

## **National Capital Region Transportation Planning Board**

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Memorandum

**Date:** April 21, 2009

**To:** Travel Management Subcommittee

**From:** Anant Choudhary  
Transportation Engineer

**Subject:** Proposed revised methodology for estimating CO<sub>2</sub> emissions benefits from the TERM 'Signal Optimization'

This memorandum provides an update on the proposed revised methodology for the adopted TERM 'Signal Optimization.' The measure was adopted in July 2002 and its accrued emissions benefits (VOC & NO<sub>x</sub>) are shown in the Tracking Sheet.

The methodology in the year 2002 analysis uses results from studies prepared: (1) by the District of Columbia Department of Transportation for the 16<sup>th</sup> Street corridor from Eastern Avenue, NW to P Street NW, and (2) by Maryland State Highway Administration for MD 650 (New Hampshire Avenue) from MD 212 to Peabody Street in the District. Delay reductions and operating speed improvements were obtained from the Synchro model and were field verified. Then, emissions benefits were estimated using emission factors from the Mobile6.2 model and VMT information. In the analysis AM speed range 8.3 to 14 mph and PM speed range 13.5 to 18 mph from these routes were considered representative for the entire region.

For the current greenhouse Gas emissions analysis staff uses the CO<sub>2</sub> emissions rates as developed by the University of California, Riverside, which vary by speed. CO<sub>2</sub> emissions rates are much higher at lower speeds, in the range of 1 mph to 15 mph (see Exhibit 1.) Since much of the regional VMT occurs at the higher speeds, estimating CO<sub>2</sub> emissions benefits using the lower speeds from the above two studies and corresponding CO<sub>2</sub> rates is likely to result in overstating the CO<sub>2</sub> emissions benefits.

In the revised methodology COG/TPB staff proposes to estimate emissions benefits for each state by facility type. Due to lack of data, estimating benefits for each and every route in the Maryland, District of Columbia and Virginia would be a difficult task. DTP staff proposes to categorize routes having similar road characteristics such as urban, semi-urban roads, arterial or major roads, and use speed profiles for these routes from the annual Arterial Travel Times Studies prepared by COG/TPB staff. The analysis and CO<sub>2</sub> emissions estimates using the revised method will provide a more realistic estimate of emissions benefits than the previous method. DTP staff will report on the revised estimate at the May 26<sup>th</sup>, 2009 TMS meeting.

Exhibit 1

