian Facility</u>									
	A project to construct roadside improvements for approximately 7,000 LF along MD 216 between Lime Kiln Rd. and the Howard County Safety complex.									
2008	<u>Roadside Improvement Program</u>									
	This project is to repair, replace, or install sidewalks and ramps for handicapped areas.									
2008	<u>Snowden River Parkway Sidewalks</u>			-0.01	-0.77	-0.01	-0.29	-0.01	-0.21	
	Construction of approximately 4000 ft. of sidewalks from Dobbin Road to Tamar Drive									
2009	<u>Rogers Avenue Sidewalk</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14	
	A project to design and construct shoulders or walkways along Roger's Avenue from Route 40 to Faber Way.									
2009	<u>School Crosswalk Improvements</u>									
	This project is for the installation of crosswalks, raised cross walks, chokers, sidewalks, raised shoulders, signs and/or other roadway retrofits to provide for an enhanced walking route for school children.									
2009	<u>Pedestrian OverPass Program</u>									
	Program for pedestrian overpass in the vicinity of schools									
2009	<u>Cedar Villa Heights Sidewalks</u>									
	A project for the design and construction of sidewalk and curb and gutter along neighborhood roads.									

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year						
				2010		2020		2030		
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx	
2010	<u>Residential Traffic Calming</u>									
	Project to construct geometric roadway changes to reduce traffic speeding in residential areas and to improve roadway safety at spot locations along collector roadways. Speed humps. Traffic circles, raised intersections, and slow points are technique tha									
2010	<u>Ilchester Road Walkways</u>			-0.01	-0.51	-0.01	-0.19	-0.01	-0.14	
	A project for the construction of a sidewalk on Ilchester Rd. from Crestwood Ln. to Wharff Ln.									
2010	<u>Guilford Rd Pedestrian/Bike Improvements</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14	
	Project to construct paved shoulders along one or both sides of Guilford Rd between Oakland Mills Rd. and Mission Rd.									
2010	<u>Pedestrian/Bicycle Improvements</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14	
	Project to construct pathway/bike links to the existing network to facilitate movement between light rail, and community and retail centers. Locations may include: Howard County spinal pathway in Savage to Savage MARC station; US 29 Columbia to Montgomer									
2010	<u>Long Gate Sidewalk</u>									
	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.									
2010	<u>Pedestrian/Bicycle Improvements</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14	
	Design and construct pathway/bicycle links to the existing network to facilitate movement between MARC and community and retail centers. At some locations, install crosswalks, pedestrian indications, pedestrian phases, signing, ADA ramps, or advanced war									

Implementing Agency	Jurisdiction	Vehicles		Vehicle Emissions kg/year						
				2010		2020		2030		
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx	
2010	<u>US 40 Corridor Enhancement</u>									
	A project to plan, design and implement a series of streetscape, pedestrian, bicycle, and public green space improvements on public property.									
2010	<u>Community Renewal / Enhancements</u>									
	A project to design and implement a series of pedestrian improvements, streetscape enhancements and repair or enhancement of public green spaces.									
2011	<u>Pedestrian Overpass Program</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14	
	Construct pedestrian bridges/overpasses in the vicinity of schools									
2011	<u>US 1 Corridor Revitalization</u>									
	Plan, design, and implement a series of streetscape, pedestrian, bicycle, and public green space improvements.									
2011	<u>Oakland Mills Rd. South - Walkway/Bikeway</u>			-0.01	-0.5	-0.01	-0.19	-0.01	-0.14	
	Project to construct pedestrian/bicycle improvements along Oakland Mills Road (south) from Snowden River Pkwy to Guilford Rd.									
2011	<u>General Sidewalk and Walkway Extensions</u>			-0.01	-0.48	-0.01	-0.18	-0.01	-0.13	
	A project to design and construct routine sidewalk and walkway extensions under 1,000 feet in length. Projects will be initiated by public request or where the need is created by development or to connect existing walks. Projects included are :St. Johns									

**Implementing Agency**

Jurisdiction	Vehicles VT VMT		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

2012	<u>MD 99 Pedestrian Facility</u>			-0.02	-1.52	-0.02	-0.58	-0.02	-0.42
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Roadside improvements for approximately 12,000 LF along MD 99 where sidewalks and pathways are not interconnected and there are no shoulders for pedestrian and bicycle use. This project is beyond the scope of SHA improvements.

2012	<u>Transit Operation Repair Facility</u>								
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A project for site selection, acquisition, design and construction of a multi-jurisdictional transit facility.

MDOT

Anne Arundel Co.

**Year Project Name/Description**

2006	<u>MARC Odenton Parking Expansion</u>			-5.67	-175.43	-5.6	-65.38	-5.59	-51.72
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A 700-space parking lot, and a facility study for structured parking (garage or parking deck)

Baltimore City

**Year Project Name/Description**

2007	<u>Light Rail Cold Spring Station Parking</u>			-5.16	-163.16	-5.1	-61.09	-5.09	-48.6
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Construct a 300-space park-n-ride facility at the Cold Spring Light Rail Station.

Baltimore Co.

**Year Project Name/Description**

2006	<u>Signal Systemization - US 1 Alt</u>								
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Selma/Halethorpe Road to Lansdowne Rd

**Implementing Agency**

Jurisdiction	Vehicles		Vehicle Emissions kg/year					
			2010		2020		2030	
			Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx

Harford Co.

**Year Project Name/Description**

- 2006 Signal Systemization - MD 22  
John Carroll Highschool to MD 543
- 2006 Signal Systemization - MD 22  
Prospect Hill Rd. to Campus Hill SC.
- 2006 Signal Systemization - MD 22  
Technology Dr. to Rogers Ave./US 40 ramps (new limits)

MDOT

**Year Project Name/Description**

2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-91.1	-3151.0	-89.95	-1173.3	-89.73	-911.79
2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-56.72	-2010.7	-56	-749.07	-55.86	-580.77
2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-9.12	-301.72	-9	-112.3	-8.98	-87.4
2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-29.17	-988.12	-28.8	-368.01	-28.73	-286.47
2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-52.81	-1906.9	-52.14	-711.18	-52.01	-552.23
2006	<u>Baltimore Region Rideshare Program - 2006</u> Baltimore Region Rideshare Program - 2006	-21.55	-813.5	-21.28	-304.47	-21.23	-235.88

Regionwide

**Year Project Name/Description**

**Implementing Agency**

	Jurisdiction	Vehicles		Vehicle Emissions kg/year							
				2010		2020		2030			
				Direct PM2.5	NOx	Direct PM2.5	NOx	Direct PM2.5	NOx		
2006	<u>MARC Halethorpe Station Parking Expansion</u>										
	Expand surface parking and investigate future parking at the Halethorpe MARC Station. 428 parking spaces will be added. The scope of the proposed work also includes high level platforms, new shelters, improved accessibility for persons with disabilities, lighting and streetscaping.										
2006	<u>MARC II Overhaul</u>										
	Overhaul 35 MARC II cars originally delivered in 1991 and 1993. In addition to system upgrades, install bike racks to toilet-equipped cars.										
2006	<u>Bus Replacements</u>			0	-48191	0	-48357	0		0	
	Replace 105 buses in Contract Year - 4										
2007	<u>Light Rail Double Tracking</u>										
	Install double track on up to eight sections of the Light Rail system, consisting of improvements to trackwork, station platforms, structures, signaling, and communications.										

## CHART CMAQ JUSTIFICATION

The goal of the Chesapeake Highway Advisory Routing Traffic (CHART) Program is to improve incident detection time, response time and clearance time to remove nonrecurring freeway obstructions and to re-route traffic around incidents if necessary. The statewide CHART operations centers continually survey states roadways to detect and clear incidents as quickly as possible.

According to a Performance Evaluation of the CHART Program prepared by the University of Maryland, in 2004, the traffic patrols alone saved 32.05 million vehicle hours of delay. The overall computation results from this finding show that there would be a total of 263.24 million vehicle hours of delay without CHART funded incident reduction efforts. In contrast, due to the efficient response of CHART, the total average weekday vehicle delay has been reduced to 231.19 million hours, about 32.05 million hours less idle time.

The estimated reductions in vehicle emissions and the total delay reduction of 32.05 million vehicle hours annually is estimated to save a total of 123,270 vehicle hours of idling time daily in the Baltimore and Washington regions together. Of this number, 68,008 vehicle hours of daily idling time will be reduced in the Baltimore region and 55,262 will be reduced in the Washington region. The emission reductions of **72.23 tons per year NOx** in the Baltimore region will provide benefits to help this nonattainment area meet its air quality mandate as well as provide for the transportation needs of its citizens.

Emissions analysis calculation: (MOBILE6)

Baltimore Region:

1. 68,008 daily vehicle hours of idling saved
2. Idling emission factors 2010: NOx 3.707 gm/hr
3.  $\text{NOx} = ((3.707 \times 68,008) / 1000) \times .001102 \times 260 \text{ weekdays/year} = \underline{72.23 \text{ tons/year}}$

## **REGIONAL COMMUTER ASSISTANCE (RCA) PROGRAM**

The Regional Commuter Assistance program is a voluntary regionwide program for reducing Single Occupant Vehicle use by employees that work for large and small employers. This program is an employer- and employee-friendly successor to the Employee Commute Options program mandated by the federal Clean Air Act Amendments of 1990.

The RCA program is a regional programmatic overlay that encompasses traditional commuter-related programs. The RCA program is part of the adopted 2004 Baltimore Regional Transportation Plan, and has been approved by the Maryland Department of Transportation as an Emission Reduction Strategy (ERS) for the Baltimore region.

This program includes traditional and emerging Emission Reduction Strategy (ERS) programmatic elements such as rideshare program (carpool and vanpool), transit information/ fare subsidy program, employer shuttle service, flexible work arrangements (flex hours and flex days), emergency ride home (ERH) program, parking cashout, preferential parking, video conferencing, live near your work, proximate commuting, etc. Telecommuting is also included as a menu item in the RCA program, but is accounted for separately for technical reasons.

### **HOME-BASED TELECOMMUTING**

Home-based Telecommuting is a voluntary regionwide strategy for reducing SOV use by employees that work for large and small employers. This analysis uses different telecommuting utilization rates for employees of large and small employers as well as for employees of government and private organizations. The 1999 Baltimore Region Telecommuting Baseline Study documented the magnitude and characteristics of telecommuting on which this measure is based. This study showed a significantly higher level of telecommuting use than had been previously assumed (3.6% instead of the previous 2.0%).

The 2004 and 2005 Alternate Commute Surveys conducted by BMC confirmed the extent to which employers are providing telecommuting options for their employees, and the level of employee interest in this option.

Home-based telecommuting is one of the menu items of Emission Reduction Strategies (ERS) available in the Regional Commuter Assistance (RCA) program. However, the emission reduction potential of home-based telecommuting is analyzed separately from the more traditional programmatic components of the RCA program for technical reasons including fewer days per week telecommuting (2.91 days / week), and longer work trip length reductions (55.8 miles / day).

## **PARK-&-RIDE PROGRAM**

Since the first lot was opened in Baltimore County in 1976, P-&-R lots have helped to reduce traffic congestion and air pollution in the Baltimore region. They function to intercept commuter and other trips, and permit travelers to transfer from single occupant vehicle commuting to more efficient travel modes that range from carpools to commuter rail trains.

The P-&-R program assumes the construction of new P-&-R spaces in the 2004 BRTP to meet projected demand. Under this plan, the 25,000 additional P-&-R spaces to be built would almost double the number of existing P-&-R spaces serving Baltimore region commuters and other users.

The proposed expansion of P-&-R facilities is based on the findings of the 2002 Baltimore Region P-&-R Study. This study documented the service areas, utilization rates, and travel characteristics associated with different types of P-&-R facilities. This study also documented the trip origins and destinations of P-&-R lot users.

Currently there are 105 P-&-R facilities containing over 28,000 parking spaces that serve the Baltimore region. These lots have been constructed and operated by a combination of the following: State Highway Administration, Maryland Transit Administration, and local governments. Future facilities are expected to be constructed by these organizations as well as by other groups in conjunction with possible joint development projects.

The new P-&-R spaces in the plan could include: 60% surface P-&-R spaces, 20% high access P-&-R spaces, 10% rail transit P-&-R spaces, and 10% leased P-&-R spaces. Parking spaces in the above categories are needed to meet the different segments of overall P-&-R demand identified in the 2002 P-&-R Study. It is assumed that the P-&-R spaces that will become operational in this program will yield VMT reductions that are proportional to VMT reductions documented in the 2002 P-&-R Study.

## **BICYCLE ELEMENT OF THE 2004 BRTP**

This emission reduction strategy assumes the completion of the bicycle element of the Plan by 2020. This analysis also assumes completion of other bicycle-related improvements in the region by the same date.

The major groups of bicycle riders used in this analysis include bicycle commuters, college student bicycle riders, and other non-leisure bicycle users. Baseline data for bicycle commuters is the 2000 Census. Baseline data for college student bicycle riders is regional college enrollment information and projections. The other non-leisure bicycle users are projected as a percent of the other two bicycle user groups.

The projection of 2020 and 2030 bicycle commuters is based on Round 6-B population and employment projections. The projection of 2020 and 2030 college student enrollment and bicycle riders is based on a Maryland Department of Planning report -

Projections of Age, Race & Sex 2000-2030, 2004. The later report shows that the college age population group steadily increases until around 2010 and then gradually declines. An average bicycle trip length for the bicycle user groups used in this analysis is assumed to be 1.8 miles.

Based on an aggregate behavior approach, the increase in 2020 and 2030 bicycle use is assumed to be proportional to the proposed increase in planned regional bikeway facilities in the adopted Baltimore Regional Bicycle, Pedestrian and Greenway Transportation Plan. This measure assumes that the mileage of off-street bikeways that could be built by the 2030 would be completed by 2020. It is expected that new on-street bikeways would add additional bike trips, but these trips are not reflected in this analysis because of difficulties in accurately forecasting on-street bicycle usage.

## **APPENDIX I**

Correspondence Related to the  
Air Quality Modeling Process



[Additional correspondence related to the air quality modeling process will be added, as available, to the final report.]

WEB VERSION: Five letters are available as part of this appendix in the draft print document. You may request them by contacting the Public Involvement Coordinator at [mhaines@baltometro.org](mailto:mhaines@baltometro.org).]



## **APPENDIX J**

### Resolutions



[Resolutions will be added to the final report.]