COMMUTER CONNECTIONS TRANSPORTATION DEMAND MANAGEMENT EVALUATION PROJECT

TRANSPORTATION EMISSION REDUCTION MEASURES (TERMS) REVISED EVALUATION FRAMEWORK 2005 – 2008

Prepared for:

Metropolitan Washington Council of Governments
777 North Capitol Street, NE, Suite 300
Washington DC 20002-4239

Prepared by:

LDA Consulting
Washington D.C.
PH (202) 548-0205

In conjunction with:

Eric N. Schreffler, Transportation Consultant
and
CIC Research, Inc

April 27, 2007

EXECUTIVE SUMMARY

The Commuter Connections Program of the Metropolitan Washington Council of Government (COG), in concert with program partners, is responsible for implementing five Transportation Emission Reduction Measures (TERMs) in support of the metropolitan Washington region's efforts to meet the conformity requirements of federal transportation and clean air mandates. The TERMs include:

- <u>Maryland and Virginia Telework</u> – Provides information and assistance to commuters and employers to further in-home and telecenter-based telework programs.

- <u>Guaranteed Ride Home</u> – Eliminates a barrier to use of alternative modes by providing free rides home in the event of an unexpected personal emergency or unscheduled overtime to commuters who use alternative modes.

- <u>Employer Outreach</u> – Provides regional outreach to encourage large, private-sector employers voluntarily to implement commuter assistance strategies that will contribute to reducing vehicle trips to worksites, including the efforts of jurisdiction sales representatives to foster new and improved in-house trip reduction programs.

- <u>Mass Marketing</u> – Involves a large-scale, comprehensive media campaign to inform the region's commuters of services available from Commuter Connections as one way to address commuters' frustration about the commute.

- <u>InfoExpress Kiosks</u> – Involves self-service electronic kiosks located in the District of Columbia and in northern Virginia that offer information on commute options and allow for remote submittal of ridematch and GRH registration applications.

Commuter Connections also operates the Commuter Operations Center (COC), providing direct commute assistance services, such as carpool and vanpool matching through telephone and internet assistance to commuters. The COC is not an "official" TERM, however, it supports all other TERMs.

This report provides a framework and methodology for evaluating the transportation and air quality impacts of these TERMs. This methodology and numerous surveys and other data collection tools described later in this report have been developed to estimate the TERMs' impacts for the period from July 2005 through June 2008 (FY 06-08). These impacts then will be compared against the goals established for each TERM by COG's National Capital Region Transportation Planning Board (TPB), the region's designated Metropolitan Planning Organization (MPO). The TERM evaluation framework and analysis reports are reviewed by the Commuter Connections Subcommittee and the TDM Evaluation Group.

At the early stages of the TERMs' implementation, Commuter Connections elected to undertake significant evaluation for each TERM. The TERM evaluation and analysis process has been ongoing since 1997. The objective of the evaluation process is to provide timely, useful, and meaningful information on the performance of the TERMs to decision-makers and other groups, including the TPB and other regional policy makers; COG program funders; Commuter Connections staff; TERM program partners, such as local jurisdictions and Transportation Management Associations (TMA); and employers and commuters who comprise Commuter Connections' clients.

Three previous evaluation frameworks have been prepared, the first for the January 1997 through June 1999 period (1997-1999) period, the second for the July 1999 through June 2002 period (1999-2002), and the third for July 2002 through June 2005 (2002-2005). The evaluation framework presented in this document builds on the framework used in the 2002-2005 analysis. Minor changes were made to the

TERM evaluation framework for 2005-2008 to address consolidation of some TERMs, such as the integration of the Employer Outreach for Bicycling into the Employer Outreach TERM and the integration of the Software Upgrades component of the Integrated Rideshare TERM into the Commuter Operations Center. Additionally, impacts for the InfoExpress Kiosk component of the Integrated Rideshare TERM now will be analyzed and measured separately.

The evaluation process outlined in this framework allows for both on-going estimation of program effectiveness and for annual and triennial evaluations. Two types of performance measures are included in the evaluation process to assess effectiveness. First, measures reflecting commuters' and users' awareness, participation, utilization, and satisfaction with the program, and their attitudes related to transportation options are used to track recognition, output, and service quality.

Second, program impact measures are used to quantify six key outcome results, including:

1) Vehicle trips reduced
2) Vehicle miles of travel (VMT) reduced
3) Emissions reduced: Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx), and Particulate Matter (PM$_{2.5}$)
4) Energy reduction (fuel saving)
5) Consumer saving (commuting cost saving)
6) Cost effectiveness, in terms of cost per benefit obtained (e.g., cost per trip reduced)

The evaluation process uses several calculation factors derived from surveys of Commuter Connections' program applicants and/or the public-at-large. These factors include: 1) placement rate (percent of commuters who shift to alternative modes), 2) vehicle trip reduction (VTR) factor (average daily trips reduced for each commuter placed), 3) average commute trip distance, and 4) proportion of ridesharers and transit users that drive alone to the location where they meet their carpool, vanpool, bus, or train.

These performance measures and factors are applied within the basic methodology steps listed below to calculate program impacts for each TERM.

1) Estimate commuter population "base" for the TERM (e.g., all commuters, GRH applicants, rideshare matching applicants, kiosk users, Employer Outreach employees, etc.)

2) Calculate "placement rate" – Percentage of commuters in the population base who made a travel change as a result of the TERM

3) Estimate the number of new alternative mode placements – Multiply placement rate by the population base for the evaluation period

4) Calculate the vehicle trip reduction (VTR) factor for new placements – Average daily vehicle trips reduced per placement

5) Estimate vehicle trips reduced – Multiply number of placements by the VTR factor

6) Estimate vehicle miles traveled (VMT) reduced – Multiply number of vehicle trips reduced by average commute distance

7) Adjust vehicle trips and VMT for access mode – Discount vehicle trips reduced and VMT reduced to account for commuters who drive alone to meet rideshare modes and transit

8)   Estimate NOx, VOC and PM$_{2.5}$ emissions reduced – Multiply adjusted vehicle trips and VMT reduced by emissions factors consistent with the regional planning process

9)   Estimate the energy and commuter cost savings – Multiply VMT reduced by fuel efficiency and vehicle operating cost factors

10)   Estimate cost effectiveness – Divide program or TERM costs by the program impact measures

The calculations outlined above have been embedded into a spreadsheet used by Commuter Connections and its partners to track estimated results on a quarterly basis. An annual summary of these results is included in Commuter Connections' Annual Report. The factors used in the spreadsheet are updated as new surveys relevant to each TERM are completed. At the end of the three-year evaluation period, a TERM Analysis Report is prepared to summarize reductions in vehicle trips, VMT, and emissions and progress toward goals in each of these performance indicators for the three-year period.

Throughout the evaluation period, additional reports are prepared to present results of major data collection efforts, such as the rideshare applicant placement survey, the "State-of-the-Commute" survey of regional commuting trends and attitudes, GRH Applicant survey, and others. These reports are distributed to program partners, policy makers, and other with an interest in regional transportation.