Ongoing Efforts in the Washimore MPO to Address Long-Range Environmental Issues Resulting from Air Pollution

A Requirement of Maryland Regulation
COMAR 26.11.37
October 22, 2012
FOR DEMONSTRATION PURPOSES ONLY

This document provides an example of the kind of progress report required by the draft MDE regulation on Long-Range Transportation Planning Targets.

Under the regulation, each of the two MPOs covered by the regulation would be required to submit a progress report whenever a TIP or CLRP is updated or amended.

This hypothetical progress report includes examples that come from both regions, to show how ongoing efforts in each MPO are already generally consistent with the goals of the draft regulation.

For more information contact MDE at (410) 537-3245.
Background

Maryland’s regulation (COMAR 26.11.37) requires that a Progress Report on meeting long-term environmental goals be submitted whenever the Washimore region updates its Transportation Improvement Plan (TIP) or Constrained Long Range Plan (CLRP). This requirement is separate from, but linked to the federal requirements for transportation conformity.

The Washimore region is responsible for coordinating and complying with both the Maryland regulatory requirements and the requirements of the federal conformity mandates.

The federal conformity requirements establish “minimum” emission reduction goals that, if not achieved, could affect federal transportation funding. The Maryland regulation establishes more aggressive emission reduction goals in order to address important issues in the Washimore region, such as meeting AQ standards, reducing greenhouse gas emissions, and protecting the Chesapeake Bay. Failure to achieve these tougher environmental goals will not result in any loss of federal transportation funds, but the Washimore region believes that it is critical for the region to strive to meet these goals over time.

This progress report summarizes the Washimore region’s efforts to continue to reduce emissions now and into the future.

Emission Trends and Long-Range Planning Targets (LRPTs)

The Washimore region has proposed an amendment to the TIP for the region. A summary of the new programs being added to the TIP can be found at http://washimoretip2012. This website also provides a schedule of meetings, including public workshops and hearings and other meetings where public input is being sought.

Figures 1 and 2 show the projected emissions through 2040 for nitrogen oxide (NOx) and carbon dioxide (CO2), the federal conformity budgets (the minimum requirement), and the LRPT (long range environmental goals). These emission projections include all new measures proposed for inclusion in the 2012 TIP amendment.

NOx is a very important pollutant as it is the primary contributor to the area’s severe problems with ground level ozone air pollution. NOx is also an important contributor to nitrogen pollution in the Bay. About 1/3 of the Bay’s nitrogen problem comes from air pollution sources. NOx is also linked to the region’s fine particulate air pollution problems and is the major contributor to a new federal standard for NO2 (nitrogen dioxide) that the region is just beginning to examine.

CO2 is the primary pollutant linked to climate change, or global warming. Maryland is the fourth most vulnerable state to sea level rise, one of the most significant
consequences of global warming. The Washimore region is home to many of these vulnerable areas.

**Figure 1 – NOx Emission Reductions Compared to Long-Range Planning Targets**

This Figure shows how the current TIP for the WRTB Region, including all of the new projects added as a result of the TIP amendment being considered, compares to both the minimum federal requirements and the long-range planning targets designed to help reduce air pollution and restore the Chesapeake Bay.

This chart shows that the region is making tremendous progress in reducing NOx emissions. Levels in 2020 and 2030 continue to decrease, primarily because of tough federal tailpipe standards (called Tier 2 Vehicle Standards) and clean fuels.

In 2020, 2030 and 2040, levels are projected to be well below the minimum requirements to comply with the federal conformity regulations. These minimum requirements date back to 2008 and are expected to be made significantly more stringent in 2015 because of the new ozone standard just finalized this past year. These budgets will be tightened again over the next three years as EPA tightens the ozone and fine particulate standards again. These tighter standards are driven by court-ordered deadlines.

Unfortunately, NOx emissions are projected to be higher than the long-range planning targets established to meet current and future air quality standards and to restore the Chesapeake Bay.

The region’s plans to continue to work to further reduce NOx emissions from the mobile source and transportation sectors are discussed later in this progress report.
Figure 2 – CO2 Emission Reductions Compared to Long-Range Planning Targets
This Figure shows how the current TIP for the Washimore Region, including all of the new projects added as a result of the TIP amendment being considered, compares to both a business-as-usual (BAU) uncontrolled scenario and the long-range planning targets designed to help reduce CO2 air pollution and help minimize the potential for global warming and sea-level rise. The Washimore region includes many coastal areas that are very sensitive to sea-level rise.

![Graph showing CO2 emissions comparison]

Figure 2 shows that the region is expected to begin the process of reducing CO2 emissions, but current reduction efforts fall far short of meeting the long-range planning targets for this critical pollutant that is the primary contributor to global warming.

The region’s ongoing efforts to reduce CO2 emissions to close the gap between future projected emission levels and the long-range planning targets for CO2 emissions are discussed below.

Ongoing Efforts in the Washimore Region to Further Reduce NOx and CO2 Emissions

This section is divided into the three types of actions being analyzed and considered for adoption as part of the Region's efforts to further reduce NOx and CO2 emissions. These three categories are:

- Local actions
- Actions being developed at the state level and supported by the Region, and
• Actions at the federal level and supported by the Region

To continue reducing NOx and CO2 emissions, all three “Action Levels” will need to be successful.

Local Actions

1. Transportation Emission Reduction Measures (TERMs)

The Washimore region has been very active in the last ten years in analyzing and adopting TERMS when appropriate.

Examples of recently adopted TERMS include:

• The purchase of 250 Compressed Natural Gas (CNG) Buses for the WMATA Fleet. This purchase allowed the regional transit authority to replace diesel gas buses on routes throughout the metro region with clean, pollution free vehicles and to eliminate further Ozone causing or Particulate Matter pollution from older diesel equipment.

• VRE Mid-Day train service. VRE is the Northern Washimore commuter rail line similar to MARC commuter rail in Maryland. Mid-day service allows more commuters leave their cars at home, knowing that safe, reliable rail service is available to return home if necessary before the end of the work day. This additional service also opens VRE to tourists and non commuters interested in traveling along the line or ultimately traveling into DC for a day trip.

• The engineering, construction and painting of distinct bicycle right of way lanes. When coupled with bike racks on transit buses, distinct bicycle lanes allow cyclists to more safely travel long distances without using automobiles.

• Regional Signal System Optimization. This inter-jurisdictional program coordinates the timing of traffic signals along major arteries and corridors to maximize the flow of traffic even when the street/road extends beyond the jurisdictional boundary. This free flow of traffic reduces congestion, lowers harmful emissions by helping cars and busses to move more efficiently.

The region is also very engaged in analyzing additional TERMS for potential inclusion in future transportation plans. The complete list of over 100 TERMS being analyzed is included in Appendix C. Examples of several higher priority TERMS that are currently being considered include:

• The Purple Line-Transitway - An inside the beltway high capacity east-west transit service from New Carrollton, Prince George’s to Bethesda, Montgomery counties providing connections with Metro’s Green, Red and Orange lines, to all
three MARC commuter rail lines, AMTRAK and local bus linkages. This proposed 21 station light rail system will include Silver Spring and College Park, and is projected to reduce gridlock, ease congestion, and improve air quality with a projected daily ridership of 60,000 riders by 2030. This project is currently in the engineering phase with construction starting 2014 if funding is available.

- Metropolitan Washimore Airport Efficiency Program - The Airport Authority has created programs to help reduce its energy demand and greenhouse gas output through a variety of efforts. Automated people movers (APM), an underground air passenger train to provide connection to existing concourses and reduce terminal travel, is nearly completed for the annual 20 Million passengers at Dulles. Electrification or CNG gas conversions of the numerous airport ground support equipment and charging stations to support them has been instituted. Employee disbursement of Metrocheck, Smartrip and further development of metro-pool and vanpool to incentivize use of public transit in favor of Authority parking privilege has been expanded. This measure helps reduce vehicle miles traveled, air pollution, greenhouse gases, and terminal congestion from the Authority’s large staff.

- Inter-County Connector - Once considered an impossible commuter connection between Montgomery and Prince George’s counties’ congested suburbs, this major transportation corridor is between two economic growth corridors: Interstate 270, with its job centers, and Interstate 95, with its access to Baltimore-Washington International Airport. The ICC is Maryland’s first all-electronic toll road where tolls are collected at highway speeds.

- Pink Line Transitway - The Pink Line is a proposed east-west mass transit light rail line for Baltimore, Maryland. It is still in the planning stages and has been granted federal approval to enter the preliminary engineering phase. The line’s construction is estimated to begin in 2015, subject to funding.

- East Baltimore pedestrian and transit enhancements including a new MARC station in 2015

- Since 2005, separate bike or pedestrian paths have been constructed to facilitate recreational or pedestrian shopping or school related travel. In the Baltimore region these include the Maryland and Pennsylvania Heritage trail extension, Broken Land Parkway Pathway, Centennial Access Trail, Wakefield Community Trail, Broadneck Peninsula Trail and the South shore Trail

- Charm City Circulator. The Charm City Circulator consists of three downtown routes, free service 7 days a week service, and uses hybrid buses. Air quality benefit calculations from this service started in 2009. The Transit Vehicle Purchases Project will add hybrid-electric buses to the Charm City Circulator to extend service to Fort McHenry National Monument and Historic Shrine.
For Demonstration Purpose Only – Hypothetical Progress Report
MDE – July 20, 2012

• Kent Street Transit Plaza- The Kent Street Transit Plaza and Pedestrian Corridor Project will expand bus ridership and safe access to the existing light rail system through design and construction of the Kent Street Plaza and Pedestrian Corridor from the Westport Light Rail Station to Annapolis Road.

• BWI Airport low emission vehicles (LEVs) - The Maryland Aviation Administration’s (MAA’s) fleet of ground vehicles is extensive and consumes a significant amount of fuel. To reduce the emissions associated with its vehicle fleet, MAA was a pioneer in encouraging the use of Compressed Natural Gas (CNG) vehicles. CNG vehicles offer air quality benefits because they produce fewer emissions than gasoline-powered engines.

• US 40 Carbon Neutral Corridor – The region has developed a comprehensive corridor vision that results in attaining smart growth, conservation and climate change goals where the net GHG emissions from the corridor are significantly reduced. The current corridor study area goes from Baltimore City to Aberdeen in Baltimore and Harford Counties.

• Baltimore Collegetown Network - BCN operates a free bus service available to students registered at Goucher, Towson, Notre Dame, Loyola, Johns Hopkins, MICA, UMBC; and is paid for by those institutions.

2. Electric Vehicles

Electric Vehicles (EVs) produce zero tailpipe emissions and, when re-charged by renewable energy sources, zero emissions overall. Even EVs charged from grids powered by a high coal fuel mix produce lower GHG emissions than conventional vehicles, especially in a state like Maryland where CO2 emissions from the power plant sector are capped.¹ The comparative climate benefits of driving an EV in Maryland will increase as renewable energy’s portion of the region’s power plant fuel portfolio grows, driven in part by renewable portfolio standard (RPS) mandates in Maryland and other PJM states.

¹ State of Charge: Electric Vehicles’ Global Warming Emissions and Fuel-Cost Savings Across the United States, The Union of Concerned Scientists, April 16, 2012. The report found that EVs charged from the electricity grid produce lower emissions than the average compact gasoline-powered vehicle (with a fuel economy of 27 miles per gallon (mpg)—even when the electricity is produced primarily from coal in regions with the “dirtiest” electricity grids. Maryland’s energy grid actually falls into the “Best” and “Better” categories in this study, where an EV charged from the grid would produce emissions comparable to a gasoline-powered vehicle with a fuel economy of 41 to 51+ mpg. This is true even though about 55% of the electricity consumed in Maryland is generated from coal. A joint study by the Electric Power Research Institute and the Natural Resources Defense Council supports this conclusion, finding that PHEVs charged from power plants with current coal technology (2010) produce 28% to 34% lower GHG emissions compared to conventional vehicles. Environmental Assessment of Plug-In Hybrid Electric Vehicles, EPRI-NRDC, July 2007.
MDE, MDOT, the Maryland Energy Administration (MEA) and several local members of the Washimore region MPO are working to spur the development of infrastructure and other tools to promote the deployment of EVs in Maryland. Appendix B includes letters of support from the Washimore region and individual members of the MPO.

Electric Vehicle Infrastructure Program (EVIP).

In 2010 MEA awarded approximately half of a $1M federal stimulus fund grant for the construction of 65 EV charging stations around the Washimore region and the state.2

1. Baltimore City received an award to install 9 to 16 EV re-charging stations in various parking garages throughout Baltimore City. Project partners include Baltimore City Department of General Services, Baltimore City Parking Authority and Baltimore Gas & Electric (BGE).

2. Baltimore Electric Vehicle Initiative (BEVI) received an award to install 55 electric vehicle re-charging stations around the state and the I-95 corridor, including Harford, Cecil, Baltimore City, Baltimore, Montgomery, Anne Arundel, Charles, Frederick and Prince George’s counties.

As reported by U.S. DOE, Maryland’s EV charging network had expanded to 278 public and private stations as of May 2012.3

Appendix B includes letters of support from the Washimore region and individual members of the MPO.

Electric Vehicle Infrastructure Council (EVIC).

In 2011 the General Assembly established the EVIC to study, make recommendations and develop a plan for integrating of EVs into the State's transportation network (SB176/HB167). The Washimore region is represented on the Council. EVIC submitted its interim report to the legislature and Governor in January 2012 and is on schedule to submit its final report by December 1, 2012.

Other Maryland EV legislation and Public Service Commission Proceedings

1. “Motor Vehicle Excise Tax - Tax Credit for Electric Vehicles” (HB 469/SB 281, 2010 Session) creates a 3-year vehicle excise tax exemption for the purchase of plug-in electric vehicles (PHEV), capped at $2,000 per vehicle. Exemptions are limited to one per individual and 10 per business entity.

---

2 The remainder of the grant went to ShorePower for truck stop electrification (TSE) units at Baltimore, Elkton, and Jessup, totaling 249 TSE installations. This improvement is expected to displace approximately 400,000 gallons of diesel fuel annually by allowing trucks to use electric power instead of idling at truck stops.

3 http://www.afdc.energy.gov/afdc/fuels/stations_counts.html
2. "High Occupancy Vehicle (HOV) Lanes - Use by Plug-In Vehicles" (HB 674, 2010 Session) permits plug-in vehicles, both hybrid and electric, to use high occupancy vehicle (HOV) lanes, without restrictions on the number of passengers required to be in the vehicle.

3. "Income Tax – Tax Credit for Electric Vehicle Recharging Equipment" (HB 163, 2011 Session) creates a 20% state income tax credit for up to 20% of the purchase price of electric vehicle charging equipment for tax years 2011-2013.

4. "Pilot Program for Charging Electric Vehicles" (SB179/HB164, 2011 Session) directs the Public Service Commission to lead development of a pilot program to incentivize off peak charging of electric vehicles.


6. "Public Utilities - Electric Vehicle Users and Charging Stations - Exclusions" (SB997/HB1280, 2012 Session) alters the definitions of "electricity supplier" and "public service company" to exclude a person that owns or operates equipment used for charging electric vehicles, and alters the definition of "retail electric customer" to exclude a person that charges an electric vehicle at an electric vehicle charging station.

7. "Motor Vehicle Administration - Plug-in Vehicles - Disclosure of Personal Information" (SB998/HB1279, 2012 Session) requires the MVA to disclose information describing plug-in vehicles and the addresses of their registered owners to electric companies for the purpose of planning for the availability and reliability of the electric power supply.

Appendix B includes letters of support on these efforts from Washimore and individual members of the MPO.

State Actions

MDE and MDOT, both members of the Washimore region, are very involved in developing programs to reduce GHG emissions through state and regional action. Several of these initiatives are discussed below.

1. Clean Fuel Standard

Since 2009, 11 Northeast and Mid-Atlantic states have been working in partnership to develop a clean fuel standard (CFS) to reduce the carbon intensity of petroleum based fuels while helping to create jobs and stimulate the economy. The CFS is a market-based program designed to address the carbon content of fuels by lowering the carbon intensity through the use of low-carbon fuel alternatives. Carbon intensity is defined as the amount of greenhouse gas emission released during the fuels’ full lifecycles,
including production, transport, and consumption. Fuels can be measured and compared with respect to their carbon intensity. To achieve meaningful GHG reductions from the transportation sector, a CFS program must work in conjunction with other efforts to improve vehicle efficiency and reduce vehicle miles traveled. Efforts such as carpooling, vanpooling, and increasing vehicle fuel economy ratings, along with a CFS, will result in lower overall greenhouse gas emissions.

The initiative is also designed to support energy independence and to reduce dependence on foreign oil. More details on the Clean Fuels Standard can be found at www.nescaum.org.

The Washimore region MPO and many of the individual members of the MPO have written letters of support for this initiative. These letters of support are included in Appendix B.

2. Maryland Clean Car Program

In 2007, Maryland joined twelve other states in adopting the California Low Emission Vehicle (LEV) Program. These “Clean Car” standards require more stringent emissions of criteria pollutants, manufacturers to produce a percentage of zero emission vehicles, and reduction of CO2 emissions. California’s current LEV II standards sunset in 2014. New LEV III standards are going to be phased-in over the 2015-2025 model years and modify the LEV II standards in a number of ways. The primary objective of LEV III is to require, by 2025, a new vehicle fleet average standard that results in a 75% reduction in criteria pollutants.

LEV III also has new zero emission vehicle (ZEV) requirements which provide a guarantee that ZEVs will be available for sale in states outside of California. The ZEV program also includes regional pooling as a means for manufacturers to meet ZEV requirements. Pooling will provide flexibility for manufacturers to place ZEVs in states that have the necessary infrastructure to support these vehicles while still providing state and regional benefits.

LEV III also adopts new GHG emission standards. These new GHG standards will phase in over the 2017-2025 model years. California has evaluated the technology requirements for increased fuel economy, and requires an increase for passenger vehicles and light-duty trucks that equates to approximately 53 mpg in 2025. This GHG reduction represents about a 5% increase in fuel economy per year for passenger cars over the current 2016 standard. Large pick-up/work trucks will see a fuel economy increase of 3.5% per year until 2021 and then 5% from 2022-2025. This approach accounts for their unique market and size. In 2021, a mid-term program review will be conducted. When fully phased-in, these new standards will reduce GHG emissions by approximately 34% in 2025.
3. Transportation and Climate Initiative (TCI)

In 2010, the energy, environment and transportation agency heads from Maryland and ten other Mid-Atlantic and Northeastern states and the District of Columbia formed the Transportation and Climate Initiative (TCI) to reduce GHG emissions in the region’s transportation sector.4

TCI’s work is carried out by state agency staff with support from the Georgetown Climate Center. It is advancing initiatives in four key areas: 1) clean vehicles and fuels; 2) sustainable communities; 3) freight efficiency; and 4) information and communication technology.

Clean Vehicles and Fuels. In 2011 TCI launched the Northeast Electric Vehicle Network to promote the deployment of EVs and EV charging infrastructure throughout the TCI region. The Network’s initial planning activities are being funded by a $1M DOE competitive planning grant awarded to the New York State Energy Research and Development Authority (NYSERDA) on TCI’s behalf. The work includes engaging stakeholders to identify opportunities and barriers to EV deployment; conducting a region-wide literature review of market barriers, electric grid impacts, plans for EV rollouts, and issues specific to the Northeast; creating regional siting and design criteria for EV charging stations, model building codes and zoning ordinances, and streamlined permitting processes; and conducting education and outreach activities.

TCI is currently evaluating initiatives it may want to pursue as a region to advance compressed natural gas (CNG) vehicles.

Sustainable Communities. TCI has developed indicators and metrics to support advancement of the TCI Sustainable Communities Principles adopted by its agency heads in 2011. They are designed to provide states with the tools needed to measure the environmental, economic and societal benefits of state-level sustainable communities policies and programs. They will enable states to share best practices and demonstrate quantifiable benefits to support funding applications for sustainable communities programs, including federal transportation funding.

Freight Efficiency. Work has focused on identifying regional scale actions that will add value to work already being done by other freight-focused groups such as the I-95 Corridor Coalition and the Northeast Corridor Commission. TCI commissioned a study to understand how truck, rail and ship freight moves through the TCI region.

and has shared its findings widely with the transportation community. It has applied for Federal Highway Administration funding jointly with the I-95 Corridor Coalition to conduct follow-on research on the emissions and energy impacts of the region’s freight movement and identify freight routes by vehicle miles traveled (VMT) and time-to-market (TTM).

Information and Communication Technologies (ICT). TCI is developing tools to harness these emerging technologies to meet regional travel needs while reducing energy consumption, GHG emissions and consumer costs. It is focused on ICT that can help travelers use transit efficiently (e.g., “Where’s my bus?”) and get real-time information on traffic and alternative routes to reduce highway travel times and traffic congestion. In 2012 TCI plans to launch an “EV Button” – an online gateway to mobile apps that will enable EV drivers to locate and reserve EV charging stations. TCI has conducted educational webinars on ICT opportunities and, through legal research and meetings with federal officials, challenged aggressive actions by “patent trolls” to prevent public access to real-time transit information apps.

Federal Action

1. Tier 3 Vehicle Standards and Low Sulfur Fuel

EPA is working to finalize new emission standards for light-duty motor vehicles, referred to as the Tier 3 standards which will be phased-in over the 2017-2025 model years. These national standards are beneficial because they will help reduce the pollutants that are transported into Maryland and harmonize the federal and California standards, thereby effectively creating one car in the country.

A key component of the Tier 3 program, referred to as the Tier 3 Low Sulfur Gasoline rule, is the requirement for the reduction of sulfur in gasoline from 30 ppm to 10ppm. In order to achieve the Tier 3 and LEV III emissions standards, low sulfur gasoline is required. Sulfur acts as poison on emission control devices and in order for the new emission control equipment to operate at is most efficient, low gasoline sulfur levels are required. Additionally, low sulfur gasoline will immediately reduce emissions from older vehicles, resulting in significant emissions benefits nationally. This EPA proposal is the single most important control program available to further reduce NOx emissions from the mobile source sector. By 2020, the new initiative is expected to further cut NOx emissions by about 20 to 30 percent.

EPA is expected to publish a notice of proposed rulemaking in the Fall of 2012.

Appendix B includes letters of support from the Washimore and individual members of the MPO, including a letter of support from Governor Martin O’Malley

2 Federal Fuel Efficiency and Greenhouse Gas Emission Standards for Light Duty Vehicles
On May 19, 2009, President Obama announced new GHG and fuel economy standards for passenger vehicles and light-duty trucks that would be set through a joint rulemaking process between the EPA and the National Highway Traffic Safety Administration. These new standards will be phased in beginning with model year 2012 and, when fully implemented in model year 2016, attain the same fuel economy and GHG levels as the California Clean Car Program.

This initiative complements the Maryland Clean Cars Act of 2007. This law required the MDE to adopt regulations implementing the California Clean Car Program. The California Clean Car Program establishes a GHG emission standard based on fleet-wide averages; it does not set specific GHG emission standards for individual vehicles. The fleet GHG standard under the Maryland Clean Cars Act of 2007 began with model year 2011 vehicles.

3 Federal Fuel Efficiency and Greenhouse Gas Emission Standards for Medium- and Heavy-Duty Trucks

The National Fuel Efficiency & Emission Standards for Medium- and Heavy- Duty Trucks program announced in 2010 is the first program designed to reduce GHG emissions and improve fuel efficiency for medium- and heavy-duty vehicles. The program represents collaboration between the EPA and the National Highway Traffic Safety Administration in response to President Obama’s Presidential Memorandum issued in May of 2010. Medium- and heavy-duty vehicles make up the transportation sector’s second largest contributor to fossil fuel consumption and GHG emissions.

The EPA and U.S. Department of Transportation are each proposing complementary standards under their respective authority covering model years 2014-2018. The EPA and National Highway Transportation Safety Administration are proposing emission standards for carbon dioxide and fuel consumption standards, respectively, for the following regulatory categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. The EPA is also proposing to include recreational on-highway vehicles in its rulemaking while the National Highway Transportation Safety Administration is not including them. For this proposal the heavy-duty fleet includes all onroad vehicles rated at 8,500 lbs or more, except those covered by the current GHG emissions and federal Corporate Average Fuel Economy standards for model years 2012-2016.

Conclusions

The Washimore region will continue to strive to achieve deeper NOx and CO2 emission reductions to help the region and the State address ongoing environmental concerns over air pollution, the Chesapeake Bay and climate change.

In 2012 and 2013, the Washimore region MPO will be holding many meetings where the general public will have the opportunity to comment on new projects that are being considered for inclusion in the next TIP or CLRP.
For access to a detailed schedule of public comment opportunities go to http://washimoretip2012.