

Baltimore Metropolitan Council



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July 23, 2002

The Honorable Jim Jeffords
Chairman, Committee on Environment and Public Works
United States Senate
Washington, DC 20510-6175

The Honorable Bob Smith
Ranking Member, Committee on Environment and Public Works
United States Senate
Washington, DC 20510-6175

Re: Transportation and Air Quality Conformity Case Study

Dear Senators Jeffords and Smith:

Please find the following responses in reference to your request for information. Thank you for the opportunity to comment on the Baltimore region's experience with transportation conformity. Additionally, it is important to note that while the Baltimore region progresses in coordinating transportation and air quality planning, stationary source and inter-regional transported pollution continue to be a major challenge in achieving attainment of national air quality standards.

For expediency, the enclosed information was formulated by staff of the Metropolitan Planning Organization for the Baltimore region and does not necessarily reflect the view of the MPO members. Responses were coordinated with the state air and transportation agencies, the Maryland Departments of Transportation and the Environment.

Please contact me with any questions or requests for additional information.

Sincerely,

Harvey S. Bloom, Director
Transportation Planning Division

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Please find the following responses in reference to your request. For expediency, this information was formulated by staff of the Metropolitan Planning Organization for the Baltimore region and does not necessarily reflect the views of the MPO Board members. For more information, please contact Harvey S. Bloom, Director of Transportation Planning, at 410-732-9566 or hbloom@baltometro.org.

Difference in Timing of Schedules

In the Baltimore region, the attainment date is 2005. Currently, transportation plans and programs are tested against the SIP budget for 2005, 2015, and 2025. Due to advancements in vehicle technology and federal and state regulations, the requirement to demonstrate conformity for out-years is not currently an issue affecting the implementation of the transportation plan or program for the Baltimore metropolitan nonattainment area.

In general, the difference in requirements for update schedules for the SIP, transportation plans, transportation programs, and conformity presents a challenge. Air quality plans are under various timelines for submittal (both required and court-ordered). Transportation plans and programs operate under a different timeline for update as well as conformity determinations that are updated under a third set of timelines. These various schedules trigger different work tasks, update timelines and/or sanctions clocks. Ultimately, timing work activities, project solicitation, and final conformity determinations demand effective coordination with a wide array of entities engaged in these various activities. A sample schedule of transportation and air quality activities is attached.

The Baltimore region experienced a delay in the 2001-2005 TIP submittal/approval due to timing issues in updating data assumptions between the transportation program and the SIP. Using 1999 vehicle registration data in the development of the 2001-2005 TIP, emissions estimates were significantly greater than those in the SIP mobile source emissions budgets created using 1990 vehicle registration data. Although not required, the SIP mobile source emissions budgets were updated to address the new vehicle data, ultimately resolving the situation. Additional emission reductions strategies were also initiated at the time. This delay did not result in the cancellation of any transportation investments or economic development opportunities.

As a result of this delay, the region's state transportation and air quality agencies now work consistently with the MPO as well as federal officials to anticipate timing and coordination issues in advance. Nonetheless, the complexity of the transportation and air quality models as well as transportation and air quality regulations and planning practices does not allow for perfect, consistent harmony between the two planning areas.

MOBILE6 Verses MOBILE5 Projections

The Baltimore region has begun the process of developing estimates of mobile source emissions using MOBILE6. Preliminary, unapproved estimates indicate a substantial increase in VOC and NOx emissions. These estimated emissions are the result of changes in heavy-duty truck percentages (which have changed in recent transportation conformity emissions work compared to the analysis completed for the approved SIP budget), greater gram per mile emission factors

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for vehicle classes contained in MOBILE6, and reductions in credits for programs such as Inspection and Maintenance.

The Baltimore region is developing a methodology to estimate mobile source emissions using MOBILE6 for a January 23, 2003 SIP submittal. Working cooperatively with the Maryland Departments of the Environment and Transportation, conformity of plans and programs using MOBILE6 will most likely wait until new SIP budgets have been developed for a January 2003 SIP submittal to and approval by EPA. It is unclear at this time the effect of MOBILE6 budgets on the ability to determine conformity of the region's transportation plans and programs.

It is our understanding that when EPA classifies areas using the 8 hour NAAQS standards, non-attainment areas will develop new budgets. It is anticipated that the budgets will change with the new standard, since a rolling 8 hour concentration will be used as opposed to a one hour concentration.

Additional Vehicle Emission Controls

Major vehicle emissions controls have already been instituted in Maryland. Additional controls could include alternative fuels and TCM-like measures. It is most likely that these measures would not be sufficient to address the shortfall created by MOBILE6, particularly in the timeframe to reach attainment in 2005.

Role of Transportation Control Measures

The Attainment Plan for the Baltimore region does not formally include any TCMs, such as those listed in Section 108(f) of the CAA. TCM-like initiatives and CMAQ-funded strategies are included in the latest transportation plan and capital program, with associated credits used for conformity.

Impacts of Conformity Lapse

The Baltimore region has not experienced a conformity lapse to date.

Role of Motor Vehicle Emission Estimates and Models

The quality of estimates of mobile source emissions has dramatically changed due to the conformity process. The conformity requirement mandates a more precise understanding of motor vehicle operation conditions and their associated impact on emissions. This improvement has promoted refinements in transportation models to produce estimates for variables for which the MOBILE model is sensitive. Together, these improvements should lead to more accurate estimates of mobile source emissions. It is hoped that the better understanding of mobile source emissions production allows for politically acceptable and cost effective programs to be developed, ultimately resulting in emission reductions and cleaner air.

mandates a more precise understanding - changed quality of estimating

Estimates of regional mobile source emissions have increased and decreased over time. As federal and state regulations have been promulgated, such as the TIER II standards, estimates of future mobile source emissions have decreased compared to early year estimates. Conversely, emissions estimates have increased as updated assumptions on inputs such as vehicle registration and vehicle miles of travel (VMT) mix have changed. Methodological changes in versions of the

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MOBILE emission model have also caused inconsistencies between what was projected and experienced. The reliability of the impacts of technology changes, input assumptions regarding fleet characteristics, and the reliance of estimations of mobile source emissions from models determines the accuracy and consistency between estimates and what is experienced over time.

Over the past 10-20 year period, mobile emissions estimates in the Baltimore metropolitan area have been decreasing. As vehicle technology has become increasingly advanced, inspection and maintenance programs have expanded and become more stringent, and fuel volatility has decreased, regional mobile emissions have also decreased. Recently promulgated Tier II regulations and the Heavy-Duty Engine Rule should help to continue this trend.

It is difficult to tell how well our estimates of mobile source emissions have been with actual emissions. Monitoring data shows emissions of all sources, including transport. Overall, ozone violations from 1990 to present have decreased. Our inventory estimates from all sources show decreasing emissions, which does agree with the monitoring data of decreasing ozone violation data.

Role of Transportation Models

At the present time, the best professional tool available to estimate regional travel, and potentially motor vehicle emissions, are travel demand forecasting models. Travel models were originally designed to assist transportation planners and elected officials in the development of the interstate and transit systems. The models have done an adequate job in performing analyses for this goal. Travel models have been developed to be sensitive to changes in transportation supply improvements (new roadways, additional lanes, and transit improvements) and changes in demand (location of households and employment) used in the planning and implementation of the transportation network.

More recently, travel demand models have been used for the estimation of mobile source emissions. This task is different from the original intent of travel demand modeling, but planners have adapted travel models to include variables sensitive to emissions analysis. This adaptation effort is not all-encompassing at this time; therefore, the output from the travel model is at times being used for levels of calculation that are beyond the travel model's intended level of accuracy.

Travel models have mixed results in their ability to track changes in VMT. In short range planning applications (5 year period), travel models perform reasonably well, since near term estimates are extrapolation of existing trends. For longer range planning purposes, the accuracy of growth in VMT is more questionable. Travel models, built on the observation of current conditions, use variables that influence travel in the base year to estimate future conditions.

Given the ever-changing influence of national and regional economic conditions, local public policy initiatives and individual choices and preferences on travel demand and behavior, the expectation that travel models will be able to capture and predict the real world experience some 20 years "down the road" is unreasonable.

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Many forms of induced travel exist. Induced demand resulting from a new transportation improvement, a location change of employment or a regional activity center are captured in our regional travel model. However, more complex issues associated with induced demand are not captured. An increase in the number of trips that a household makes as a result of reduced congestion is not estimated. Increases in the concentration of new households and employment resulting in additional access with transportation network improvements are also not captured. The Baltimore Metropolitan Council is currently working on a method to integrate a land use model into the transportation planning process to forge a better understanding and ultimate decision-making process in capturing the potential impacts of transportation investments.