

2010
Congestion Management Process (CMP)
Technical Report

DRAFT

Transportation Planning Board Technical Committee
May 7, 2010

Andrew Meese and Wenjing Pu
National Capital Region Transportation Planning Board (TPB)
Metropolitan Washington Council of Governments (COG)

Background

- A Congestion Management Process (CMP) is a requirement in metropolitan transportation planning
 - SAFETEA-LU and associated 2007 Federal regulations for metropolitan planning address CMP requirements
- Metropolitan long-range plans developed after July 1, 2007 must have a CMP
 - The official CMP component is wholly integrated into the CLRP to address the federal requirement
- March 2006 Federal certification of the TPB process recommended demonstrating how the Congestion Management System (CMS, now CMP) was applied at critical stages of the metropolitan planning process, in the CLRP or a stand-alone document
- A 2008 CMP Technical Report was published
- Draft 2010 CMP Technical Report now ready for review

Outline of the Draft Report

- Executive Summary
 1. Introduction
 2. State of Congestion
 3. Consideration and Implementation of Congestion Management Strategies
 4. Studies of Congestion Management Strategies
 5. How Results of the CMP Are Integrated into the CLRP
 6. Conclusions

The 2010 CMP Technical Report:

- *Compiles information from a wide range of metropolitan transportation planning activities, and*
- *Provides some additional CMP specific analyses, particularly travel time reliability and non-recurring congestion analyses*

Executive Summary

- “Brief story” of the 2010 CMP Technical Report
- 14 pages
 - Significantly expanded versus the 2008 Report
- Highlights of chapters
- Key findings
- Key recommendations

Chapter 1 – Introduction

- Need for a CMP Technical Report
- Institutional context of the CMP
- Coverage area and extent of the CMP
- Highlights of the 2010 update
 - New data source for highway performance monitoring
 - Quantified congestion analysis: Travel Time Index and Mile-Hours of Congestion
 - Travel time reliability analysis: Planning Time Index and Buffer Time Index
 - MATOC program
 - MOITS Strategic Plan

Chapter 2 – State of Congestion

- Congestion on major highways
 - Freeways (Skycomp and INRIX)
 - Sampled arterials (arterial monitoring program and INRIX)
- Safety and congestion
- Congestion on the area's transit systems
- Park-and-ride facilities
- Airport access
- Freight movement and congestion
- Other congestion monitoring and data consolidation activities
- National comparison of the region's congestion
- 2009 CLRP congestion analysis

Chapter 3 – Consideration and Implementation of Congestion Management Strategies

- Similar to the 2008 Report with appropriate updates
- Demand management strategies
 - Commuter connections programs
 - Local jurisdictional activities (Table 5, pages 92-101)
- Operational management strategies
 - HOV Facilities
 - Variably Priced Lanes (VPLs)
 - Traffic Management (MATOC, MOITS)
 - Capacity Increases (Based upon CLRP)
- Construction-Related Congestion Management

Chapter 4 – Studies of Congestion Management Strategies

- Expanded from the 2008 Report
- Review of performance measures
- Review of congestion management strategies
- Updated information on studies
 - TERM evaluations
 - Regional mobility and accessibility study (RMAS)
 - Phase I: from 2000 to 2006, five scenarios
 - Phase II: from 2007 to present, two scenarios
 - MATOC benefit-cost study
 - MOITS Strategic Plan

Chapter 5 – How Results of the CMP Are Integrated into the CLRP

- Expanded from the 2008 Report
- The following are integrated into the CLRP:
 - Components of the CMP
 - Demand management
 - Operational management
 - Capacity increases in the CLRP

Chapter 6 – Conclusions

- New in the 2010 Report
- Key findings of the 2010 CMP Technical Report
- Recommendations for the Congestion Management Process

Key Findings: Strategies

- The **transit system** in the Washington region serves as a major alternative to driving alone – transit mode share is among the highest several metropolitan areas in the country
- The **Commuter Connections Program** remains a vital means to assist and encourage people in the Washington region to use alternatives to the single-occupant automobile
- Congestion management strategies of Management, Operations, and Intelligent Transportation Systems (**MOITS**) provide essential ways to make most of the existing transportation facilities
- **Variably priced lanes (VPLs)** are an effective way to provide alternatives to travelers and manage congestion on new capacity
- The Metropolitan Area Transportation Operations Coordination (**MATOC**) program enhances regional coordination for regional-significant incidents and the program is cost-effective with a conservative benefit to cost ratio of 10:1

Key Findings:

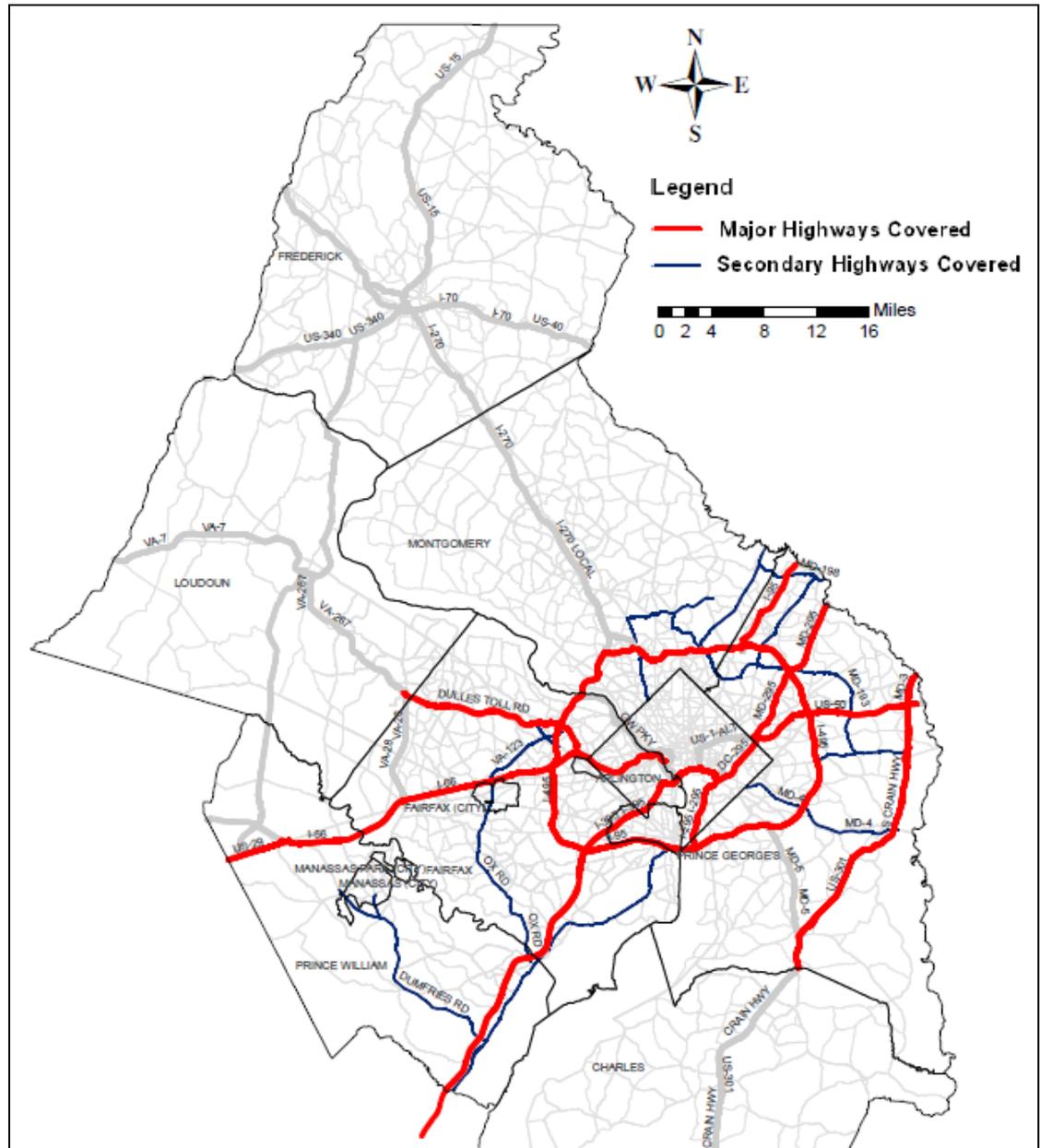
Skycomp and Arterial Monitoring Studies

- As reported in earlier published TPB travel monitoring reports
- 2008 (when fuel prices were at an all-time high) saw reductions in congestion compared to previous years.
 - Total freeway lane miles with level of service (LOS) F congestion in the AM and PM peak periods dropped by 24 percent from 2005 to 2008, almost back to 2002 levels.
- Arterial congestion tended to become worse over the years in the PM peak period (4:00-7:00 PM), especially during the PM peak hour (5:00-6:00 PM), while kept unchanged or relieved in the PM off-peak period (1:00-4:00 PM & 7:00-8:00 PM).

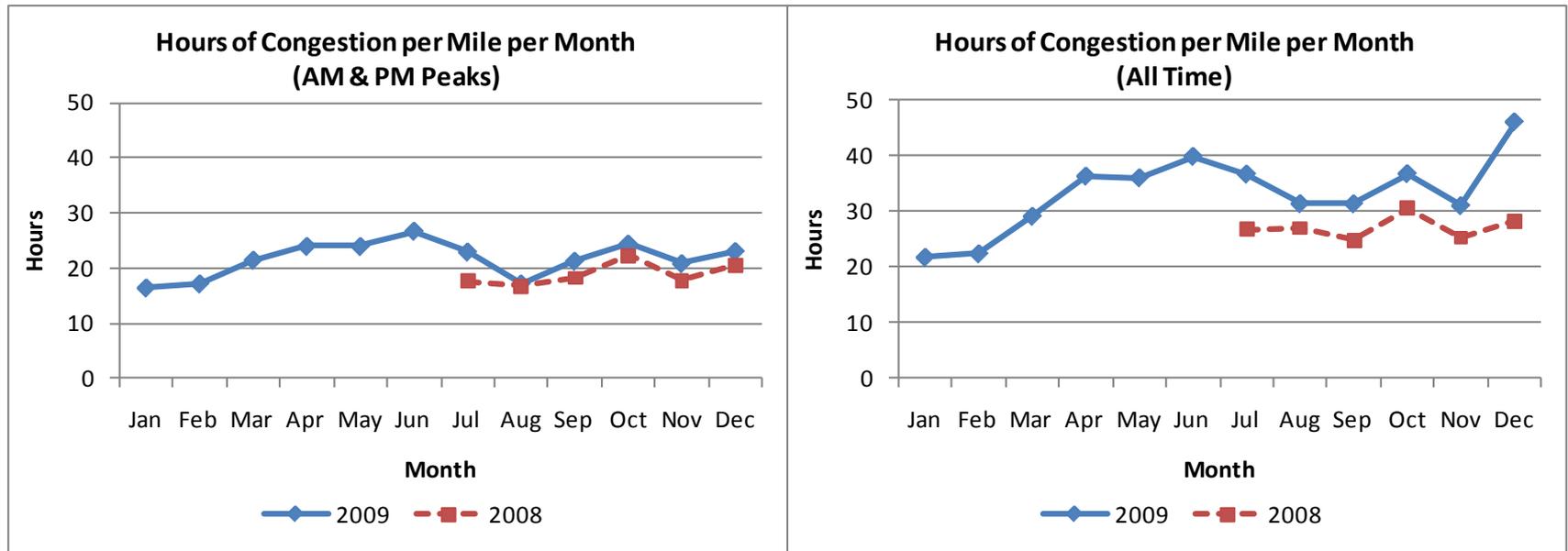
Analyses of INRIX Data (New for 2010)

- Section 2.1.3 (pages 48-65)
 - A New Data Source for Highway Performance Monitoring
 - Travel time index
 - Mile-hours of congestion
 - Planning time index
 - Buffer time index
- Limited Trial Data Sample
 - Significant but not comprehensive roadway coverage regionally (e.g., data for I-70 & I-270 are not yet available)
 - Data only since July 1, 2008

INRIX Data Coverage in the TPB Member Jurisdictions



Congestion on Freeways Covered by INRIX Data



Note: "congestion" is considered when speed \leq 50% of free flow speed.

- Congestion increased from 2nd half of 2008 to 2nd half of 2009:
 - 14% increase for AM & PM peaks
 - 24% increase for all time
- Congestion in 2009:
 - From January to June, increasing
 - From July to December, fluctuating

Key Findings:

INRIX (Limited Trial Data Sample)

- Congestion increased from the 2nd half of 2008 to the 2nd half of 2009 on the sampled freeways
 - “Mile-hours of congestion” as the congestion indicator
 - 14% increase in peak periods
 - 24% increase in all time
- Congestion varies seasonally and daily in 2009 on the sampled freeways
 - Most congested and unreliable month: June
 - Least congested and most reliable month: January
 - Most congested and unreliable AM hour: Tuesday 8-9 AM
 - Most congested PM hour: Friday 4-5 PM
 - Most unreliable PM hour: Friday 5-6 PM
 - Congestion kept increasing from January to June, while fluctuated in the 2nd half of 2009
- Travel time reliability has been examined in the CMP for the first time
 - On average there was a 13% decrease of travel time reliability from the 2nd half of 2008 to the 2nd half of 2009

Recommendations

- Continue the Commuter Connections Program
- Continue the MATOC program and agency/ jurisdictional transportation management activities
- Consider variable pricing and other management strategies for capacity increasing projects
- Encourage implementation of congestion management for major construction projects
- Continue and enhance the use of continuous, probe-based congestion monitoring data
- Integrate probe-based congestion monitoring data and location-fixed sensor data
- Continue travel time reliability analysis
- Explore the use of INRIX and other emerging data sources to produce online quarterly snapshots of regional congestion

Priorities for Committee Review

- Executive Summary (pages 7-20)
- Analyses of INRIX data (pages 48-65)
- Implemented strategies overall (Chapter 3, pages 89-128)
- Conclusions (Chapter 6, pages 145-147)

Review Schedule

- Committee presentations
 - Travel Management Subcommittee, April 27
 - MOITS, May 11
 - Commuter Connections, May 18
 - Travel Forecasting Subcommittee, May 21
- DEADLINE for comments May 28
- Finalization at June 4 Technical Committee