

# Workshop #1 Summary

The Maryland/D.C. region pilot is focused on congestion, with an emphasis on the use of performance measures to inform decisions regarding capacity improvements along bus priority corridors in Maryland. The first workshop was held on December 13, 2011 at the National Capital Region Transportation Planning Board (TPB)/Metropolitan Washington Council of Government (COG) in Washington, D.C. The one-day workshop brought together representatives from the Maryland DOT/State Highway Administration (SHA), TPB/COG, Washington Metropolitan Area Transit Authority (WMATA), the Maryland-National Capital Park and Planning Commission (M-NCPPC), Montgomery and Prince George's counties, and AASHTO.

Discussion topics during the workshop included the use of congestion performance measures and data to support the following activities:

- Identifying priority corridors;
- Identifying congestion hotspots/chokepoints;
- Identifying and evaluating options for addressing these needs; and
- Doing all of the above in a coordinated manner across agencies.

In total, 14 participants from eight agencies participated in the workshop (see Table 1). The workshop agenda is included in Appendix A.

**Table 1 Maryland/D.C. Region Workshop #1 Participants**

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<u>MDOT/SHA</u>	<u>M-NCPPC</u>
Lyn Erickson	Eric Graye
Subrat Mahapatra	<u>Montgomery County</u>
<u>TPB/COG</u>	Edgar Gonzalez
Ron Kirby	<u>Prince George's County</u>
Andy Meese	Victor Weissberg
Eric Randall	<u>AASHTO</u>
Wenjing Pu	Matt Hardy
Lora Byala (Foursquare ITP)	

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**FTA**

Nick Garcia

**WMATA**

Tom Harrington

Charlie Scott

Patricia Hendren

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**Facilitators**

Joe Guerre, Cambridge Systematics

Jay Evans, Cambridge Systematics

Kelsey Ahern, Cambridge Systematics

## **KEY DISCUSSION TOPICS**

### **Congestion Performance Measures**

During the first half of the workshop, TPB/COG, MDOT/SHA, and WMATA each gave presentations highlighting their existing congestion data and performance measures as well as the role of performance measures in supporting planning. TPB/COG is in the process of piloting a regional congestion dashboard that reports system-level information on freeway congestion (delay per traveler) and reliability (planning time index) during the AM and PM peak periods. These two measures were identified as the most promising for this pilot work. As summarized in Table 2 TPB/COG compiles congestion data from a variety of sources and has developed the Regional Integrated Transportation Information System (RITIS) that acts as a clearinghouse for roadway data collected by numerous operating agencies in the region. While the RITIS system is primarily highway-oriented now, there is an opportunity to supplement the system with data related to bus incidents and on-time performance, and for bus operations staff to access the existing incident data.

MDOT/SHA reports on congestion at two levels: at the project/corridor level and at the systematic/capital programming level. To address its mobility/economy goal, SHA reports corridor level congestion measures in the SHA Business Plan and SHA Annual Report. These measures include reliability measures<sup>1</sup> (average speed, buffer time, travel time index, planning time index, and number of bottlenecks), total congestion cost, and count-based measures. This information helps SHA target the portions of the highway network that are both slow and unreliable. At a systems level, the MDOT Annual Attainment Report addresses congestion performance by reporting the percent of freeway lane-miles and arterial lane-miles with average annual volumes at or above congested levels.

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<sup>1</sup> Reliability measures are newly available to the DOT due to efforts by the I-95 Coalition, technology improvements over the last two to three years, and investments in vehicle probe data.

WMATA launched its Priority Corridor Network Plan in 2008, which identified 23 arterial bus corridors that account for roughly 50 percent of total bus ridership. WMATA conducts detailed corridor studies on a handful of these corridors each year. To identify locations for bus priority capital improvements, WMATA considers performance data such as ridership, bus speed and frequency, general purpose volume/capacity ratios, intersection level of service, reliability and on-time performance, and feasibility. To support bus operations and planning, WMATA considers congestion measures such as average bus travel speeds and bus on-time performance. On-time performance is viewed as the best indicator of bus performance, and is essentially an indicator of reliability.

TPB/COG also presented information on their ongoing regional bus priority hot spots study that is evaluating performance data from all bus transit agencies in the region. From the full list of hot spots identified, the study will identify the top hot spots based on bus speeds and level of service and recommend bus priority treatments to address the performance issues.

During the agency presentations, participants identified the following challenges/opportunities for evaluating multimodal congestion in the region:

- Exploring the relationship between the highway relative measure (planning time index) and the transit reliability measure (on-time performance);
- Developing the capability to forecasting reliability measures;
- Coordinating the development of priorities across agencies;
- Improving data sharing across agencies; and
- Exploring opportunities to enhance existing measures or develop new ones using newly available vehicle probe data.

**Table 2 Summary of MWCOC Congestion Data and Performance Measures**

Source/Program	Directly Observed Data	Performance Measures	Challenges*/Shortcomings
TPB/COG Freeway Traffic Monitoring/Skycomp	Density	Level of service (LOS)	4 day sample (Tues, Wed and Thu), major incidents excluded
TPB/COG Arterial Traffic Monitoring	Speed Travel time	LOS	1 day sample of NHS arterial highways
TPB/COG Congestion Management Process (CMP)/INRIX	Speed Travel time	Travel Time Index Planning Time Index  Delay (\$ cost)	Explaining it to the public; planning implementation  If person-hours of delay is calculated, integration of volume data is needed
TPB/COG HOV Facility Survey	Vehicle occupancy Vehicle classification Travel time	Average auto occupancy Person movement per lane per hour HOV lane travel time savings	Small sample size (5-9 floating car runs), only when HOV in operation
TPB/COG Airport Ground Access Travel Time Study	Speed Travel time	Travel time (from activity centers to airports) Average speed as a % of speed limit	Small sample size, only major highways studied
TPB/COG Transportation Data Clearinghouse/Maryland Traffic Monitoring System		AADT/AAWDT	
RITIS VPP Suite (a web-based congestion analysis and visualization tool)	Speed Travel time	Bottleneck (queue length, duration, frequency) Congestion scan (spatial-temporally) Travel Time Index Planning Time Index Buffer Index	Data only available for the I-95 Vehicle Probe Project
RITIS/MATOC	Incidents	Incident duration, type, etc.	

\*Note: Some overall challenges include:

1. Uncertainties in future funding, availability and methodology for third-party data procurements (e.g., INRIX data).
2. Coordinated selection of the most appropriate corridors/locations if only a sample of data can be collected or purchased.
3. Determination of the causes of changes in monitored performance measures ("why").

Source: TPB/COG

## **Decision Support**

The participants discussed the value of using congestion data and performance measures as a way to support decision-making. TPB/COG, MDOT/SHA, and WMATA provided examples of how they are applying performance measures to identify and evaluate strategies for congestion hotspots. This allows the agencies to identify high payoff corridors where congestion reduction strategies provide the biggest “bang for the buck.” They indicated that performance measurement provides a good method to deploy limited resources to priority corridors while integrating hotspot analysis with other agency project decisions.

Despite these advancements, the participants identified opportunities to combine roadway and transit analysis, and to improve how performance information is communicated to decision makers. They discussed the need to improve visualization in a way that brings all the data together to tell a coherent story and make the case for a particular investment.

Participants also noted that understanding what information the decision maker needs to know to make an informed decision as well as how to best communicate the information is an important element of performance-based planning that often gets overlooked. There were also discussions regarding of performance on agency accountability. Some participants felt that the public held agencies more accountable based on the performance of specific locations or areas, then on network-level performance.

## **Data Sharing and Interagency Coordination**

Given the number of transit providers and member jurisdictions in the metropolitan Washington region, interagency coordination and communication remains a challenging obstacle. For example, there are around 20 transit providers in the region, and the technologies that each agency uses to collect performance data are not necessarily the same. Similarly, examples where MDOT owns the roads, TPB/COG tracks performance data, and WMATA provides transit service underscore the importance of cross-agency collaboration to identify multimodal hotspots and evaluate and implement congestion mitigation strategies.

The workshop participants recognized the importance of finding opportunities to share data among agencies and avoid duplicate work. The workshop provided a venue for the region’s transportation planning agencies to present to one another, compare data availability, and identify areas of gaps and/or overlap. The participants recognized a need for better sharing and integration of data between highways and transit.

## **1.2 OPPORTUNITIES FOR IMPLEMENTATION WORK**

The workshop participants identified the following opportunities for implementation work that could be conducted as part of the NCHRP 8-36 (104) pilot:

1. Building from WMATA and TPB/COG's regional bus priority hot spots analyses, apply roadway performance data to identify priority multimodal hotspots that target both transit and highway congestion needs. This process would also include defining the criteria for identifying multimodal hotspots.
2. Develop a process for identifying and evaluating strategies to address multimodal congestion hotspots at the project level, including the identification of key decision points. The process should address issues such as:
  - What information do state, regional and local decision makers need to make a decision about funding a project in these locations?
  - What data and performance measures are available to evaluate the potential projects and build the case for the preferred project?
  - How should costs and benefits of the potential multimodal strategies be evaluated?
  - Are there any cross-agency data issues that could be addressed to help make this process more efficient?
  - How should the results of the analysis be communicated?
3. Inventory the congestion-related data that are available in the region and develop recommendations on how the data could be compiled, consolidated, and integrated across agencies.
4. Conduct a national scan on visualization and the communication of corridor performance data.

Regarding implementation of these activities, the participants suggested that items #3 and #4 could be addressed as part of item #2.

Eric Randall from TPB/COG volunteered to be the point of contact for the research team to coordinate implementation activities in the coming months.

# Proposed Implementation Activities

Proposed implementation activities in the Maryland/D.C. region would build on the recent efforts of WMATA and TPB/COG to define bus priority corridors and identify priority hotspots (i.e., needs) on these corridors. The research team would work with the regional agencies to integrate highway performance data into the analysis and develop a process to identify and prioritize multimodal strategies for addressing congestion. The role of the research team would focus on facilitating and documenting the process, while the participating agencies would provide the analytical support required for the steps described below.

## **Task 1 – Identify Multimodal Hotspots and Select two for the Pilot**

**Objective.** To identify priority multimodal hotspots that target both transit and highway congestion needs.

**Work Steps.** Proposed work activities for this task include:

- Coordinate with TPB/COG to obtain a list of regional bus priority hotspots (this is ongoing work, scheduled to be finalized by mid-January).
- Apply SHA’s critical intersection list and other agency highway congestion data (such as vehicle probe data) to the list of bus hotspots and develop a process for identifying multimodal hotspots.
- Select two multimodal hotspot locations for analysis in Task 2.

**Pilot Products.** Documentation of evaluation process used to identify multimodal hotspots.

## **Task 2 – Develop Methodology to Identify and Prioritize Multimodal Congestion Strategies**

**Objective.** To develop a methodology for identifying and prioritizing strategies to address transit and roadway congestion, and pilot the methodology on two multimodal hotspots.

**Work Steps.** Proposed work activities for this task include:

- Outline a process for identifying and prioritizing multimodal congestion strategies, including the key decision points that would be required at each stage. The process will address issues such as:
  - What information do state, regional and local decision makers need to make a decision about funding a project at the two locations?

- What data and performance measures are available to evaluate the potential projects and build the case for the preferred project?
- How can costs and benefits of the potential multimodal strategies be evaluated?
- Are there any cross-agency data issues that could be addressed to help make this process more efficient?
- How should the results of the analysis be communicated?
- Pilot the evaluation process for each multimodal hotspot and design a project justification report that highlights the costs and benefits of potential projects.
- Identify lessons learned and opportunities to improve regional coordination (i.e., data consolidation, visualization tools, etc.).
- Present results and findings during workshop #2.

**Pilot Products.** Memorandum presenting a flowchart for identifying and prioritizing multimodal congestion strategies, summarizing the results of a pilot application of this process at two hotspot locations, and documenting lessons learned/recommendations to improve inter-agency coordination and communication with decision makers.



# **NCHRP 8-36 Task 104**

## **Maryland/D.C. Region Pilot, Workshop #2**

### Integrating Performance Measures into a Performance-Based Planning and Programming Process

#### AGENDA

Thursday, April 19, 2012  
9:00 AM to 3:00 PM

WMATA Headquarters, Room 5D-02  
600 Fifth Street NW  
Washington, DC 20001

#### Workshop Objectives

- Review results of the implementation work completed since Workshop #1;
- Discuss findings and lessons learned, e.g., what worked, what did not, barriers to further implementation, strategies for overcoming the barriers; keys to success, etc.; and
- Identify priorities and next steps for the participating agencies after the pilot concludes.

9:00 AM – 9:15 AM	<b>Welcome and Introductions</b>
9:15 AM – 9:30 AM	<b>Pilot Project and Workshop Overview</b> Recap the research effort, the objectives of the Maryland/D.C. Region pilot, and the objectives of the workshop
9:30 AM – 11:00 AM	<b>Multimodal Congestion Strategy Prioritization Framework</b> Present findings from the phone interviews and proposed prioritization framework Discuss opportunities and challenges for implementation
11:00 AM – 11:15 AM	<b>Break</b>
11:15 AM – 12:15 PM	<b>Overview of Multimodal Hotspot Data Analysis</b> TPB/COG Presentation Presentation of compiled data analysis of the two hot spot locations, including measured performance in congestion and reliability
12:15 – 1:00 PM	<b>Lunch</b> Provided by TPB/COG
1:00 – 1:45	<b>Communicating with Decision Makers</b> Discuss communication of results and role of performance measures
1:45 PM – 3:00 PM	<b>Regional Priorities and Next Steps</b> Identify priorities and next steps for the region after the pilot concludes Discuss lessons learned from the pilot that could be applicable to other agencies throughout the U.S. Identify needs for additional national research and capacity building