

# DEVELOPMENT OF 2024 CONGESTION MANAGEMENT PROCESS (CMP) TECHNICAL REPORT

---

Andrew Meese  
TPB Program Director, Systems Performance Planning

Systems Performance, Operations, and Technology Subcommittee  
August 15, 2024



# Introduction

---

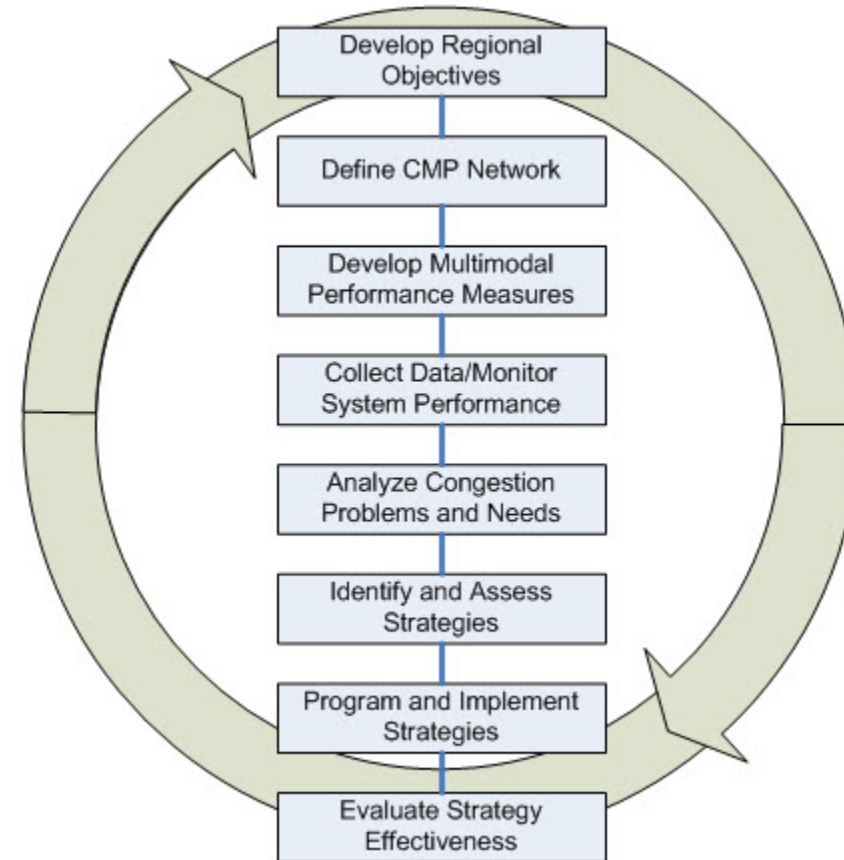
- A Congestion Management Process (CMP) is a mandated element of metropolitan transportation planning
  - Many generations of federal regulations for metropolitan planning have addressed CMP requirement; no changes in law under IIJA/BIL
  - The CMP Technical Report is a supporting document for the National Capital Region Transportation Plan (Visualize 2050)
    - Developed biennially since 2008
- In development for finalization and presentation to the Technical Committee in October/November
  - Feedback opportunities will be announced subsequently



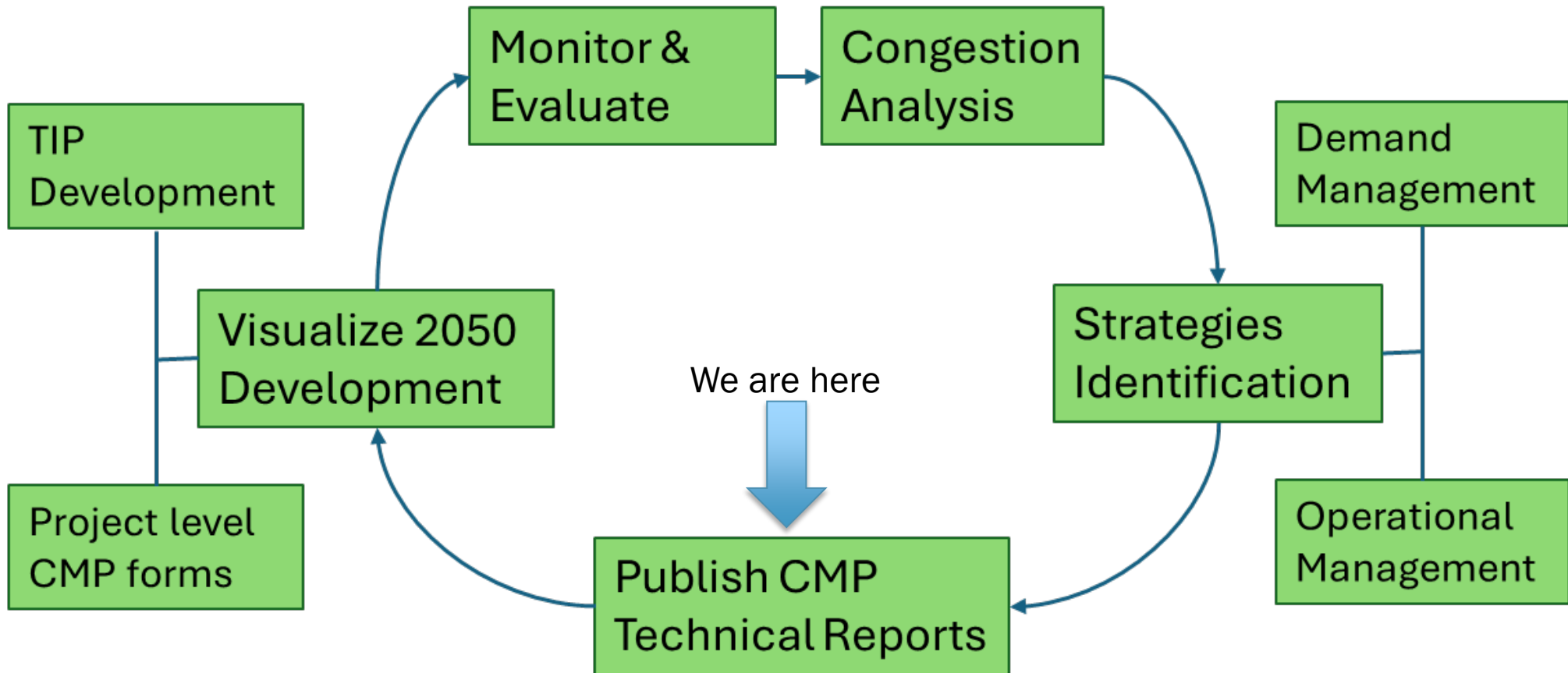
# What Is a CMP?

The transportation planning process in a TMA shall **address congestion management through a process** that provides for safe and effective integrated management and operation of the multimodal transportation system...**through the use of travel demand reduction...job access projects, and operational management strategies.**

- Federal Register Vol. 81, No.103, pp.34152, May 27, 2016.



# National Capital Region Transportation Plan & CMP



# Components of the Region's CMP

---

- Visualize 2045 comprises the official regional CMP
  - The CMP process document
    - TPB ensures that the plan includes alternatives to SOVs
    - The CMP informs the project selection process for the plan and TIP
- Project-specific CMP addressed in Technical Inputs Solicitation
- National Capital Region Congestion Reports (quarterly dashboard)
- Biennial CMP Technical Reports
  - The 2024 CMP Technical Report will inform Visualize 2050 development



# The 2024 CMP Technical Report

The **Report** serves as a background document to the National Capital Region Transportation Plan's CMP, providing detailed information on data, strategies, and regional programs involved in congestion management:

Compiles information from a wide range of metropolitan transportation planning activities

Provides some additional CMP-specific analyses, particularly Vehicle Probe Project data-based analyses



# Contents – Congestion Summaries

---

- Executive Summary
- Chapter 1 – Introduction
- Chapter 2 – State of Congestion
  - Regional Travel Trends
  - Congestion on Highways; Transit Systems
  - National Comparison of the Washington Region’s Congestion
  - Performance Analysis of Visualize 2045



# Contents – Strategies and Outcomes

---

- Chapter 3 – Consideration/Implementation of Strategies
  - Demand Management Strategies (esp. Commuter Connections)
  - Operational Management and Integrative/Multi-Modal Strategies
- Chapter 4 – Studies of Congestion Management Strategies
- Chapter 5 – How Results of the CMP Are Integrated into the National Capital Region Transportation Plan
- Chapter 6 – Conclusions
  - Key Findings of the 2024 CMP Technical Report
  - Recommendations
- Appendices





# Highlights of The Report

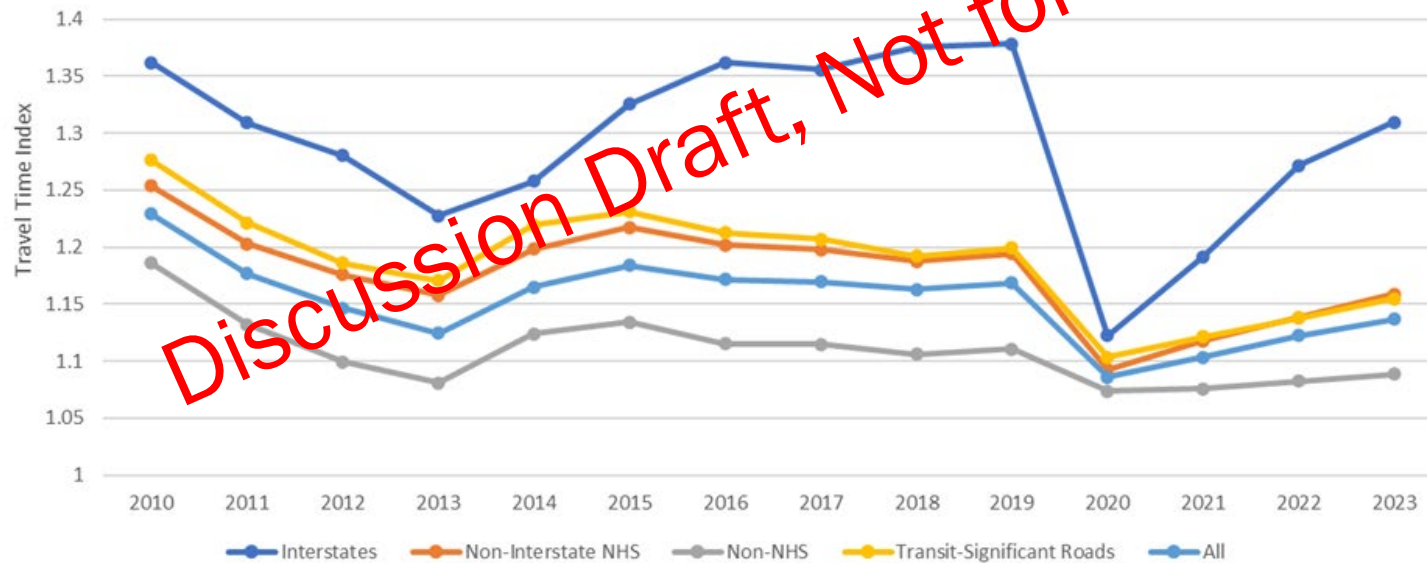
---

- § 2.2.1 The Eastern Transportation Coalition Vehicle Probe Project Traffic Monitoring
- § 2.2.1.6 Top Bottlenecks
- § 2.5 National Comparison of the Washington Region's Congestion
- Appendix A – 2023 Peak Hour TTI for the Region and Sub-regions
- Appendix B – 2023 Peak Hour PTI for the Region and Sub-regions
- Appendix C – 2010 and 2021-2023 Travel Times along Major Freeway Commute Corridors
- Appendix D – Peak Hours Travel Time over Years on Major Freeway Commute Corridors



# Peak Period Congestion

- Measured by Travel Time Index (TTI)\*
- TTI has been steadily climbing since 2020, indicating a return to pre-pandemic traffic levels. While this trend highlights the recovery of travel demand, it also presents a challenge in terms of congestion. Strategies to manage traffic flow and improve travel efficiency remain important.

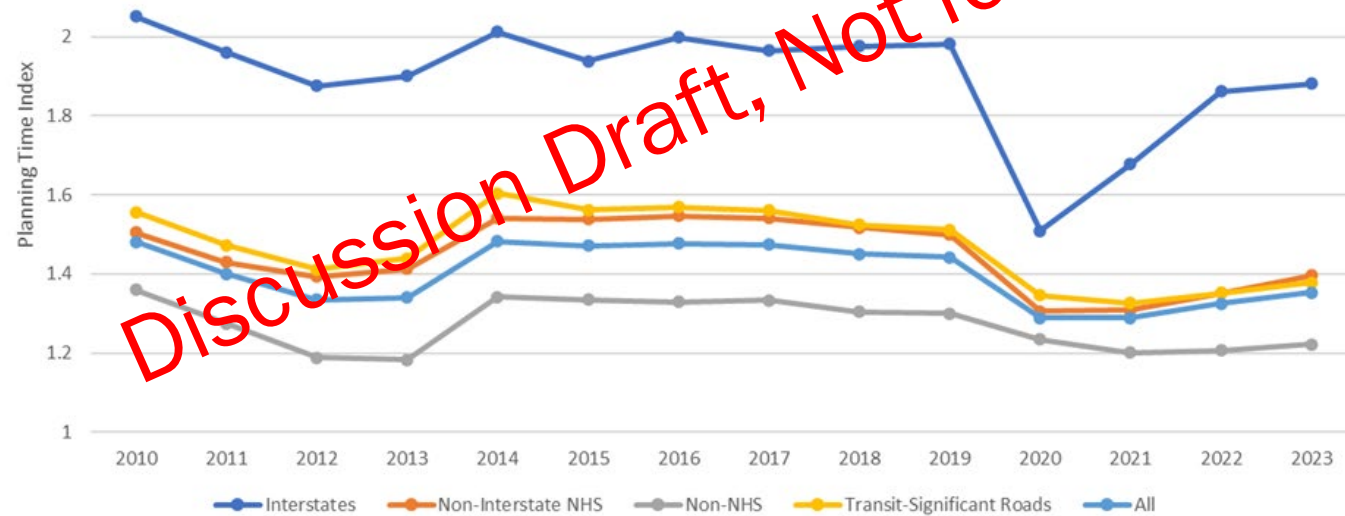


\*Travel Time Index = Actual travel time / Free flow travel time.



# Peak Period Travel Time Reliability

- Measured by Planning Time Index (PTI)\*
- The PTI for Interstates has been increasing more rapidly than for other categories of roadways in the three years following the pandemic in 2020. This trend is observed for both AM and PM peak periods. The PTI for Interstates increased by approximately 23% from 2020 to 2023 during AM peak periods, and by approximately 27% during PM peak periods.

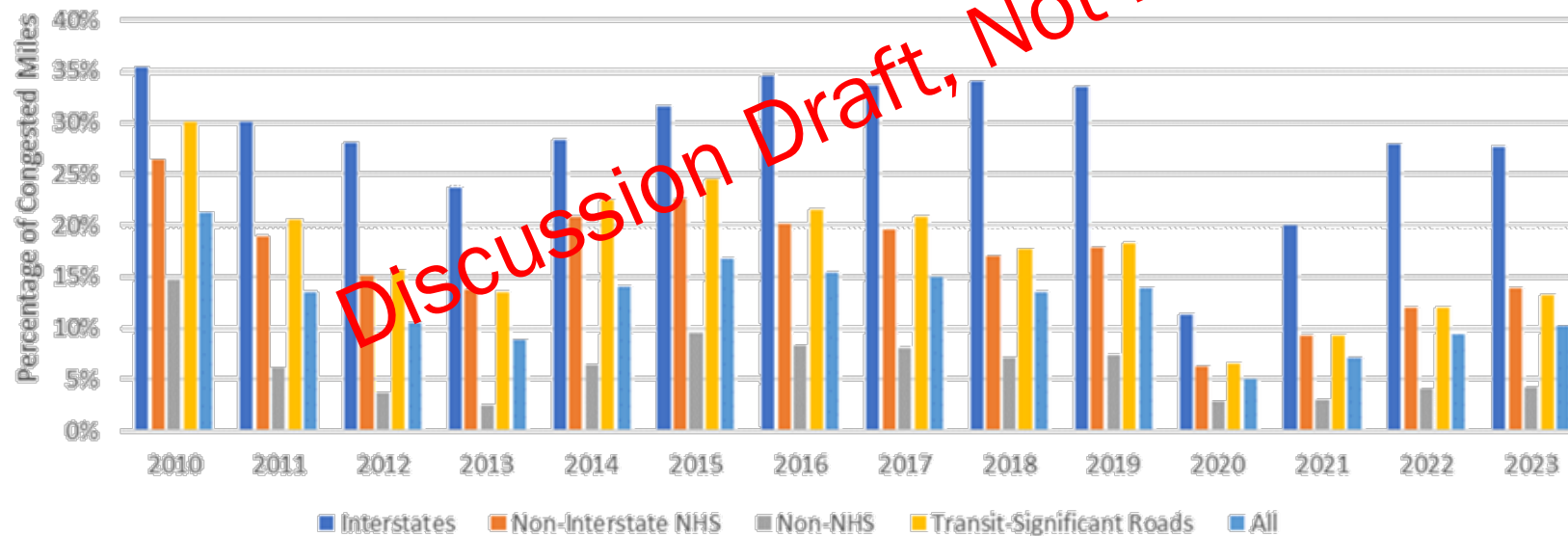


\*Planning Time Index = 95th percentile travel time / Free flow travel time



# Percent of Congested Miles by Highway Category

- To capture the spatial extent of congestion\*
- Despite the temporary drop in 2020 due to the pandemic, the long-term trend shows a general increase in the percentage of congested miles, particularly on Interstates
- In 2023 regionally, approximately 27% of Interstate mileage was congested, versus about 10% of roadway mileage overall



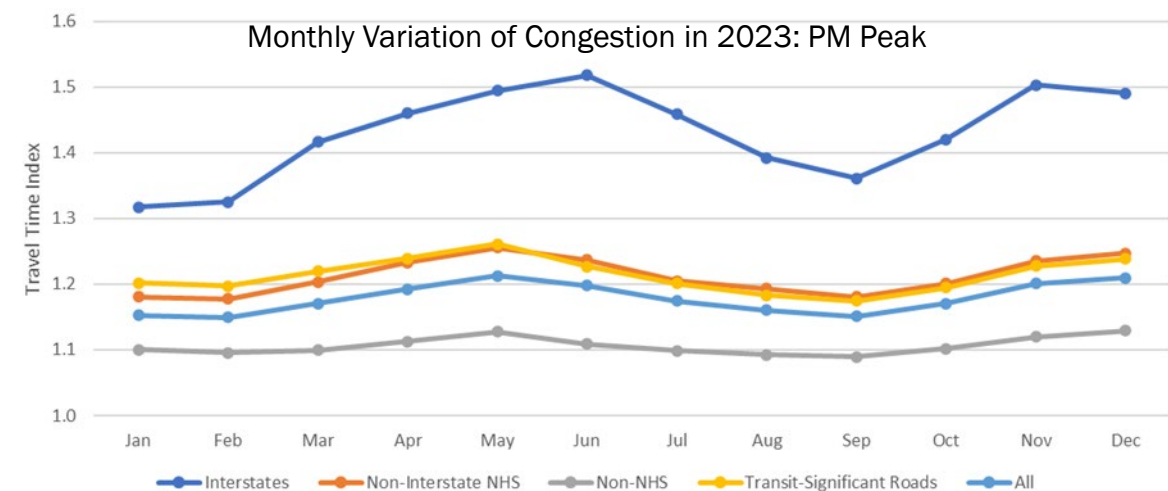
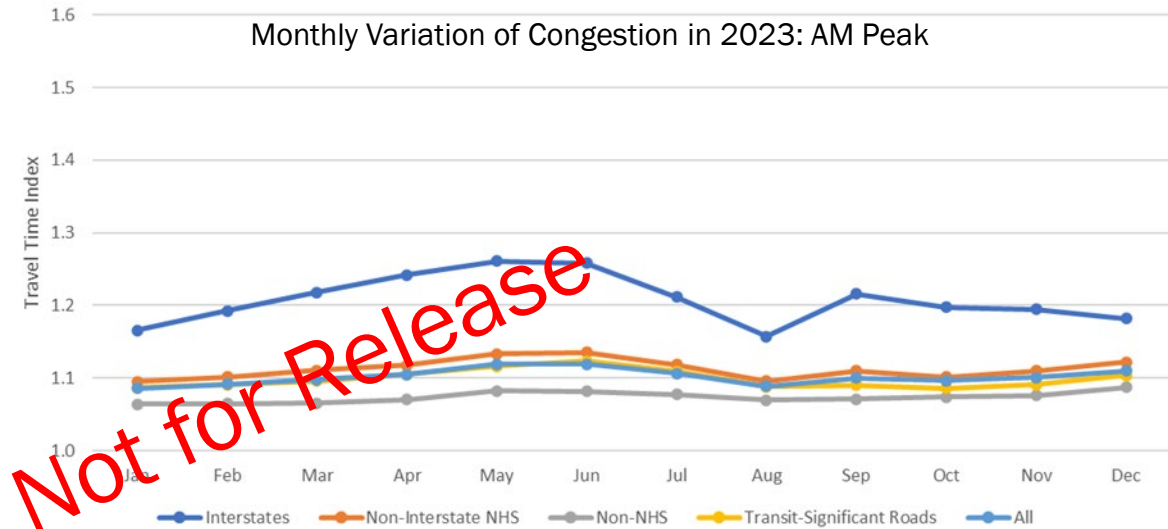
\*Conditions are considered to be congested when Travel Time Index > 1.30.



# Congestion Monthly Variation in 2023

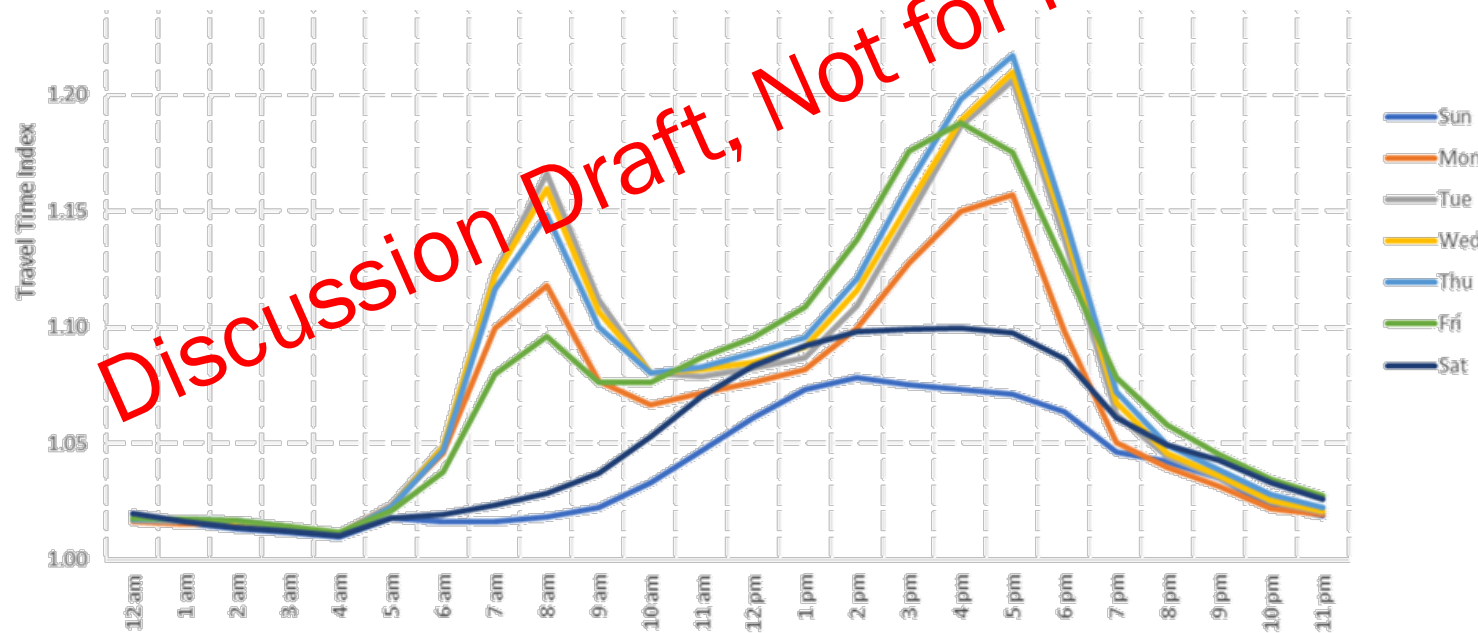
- The TTI for Interstates fluctuates more throughout the year compared to other categories
- The TTI values in the PM peak are consistently higher than those in the AM peak
  - This observation aligns with the general trend of heavier traffic during afternoon or evening hours

Discussion Draft, Not for Release



# Congestion Time of Day, Day of Week Variation

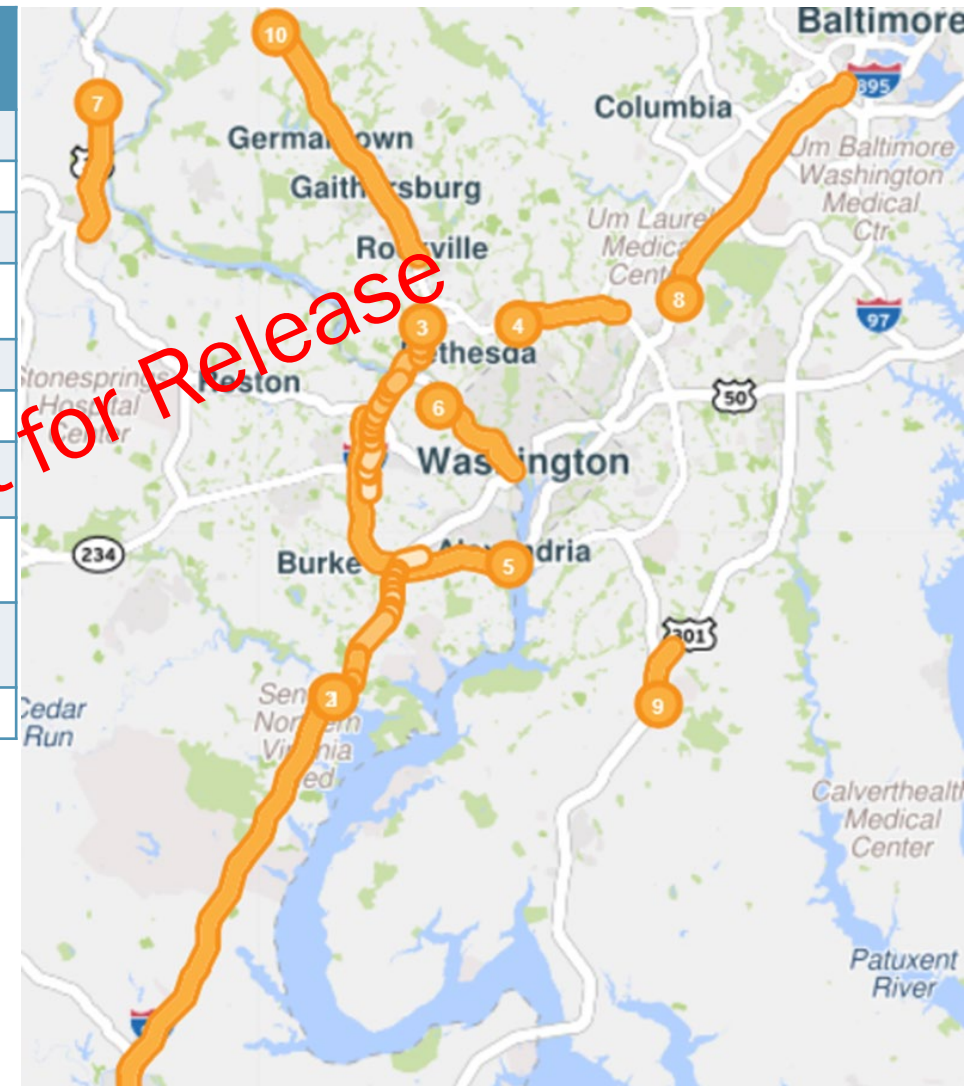
- Weekday AM and PM peaks on Tuesday, Wednesday, and Thursday show significant increases. These levels are comparable to those observed before the COVID-19 pandemic.
- The most congested PM peak hour shifted from Friday to Thursday in 2023. Additionally, Tuesday and Wednesday PM commutes had higher TTI than Friday. This is a new pattern compared to previous years, where Friday evenings typically had the worst congestion.





# Location of Top 10 Bottlenecks in 2023

Rank	Location	Impact factor*
1	I-95 S @ VA-123/EXIT 160	358,921
2	I-95 N @ VA-123/EXIT 160	348,300
3	I-495 CW @ I-270 SPUR	311,793
4	I-495 CCW @ MD-97/GEORGIA AVE/EXIT 31	265,032
5	I-495 CCW @ US-1/EXIT 1	251,152
6	GW PKY N @ VA-123/CHAIN BRIDGE RD	239,625
7	US-15 N @ STUMPTOWN RD/LUCKETTS RD	220,696
8	B/W Parkway S @ POWDER MILL RD	217,495
9	US-301 S @ MCKENDREE RD/CEDARVILLE RD	217,102
10	I-270 N @ MD-109/EXIT 22	214,980



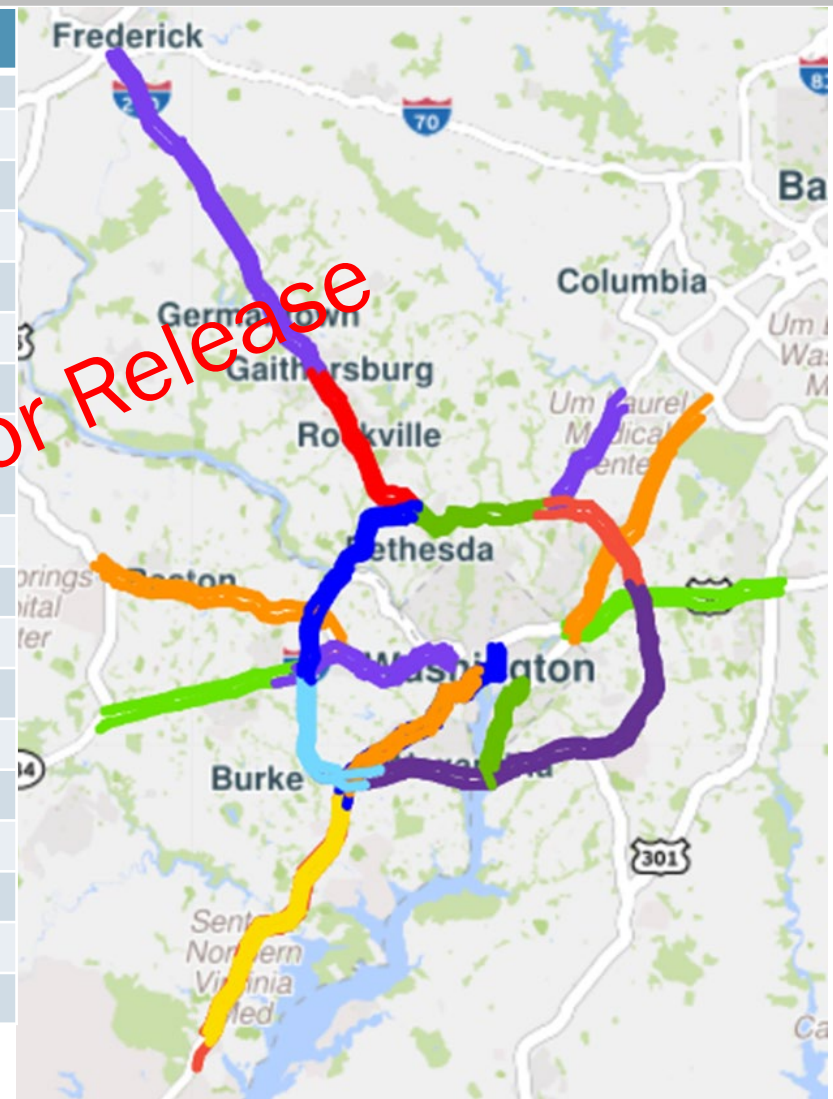
Discussion Draft, Not for Release

\*Base impact - the sum of queue lengths over the duration



# Major Freeway Commute Routes

Route Code	Description	Peak Period Travel Time: 2023 vs. 2021	
		AM	PM
C1	I-270 between I-370/Sam Eig Hwy/Exit 9 and I-70/US-40	↑	↑
C2	I-270 between I-370/Sam Eig Hwy/Exit 9 and I-495/MD-355	↑	↑
C3	VA-267 between VA-28/Exit 9a and VA-123/Exit 19	↑	-
C4	I-66 between VA-28/Exit 53 and I-495/Exit 64	↓	↓
C5	I-66 between I-495/Exit 64 and Theodore Roosevelt Memorial Bridge	↑	↑
C6	I-95 between VA-234/Exit 152 and Franconia Rd/Exit 169	↑	-
C7	I-95 HOV between VA-234/Exit 152 and Franconia Rd/Exit 169	↑	-
C8	I-395 between I-95 and H St	↑	↑
C9	I-395 HOV between I-95 and US-1	↑	-
C10	US-50 between MD-295/Kenilworth Ave and US-301/Exit 13	↑	↑
C11	Balt-Wash Pkwy between US-50/MD-201/Kenilworth Ave and MD-198	↑	↑
C12	I-95 between I-495/Exit 27-25 and MD-198/Exit 33	↑	↑
C13	I-495 between I-270/Exit 35 and I-95/Exit 27	↑	↑
C14	I-495 between I-95/Exit 27 and US-301/Exit 19	↑	↑
C15	I-495 between US-50/Exit 19 and I-95/I-395/Exit 57	↑	↑
C16	I-495 between I-95/I-395/Exit 57 and I-66/Exit 9	↑	-
C17	I-495 between I-66/Exit 9 and I-270/Exit 35	↑	↑
C18	I-295 between I-495 and 11 <sup>th</sup> St. Bridge	↑	-





# National Comparison

INRIX Traffic Scorecard (2022 data)			TomTom Traffic Index (2023 data)		
Hours Lost in Congestion			Average travel time per 6 miles (Metro Area)		
Metro Area	Value	Rank	Metro Area	Minutes	Rank
Chicago	155	1	New York	21 min	1
Boston	134	2	Honolulu	21 min	2
New York City	117	3	McAllen	20 min	3
Philadelphia	114	4	San Francisco	20 min	4
Miami	105	5	Los Angeles	20 min	5
San Francisco	97	6	Philadelphia	19 min	6
Los Angeles	95	7	Seattle	19 min	7
<b>Washington</b>	83	8	Miami	19 min	8
Houston	74	9	Chicago	19 min	9
Atlanta	74	10	<b>Washington</b>	18 min	14

Discussion Draft, Not for Release



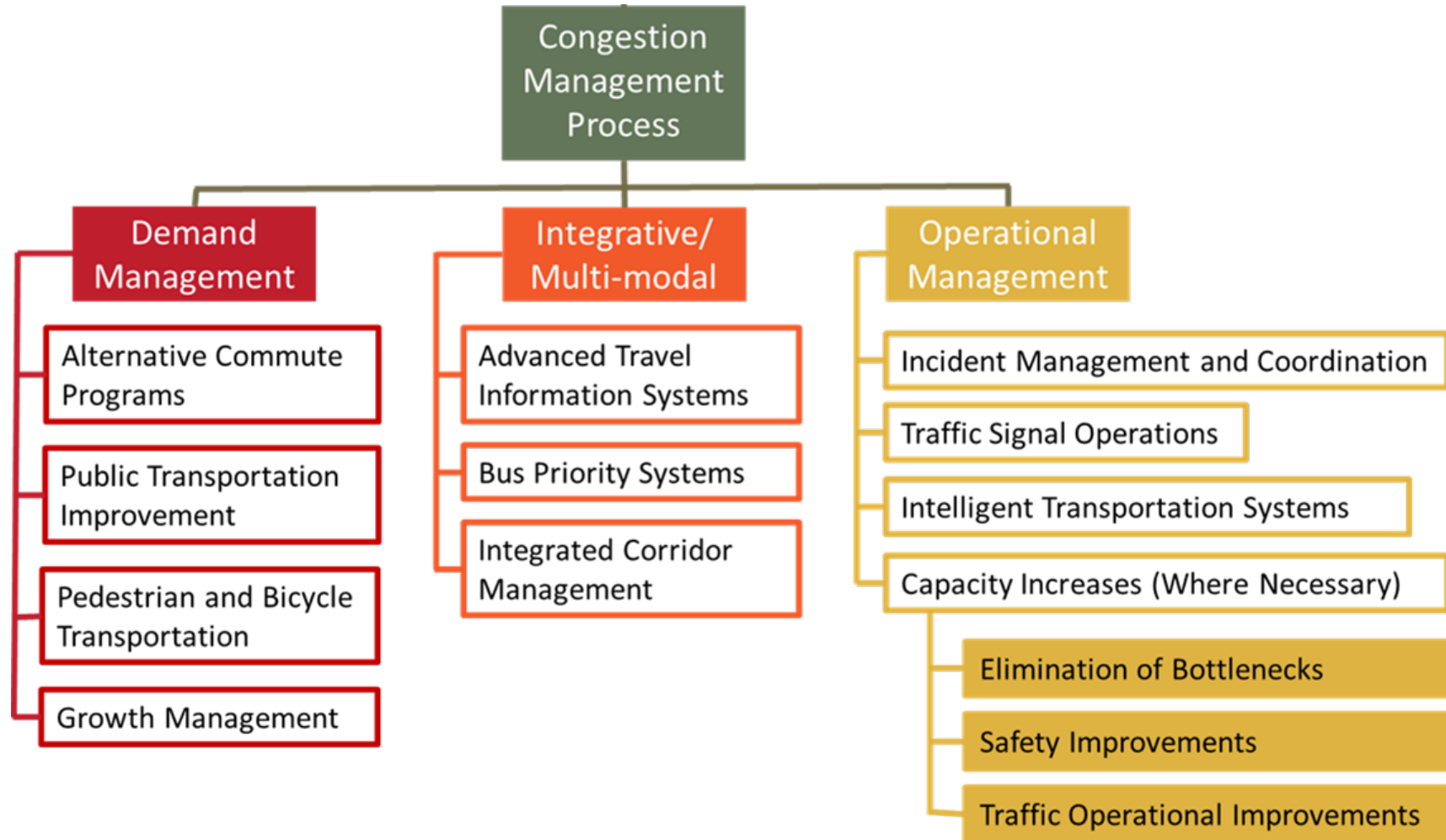
# Latest Additions to The Report

---

- 2.1.1 Key External Influences on NCR's Congestion
  - An interpretative analysis of the external factors influencing weekday Interstate traffic congestion, as gauged by the travel time index (TTI)
  - Preliminary data from 2010-2022 suggests that employment, population, and gasoline prices have a moderate to minor impact on TTI
- 2.1.2 Long-term Travel Time Trends on NCR Corridors
  - Traffic congestion has worsened on average during both morning and evening peak hours compared to 2013.
  - The impact varies significantly across corridors, with some experiencing improvements and others significant slowdowns.
- 2.1.3 Congestion in Equity Emphasis Areas
- Appendix D is added to provide more details of the peak hours' travel time trend



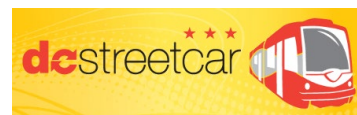
# Congestion Management Strategies in The Report



# Selected Congestion Management Strategies



Multimodal Solutions - 495 to Haymarket



National Capital Region  
Transportation Planning Board

## Andrew Meese

TPB Program Director, Systems Performance Planning  
(202) 962-3789  
ameese@mwkog.org

[mwkog.org/tpb](http://mwkog.org/tpb)

---

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



National Capital Region  
**Transportation Planning Board**