Item #3

2012
Congestion Management Process (CMP) Technical Report

Preliminary Draft

MOITS Policy Task Force and Technical Subcommittee
June 12, 2012

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National Capital Region Transportation Planning Board (TPB)
Metropolitan Washington Council of Governments (COG)

Today's Presentation

- Overview and Chapter 2: State of congestion (Wenjing Pu)
- Chapter 3: Summary of strategies

  (Erin Morrow)
- Chapter 4: Studies of strategies

  (Daivamani Sivasailam)

Acknowledgements

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all who provided input to this document,

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Background of the CMP

- 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

- 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
- CMP Technical Reports were released in 2008 and 2010
- 2010 Federal Certification of the TPB Process commended the CMP for its detailed documentation efforts in the 2010 CMP Technical Report
- Preliminary Draft 2012 CMP Technical Report now ready for review

Review Schedule

- Committee presentations
  - MOITS, June 12, 2012
  - TPB Tech, September 2012 (proposed)
  - Additional committees, TBD
- DEADLINE for comments by MOITS participants: July 10, 2012
- Please send comments to COG/TPB staff Erin Morrow: emorrow@mwcog.org

Outline of the Report

- Executive Summary

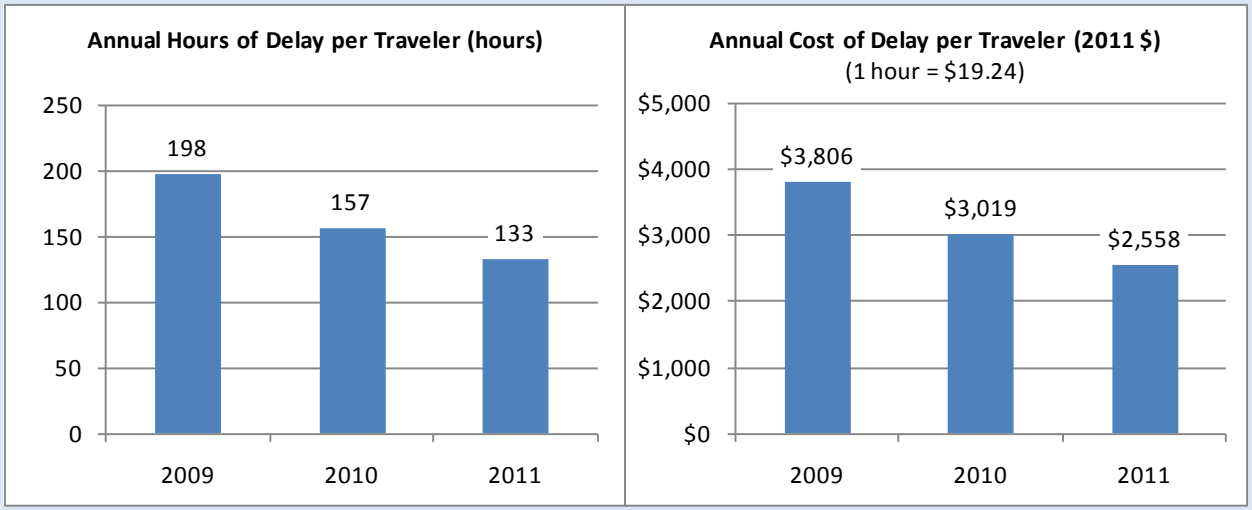
1. Introduction
2. State of Congestion (Wenjing Pu)
3. Consideration and Implementation of Congestion Management Strategies (Erin Morrow)
4. Studies of Congestion Management Strategies (Daivamani Sivasailam)
5. How Results of the CMP Are Integrated into the CLRP
6. Conclusions

The 2012 CMP Technical Report:

- *Compiles information from a wide range of metropolitan transportation planning activities, and*
- *Provides some additional CMP specific analyses, particularly I-95 VPP/INRIX data-based analyses*

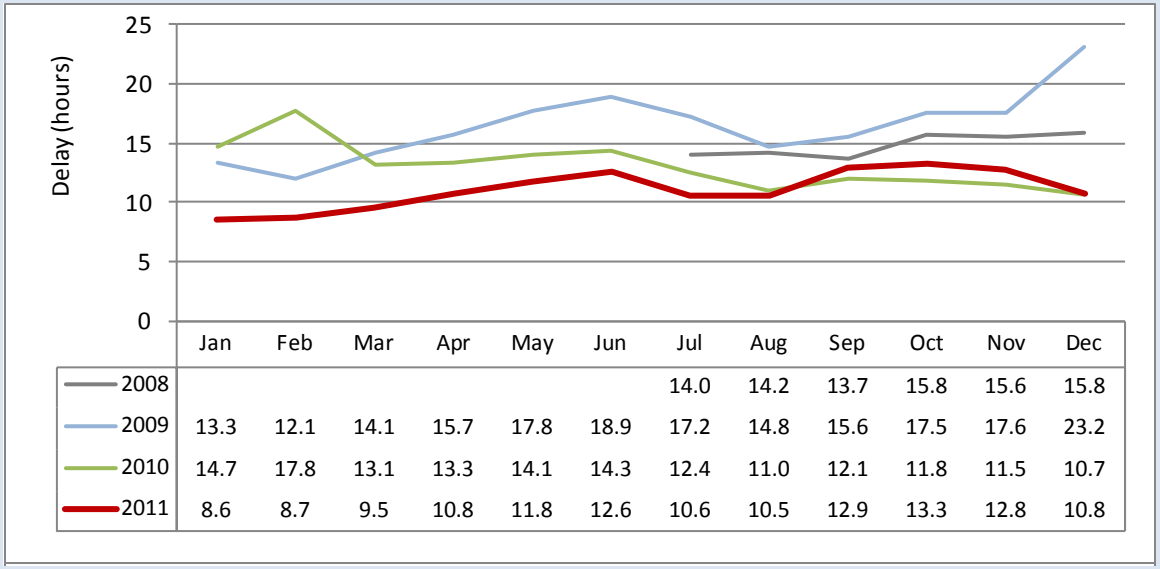
Key Findings (1/10)

- Freeway travelers in the Washington region on average experienced **decreasing** delays from 2009 to 2011



Key Findings (2/10)

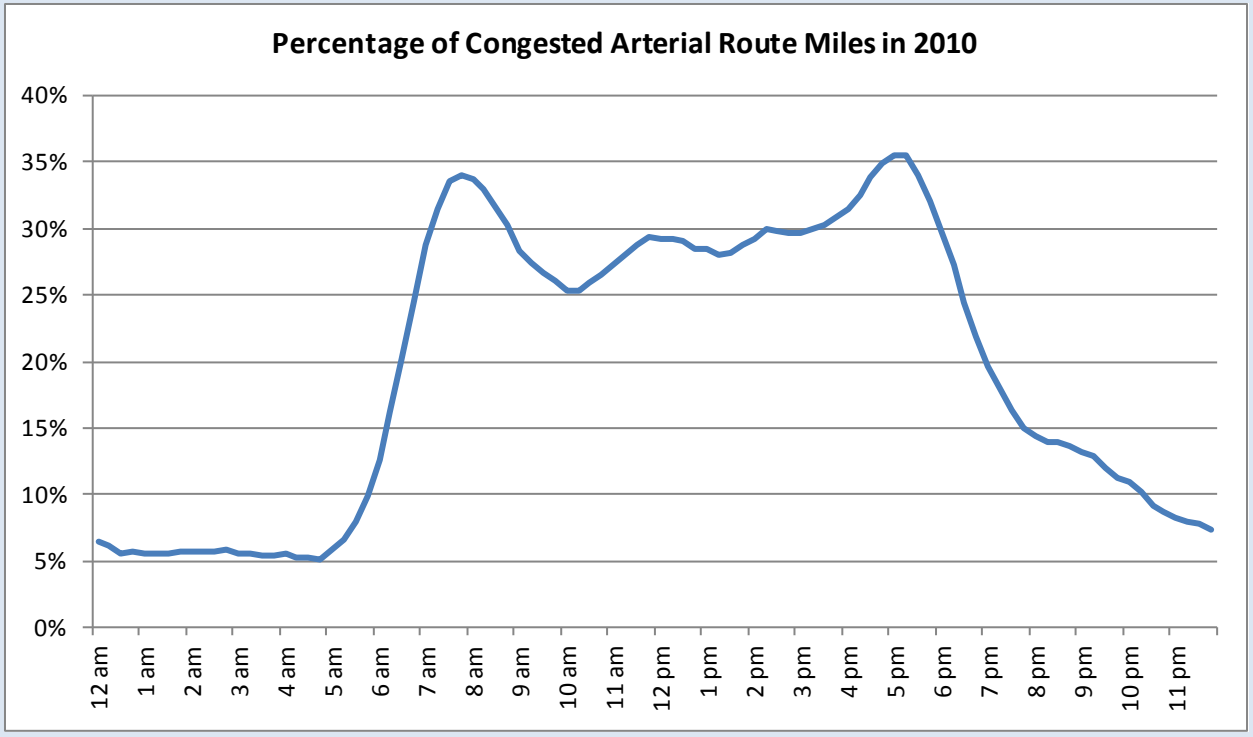
- Seasonal variation of congestion/delay:
  - Worst: June
  - Best: August/Dec – Feb, if no bad weather



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008							14.0	14.2	13.7	15.8	15.6	15.8
2009	13.3	12.1	14.1	15.7	17.8	18.9	17.2	14.8	15.6	17.5	17.6	23.2
2010	14.7	17.8	13.1	13.3	14.1	14.3	12.4	11.0	12.1	11.8	11.5	10.7
2011	8.6	8.7	9.5	10.8	11.8	12.6	10.6	10.5	12.9	13.3	12.8	10.8

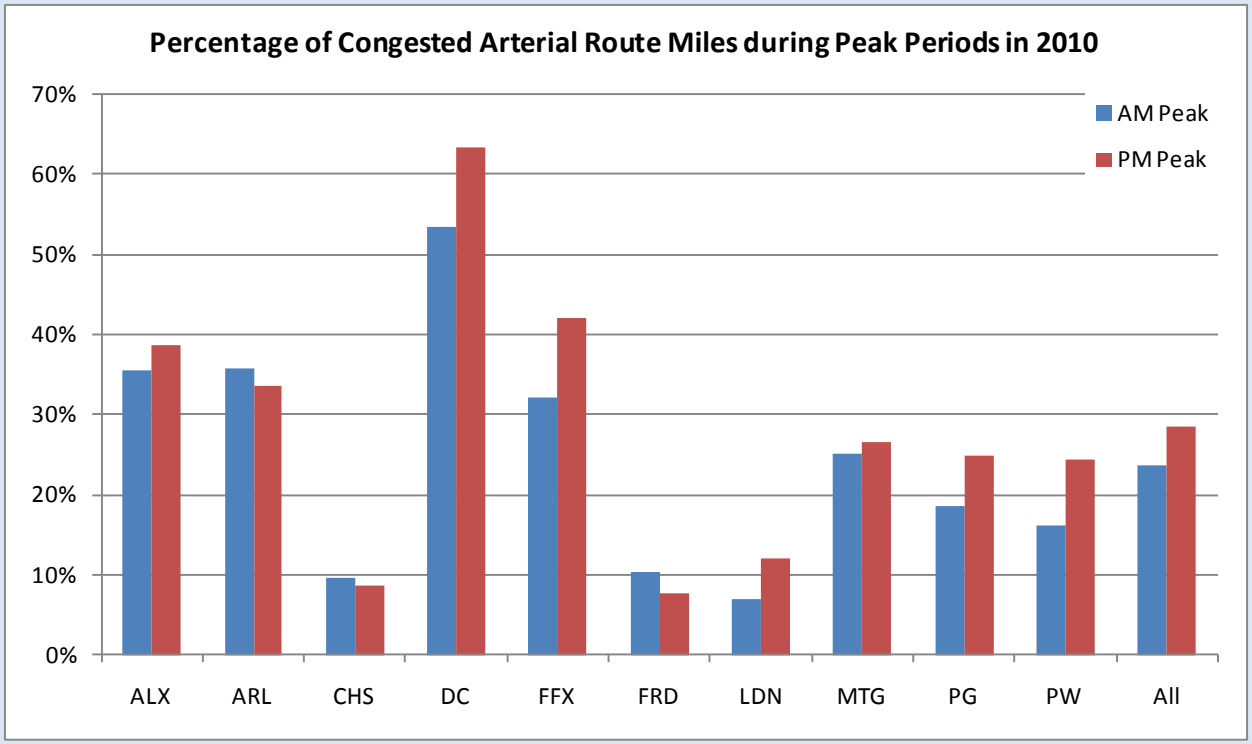
Key Findings (3/10)

- 4,600 route miles of arterials were scanned for the first time, **more than a quarter** of which were always congested from 7:00 AM to 6:30 PM on a workday in 2010 (not necessarily the same set of arterials always congested)



Key Findings (4/10)

- **Arterial congestion unevenly distributed** in the region, with more congestion in dense urban areas where there is an emphasis on streets as accessibility in addition to mobility



Key Findings (5/10)

- The TPB's **Regional Transportation Priorities Plan (RTPP)** has taken a performance-based transportation planning approach…
  - The CMP supports the RTPP by monitoring congestion and providing strategies that could improve the mobility of the transportation systems

Key Findings (6/10)

- The **Commuter Connections** program remains the centerpiece to assist and encourage people in the Washington region to use alternatives to the single-occupant automobile. The **transit system** in the Washington region serves as a major alternative to driving alone – transit mode share is among the highest in the country

Key Findings (7/10)

- This region has enhanced efforts in regional transportation operations coordination:
  - Enhanced MATOC program
    - More staff covering longer time period
    - Dedicated website www.MATOC.org
  - New Regional Incident Coordination (RIC) program
  - New public website for incidents information www.capitalregionupdates.gov

Key Findings (8/10)

- Variably Priced Lanes (VPLs) provide options to travelers
  - The Intercounty Connector is open between I-270 and I-95
  - I-495 Express Lanes will open on the Beltway (VA side) in 2013
  - I-95 (Virginia) Express Lanes are in the CLRP

Key Findings (9/10)

- Bike Sharing and Car Sharing programs are growing
  - Capital Bikeshare
    - Now: covers DC and Arlington
    - Future: City of Alexandria, Montgomery County, and Prince George's County
  - Car sharing
    - 800+ Zipcar cars
    - More providers: Car2Go, Hertz On Demand

Key Findings (10/10)

- Congestion management strategies of Management, Operations, and Intelligent Transportation Systems (MOITS) provide essential ways to make most of the existing transportation facilities

Recommendations

1. Refine and enhance the Congestion Management Process to help support the Regional Transportation Priorities Plan (RTPP), and other **performance-based planning and programming** processes
2. Continue the **Commuter Connections** program
3. Continue the **MATOC program** and support agency/jurisdictional transportation management activities including the Regional Incident Coordination (RIC) Program

Recommendations (Cont'd)

4. Capacity increasing projects should consider **variable pricing** and other management strategies
5. Encourage implementation of congestion management programs for **major construction projects**
6. Continue to **encourage transit** in the Washington region and explore transit congestion measures to address passenger crowding and person delay

Recommendations (Cont'd)

7. Continue to encourage access to **non-auto travel modes**
8. Continue and enhance providing both **real-time** and **historical multimodal** traveler information
9. Continue and enhance the **arterial congestion monitoring program**

Recommendations (Cont'd)

10. Continue and enhance frequently updated congestion reporting with a **standardized procedure** in calculating performance measures and more **trip-based** assessments
11. Continue to conduct **Geographically-focused Household Travel Surveys** to collect mode choice information

Chapter 3

Consideration and Implementation of Congestion Management Strategies

Chapter 3 - Overview (1/3)

- Provides an overview of both demand and supply management strategies aimed at reducing congestion
- Not intended to be an exhaustive list, but rather to highlight major congestion management related initiatives in the TPB planning area

Chapter 3 - Overview (2/3)

- Four Sections
  - Demand Management Strategies
    - Encourage reduction in single occupant vehicle trips by providing other options
  - Operational Management Strategies
    - Manage the existing transportation network for more efficient utilization
  - Additional System Capacity
  - Project-related Congestion Management

Chapter 3 - Overview (3/3)

- Local, regional, and state strategies reviewed by MOITS, Commuter Connections, and Regional Bus Subcommittees
- Other congestion management strategies from DTP staff research

Chapter 3 - New/Significantly Updated Strategies in the 2012 CMP report (1/3)

- Demand Management
  - Bikesharing
  - ‘Pool Rewards
  - Bicycle/Pedestrian Infrastructure
  - Geographically-focused Household Travel Surveys

Chapter 3 - New/Significantly Updated Strategies in the 2012 CMP report (2/3)

- Operational Management
  - Variably Priced Lanes (VPL)
    - Opening of the region's first VPL facility (ICC)
    - Construction of I-495 (Beltway) Express Lanes
    - Removal of I-395 Express Lanes from CLRP
  - Advanced Traveler Information Systems (ATIS)
    - Expansion of state DOT 511, systems
    - MATOC's www.trafficview.org
    - www.CapitalRegionUpdates.gov
  - Variable Message Signs
    - New message signs provide alerts to drivers

Chapter 3 - New/Significantly Updated Strategies in the 2012 CMP report (3/3)

- Operational Management
  - Active Traffic Management
    - I-66 Corridor
  - Integrated Corridor Management
    - VDOT project
  - Regional Incident Coordination
    - Coordination between agencies before and during emergency events
  - BRAC
    - Improvements made to areas where jobs relocated

Chapter 4

Studies of Congestion Management Strategies

Chapter 4 - Review of Performance Measures (1/2)

- *Definition of congestion management objectives and performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods."*
- Performance Measures (PMs) used to gauge the effectiveness of CM strategies
  - Qualitative and Quantitative PMs
- History of PMs
  - 1994 CMP work plan, FHWA course on CMP, Technical subcommittees
- Performance Measures classified as direct assessment measures and calculated measures

Chapter 4 - Review of Performance Measures (2/2)

- Direct Assessment measure examples – Volume, speed, density, transit ridership
- Calculated measure examples – V/C ratio, levels of service, person hours of delay
- Other performance measures – bicycle usage and pedestrian counts, hours of congestion per day, percent delay, average duration of incidents
- Additional performance measures – Travel Time index, Planning Time Index

Chapter 4 - Review of CMP Strategies (1/3)

- *Federal Regulations on CMP*
  - *"Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures.*

Chapter 4 - Review of CMP Strategies (2/3)

- *Strategies considered include:*
  - *Demand Management measures, including growth management and congestion pricing;*
  - *Traffic operational improvements;*
  - *Public transportation improvements;*
  - *ITS technologies as related to the regional ITS architecture; and*
  - *Where, necessary, additional system capacity.*

Chapter 4 - Review of CMP Strategies (3/3)

- Operational and demand management strategies
  - Examples of OS> Traffic Management Center, Traffic Signal Timing, Variable Message Signs, and Safety Improvements
  - Examples of DM> Carpooling, Variably Priced Lanes, Park and Ride Lots, Bike Sharing Programs, and Live near your Work Program.
- Qualitative criteria used to evaluate strategies
  - Some criteria used are: reduces overall congestion, reduces incident related congestion, supports multi-modal transportation, regional or local, ease of implementation, cost, cost effectiveness
  - Impact identified as low, medium or high

Chapter 4 - Examples of Strategies Studies (1/3)

- Detailed CM Strategy Studies in the region
  - Transportation Emissions Reduction Measures (TERMs). Primarily demand management impacts, however funded for the explicit purpose of improving air quality. Significant impact in terms of trips and vehicle miles of travel reduced.
  - CLRP Aspirations Scenario – sensitivity tests of a number of scenarios including a network of variably priced lanes and major improvements to transit. Results are promising.

Chapter 4 - Examples of Strategies Studies (2/3)

- What Would It Take > to meet regional greenhouse gas reduction targets; studied the impact of a number of operational and demand management strategies.
- Metropolitan Area Transportation Operations Coordination (MATOC) Program > A detailed cost benefit analysis undertaken which showed benefits are tenfold the cost. A number of operational strategies are supported by MATOC.
- MOITS Strategic Plan

Chapter 4 - Examples of Strategies Studies (3/3)

- Strategic Plan defines and promotes potential regional projects dealing with the management, operations, and application of advanced technology.
- The MOITS Strategic Plan builds upon the TPB Vision by identifying four key tactical actions.
- It identifies nine emphasis areas derived from the National ITS Architecture.
- The Plan also recommends use of a few key performance measures, including travel time index and planning time index