

National Capital Region Transportation Planning Board

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Memorandum

October 12, 2005

To: Transportation Planning Board

From: Michael J. Clifford

Subject: Status of 2005 CLRP / FY2006 - 2011 TIP Conformity Assessment with Respect to Fine Particles (PM2.5)

Introduction

At last month's TPB meeting staff reported that we were trying to finalize the modeling approach and environmental inputs to the Mobile model as we transition from daily to annual emissions inventories in the analysis of PM2.5. Under consideration are such inputs as temperature, humidity, Reid vapor pressure (RVP), and sulfur content for gas and diesel, and the use of units such as hourly versus daily values (for temperature and humidity) or monthly versus seasonal values (for RVP and sulfur content).

Development of Model Inputs / Approach

Since we were about to configure Mobile model runs and subsequent post-processor emissions calculation procedures to address the PM2.5 requirements, our working assumption was that we would set up such analysis procedures once: for use now in conformity and for subsequent use in the state implementation plan (SIP). In discussing the topic with MWAQC's Emissions Inventory Working Group, the air agencies expressed preference for greater detail for the inputs, at least for development of the SIP. For example, while travel demand data are to be converted from daily to annual totals by use of seasonal adjustment factors, the air agencies indicated that emissions factors should be developed for each month, not each season. Further, the air agencies planned to use hourly temperatures, humidity, and barometric pressure, rather than the historical approach of minimum / maximum daily temperature settings, which use a Mobile6 internally-provided set of humidity and barometric pressure values.

EPA guidance suggested checking each variable for its sensitivity in affecting overall emissions and then designing an approach accordingly. Since final inputs are not currently available at the more detailed levels under consideration by the air agencies for SIP development, we decided for conformity purposes to pursue use of a 'basic approach' for the PM2.5 assessment as authorized

in EPA guidance and consistent with the methods used historically for conformity and the SIP. Accordingly, we requested minimum / maximum temperatures from DEP staff for use in the conformity assessment. More detailed inputs can still be developed by the air agencies and used in the PM2.5 SIP, as the SIP schedule is not as pressing as the April 2006 conformity lapse date faced by transportation agencies. As part of this basic approach, monthly minimum / maximum temperature values would be applied in conjunction with: model default values for humidity / barometric pressure; previously specified values for RVP; diesel sulfur content as per recent Region 3 EPA guidance; and Mobile6 defaults for gasoline sulfur content.

Modeling Experience to Date

Following receipt of the minimum / maximum temperatures, TPB staff applied the data in Mobile6 to develop 'production' emissions factors for direct PM2.5 and for NOx (as a PM2.5 precursor) for each month of the year. It was observed that while very little difference was seen in emissions rates by month within a season, the machine time for execution of the Mobile6 computations on a fairly high performance computer approached 30 hours. We therefore researched whether monthly rates were worth the additional level of effort to develop. Our sensitivity tests showed that emissions factor differences for seasonal vs. monthly conditions do not appear to be significant, and we forwarded these results to the MWAQC Emissions Inventory Working Group, along with a recommendation for use of seasonal values, for discussion at its next meeting on October 13th.

Next Steps

In the coming week we hope to finalize this technical approach for air quality conformity, proceed with our production runs for emissions factors, and prepare mobile source emissions inventories for all of our conformity milestone years (2002, 2010, 2020 and 2030). Our schedule is to present draft results for the project at the November 4th Technical Committee meeting, which would enable staff to prepare a draft report on the overall PM2.5 conformity assessment for the November 16th TPB meeting. This time frame provides for public comment and interagency consultation, response to comment, and Board approval on December 21. Historically, federal review and approval has taken about three months, so meeting this schedule for TPB is critical in order to provide the federal agencies with sufficient time for their process to be completed before the conformity lapse deadline of April 6, 2006.