

UPDATE ON TPB CONGESTION MANAGEMENT PROCESS AND PERFORMANCE-BASED PLANNING ACTIVITIES

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TPB Systems Performance, Operations, And Technology Subcommittee (SPOTS)
and Traffic Signals Subcommittee Joint Meeting
April 05, 2018



Presentation Items

- TPB Congestion Management Process (CMP) Activities
 - National Capital Region Congestion Report
 - Congestion Dashboard
 - Development of 2018 CMP Technical Report
- TPB Performance-Based Planning (PBPP) Activities
 - System Performance (NHS, Freight, CMAQ Program) Measures



TPB Congestion Management Process (CMP) Activities Update



What is Congestion Management Process (CMP) ?

- The CMP is a requirement in metropolitan transportation planning
 - SAFETEA-LU and associated 2007 Federal regulations for metropolitan planning address CMP requirements
 - Retained in MAP-21 and FAST Act 2015
- Major Components of the CMP include:
 - Methods to monitor and evaluate system performance
 - Objectives and performance measures
 - Data collection and analysis
 - Identification and evaluation of anticipated performance of Congestion Management strategies
 - Assessment of the effectiveness of previously implemented strategies

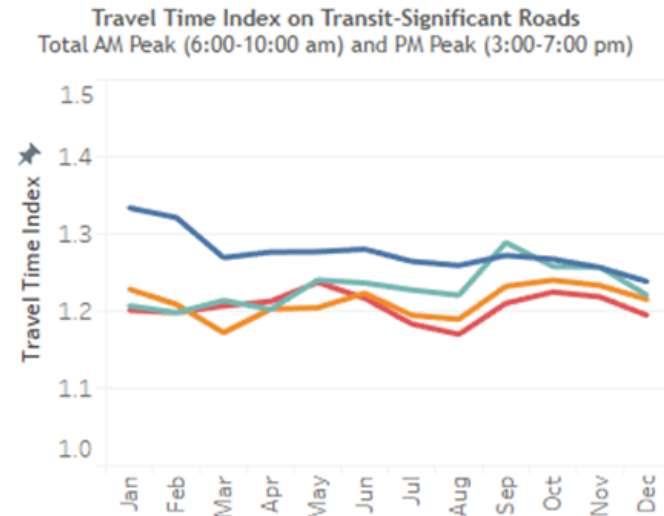
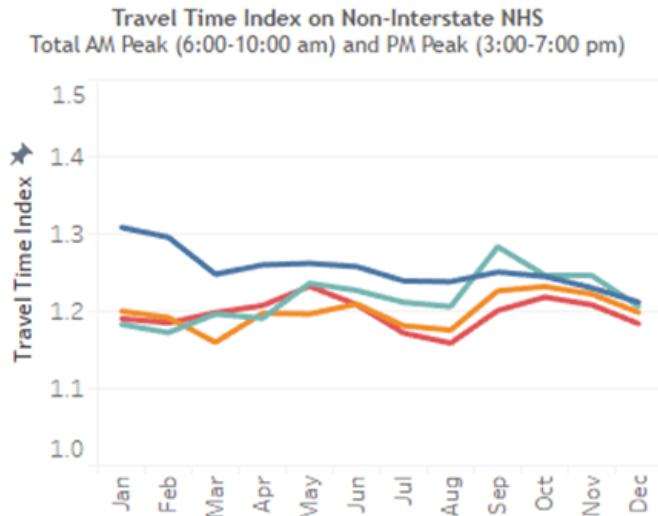
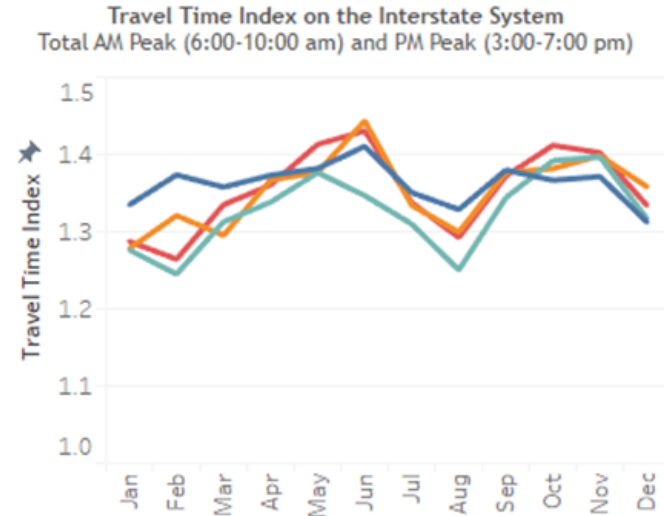
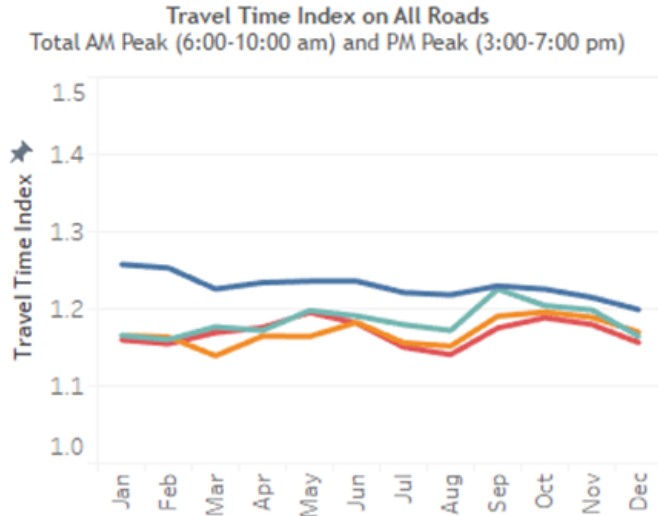


National Capital Region Congestion Report

- A quarterly update of the National Capital Region's
 - Traffic congestion, in terms of Travel Time Index (TTI)
 - Travel time reliability, in terms of Planning Time Index (PTI)
 - Top-10 bottlenecks, and
 - Featured spotlight
- Travel Time Index (TTI):
 - The ratio of actual travel time to free-flow travel time
 - $TTI = 1.00$ means free flow conditions
- Planning Time Index (PTI):
 - The ratio of 95th percentile travel time to free flow travel time
 - The higher the index, the less reliable traffic conditions it represents

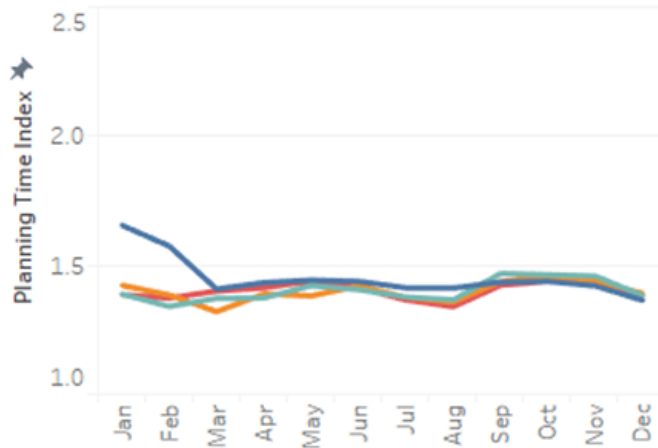


Example of Monthly Travel Time Index

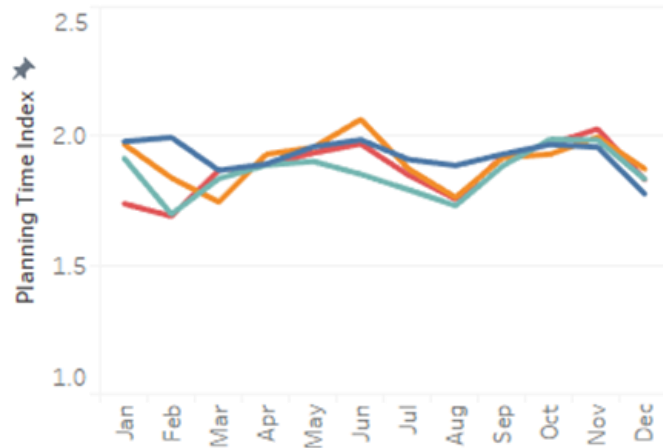


Example of Monthly Planning Time

Planning Time Index on All Roads
Total AM Peak (6:00-10:00 am) and PM Peak (3:00-7:00 pm)

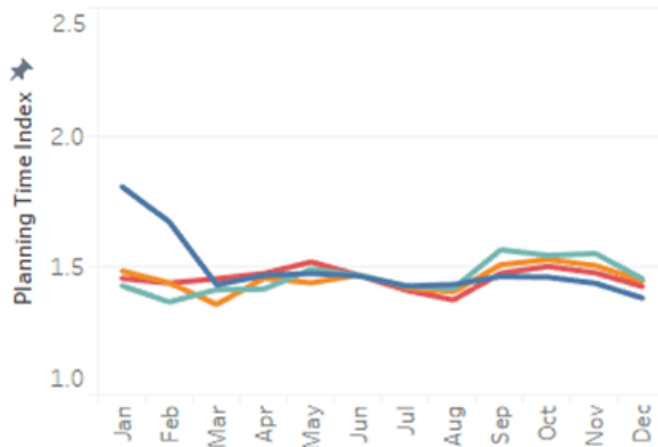


Planning Time Index on the Interstate System
Total AM Peak (6:00-10:00 am) and PM Peak (3:00-7:00 pm)

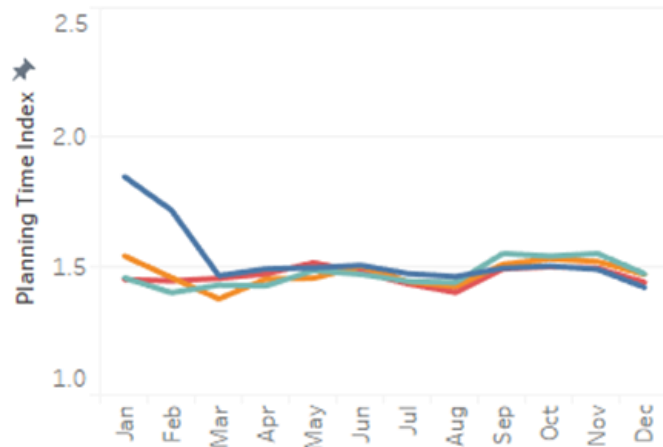


Year
■ 2010
■ 2015
■ 2016
■ 2017

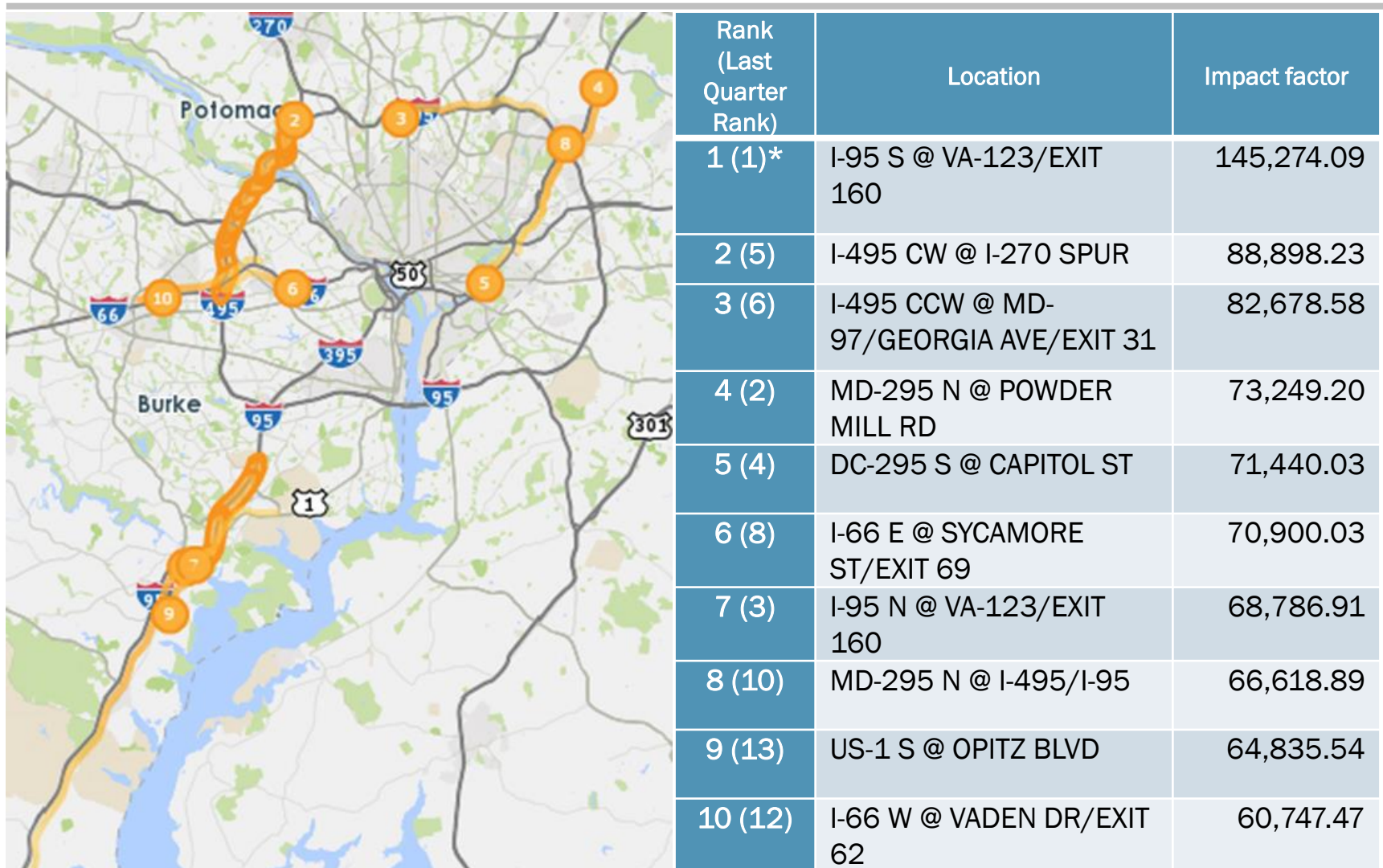
Planning Time Index on Non-Interstate NHS
Total AM Peak (6:00-10:00 am) and PM Peak (3:00-7:00 pm)



Planning Time Index on Transit-Significant Roads
Total AM Peak (6:00-10:00 am) and PM Peak (3:00-7:00 pm)



Example of TOP 10 BOTTLENECKS

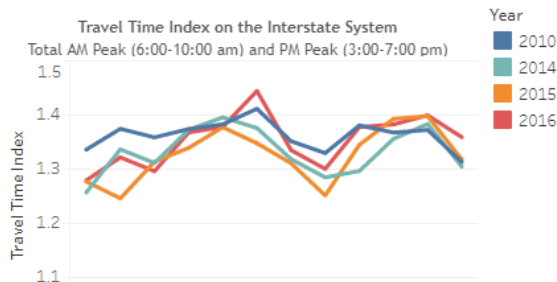


Example of Congestion Dashboard

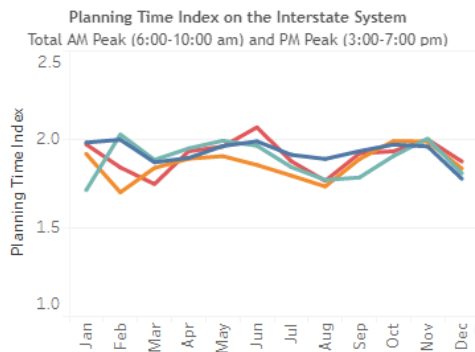
TRANSPORTATION

Congestion Dashboard

Regional Trends



<https://www.mwcog.org/congestion/>



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- ### Transportation – Data & Tools
- Regional Household Travel Survey
 - State of the Commute Survey
 - Modeling
 - CLRP Performance Analysis
 - Mobile Air Quality Forecasts
 - Maps & GIS
 - Congestion Dashboard

- ### Region Congestion Report
- 1st Quarter, 2014
 - 2nd Quarter, 2014
 - 3rd Quarter, 2014
 - 4th Quarter, 2014
 - 1st Quarter, 2015
 - 2nd Quarter, 2015
 - 3rd Quarter, 2015
 - 4th Quarter, 2015
 - 1st Quarter, 2016
 - 2nd Quarter, 2016



Development of 2018 CMP Technical Report

- Biennial CMP Technical Reports since 2008, an ongoing activity.
- Outline of the report covers
 - Executive summary
 - Chapter 1. Introduction
 - Chapter 2. State of Congestion
 - Chapter 3. Consideration and Implementation of Congestion Management Strategies
 - Chapter 4. Studies of Congestion Management Strategies
 - Chapter 5. How Results of The CMP Are Integrated Into The CLRP
 - Chapter 6. Conclusions
 - Appendices



Draft of the Chapter 2

2.1 Regional Travel Trends

2.2 Congestion on Highways

2.3 Congestion on Transit Systems

2.4 Other Congestion Monitoring and Data Consolidation Activities

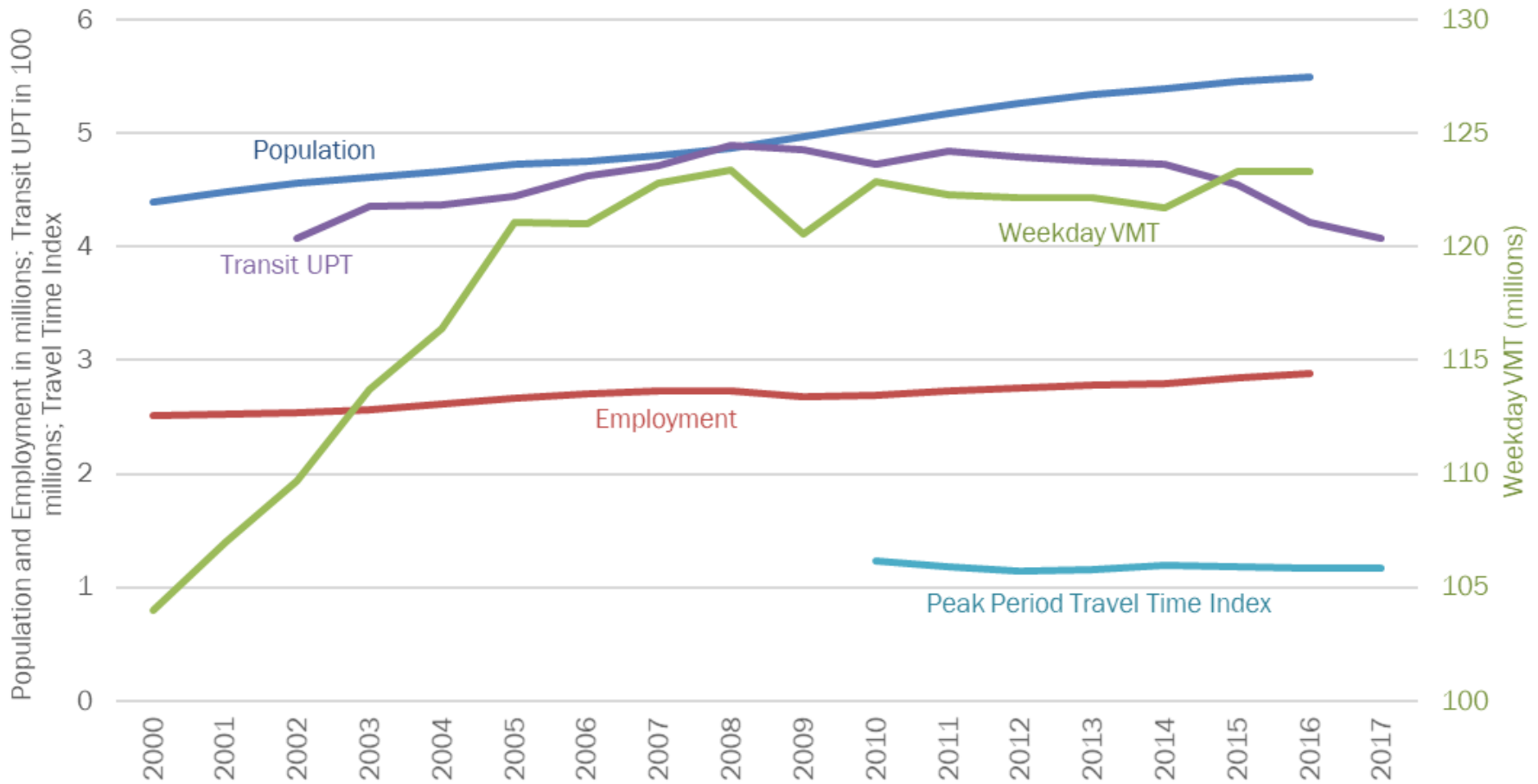
2.5 National Comparison of the Washington Region's Congestion

2.6 Performance and Forecasting Analysis of the 2016 Financially Constrained Long-Range Transportation Plan (CLRP)



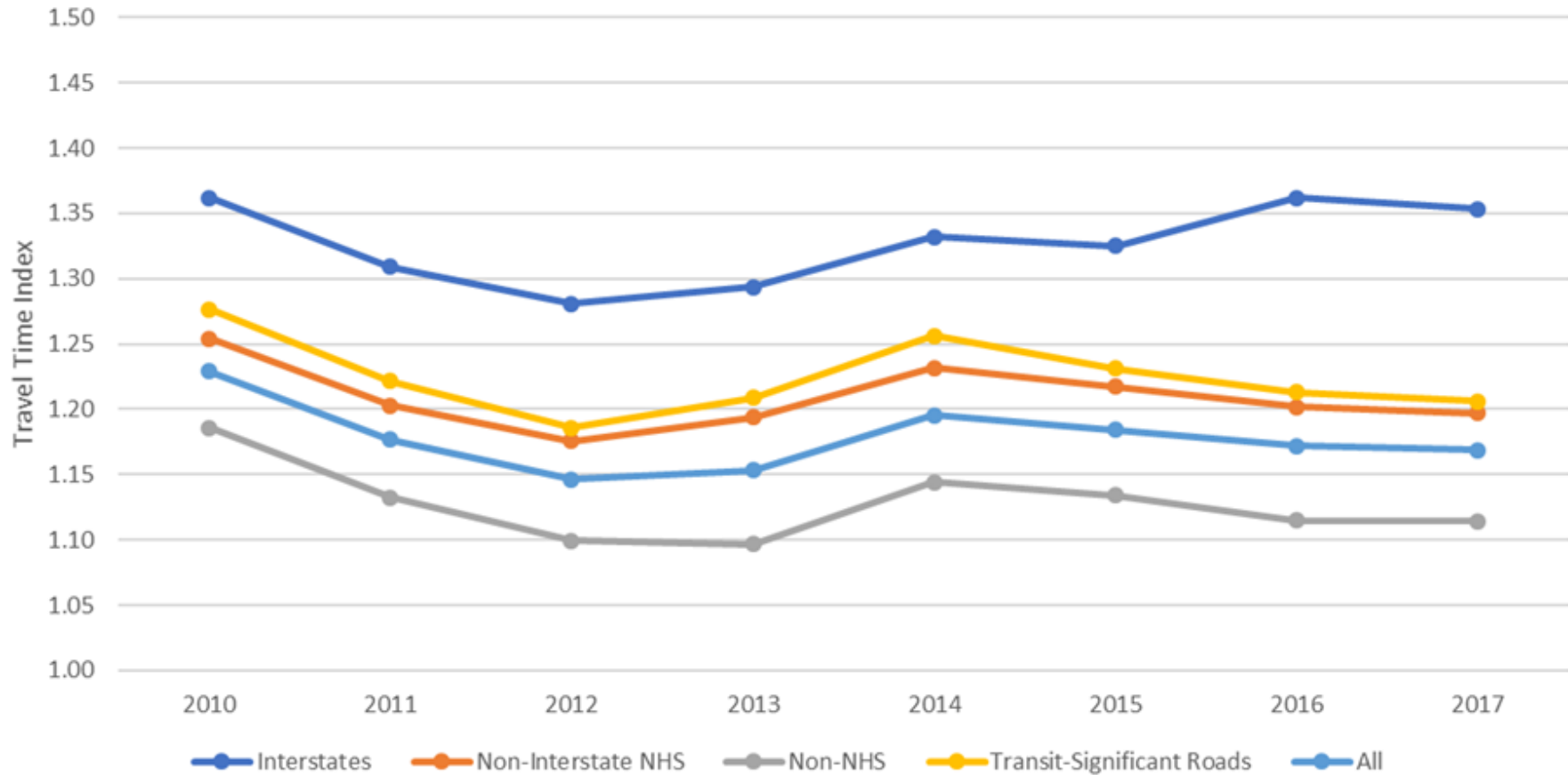
Regional Travel Trends (Draft)

Population, Employment, Vehicle Miles Traveled, Transit Ridership, and Travel Time Index in the TPB Planning Area



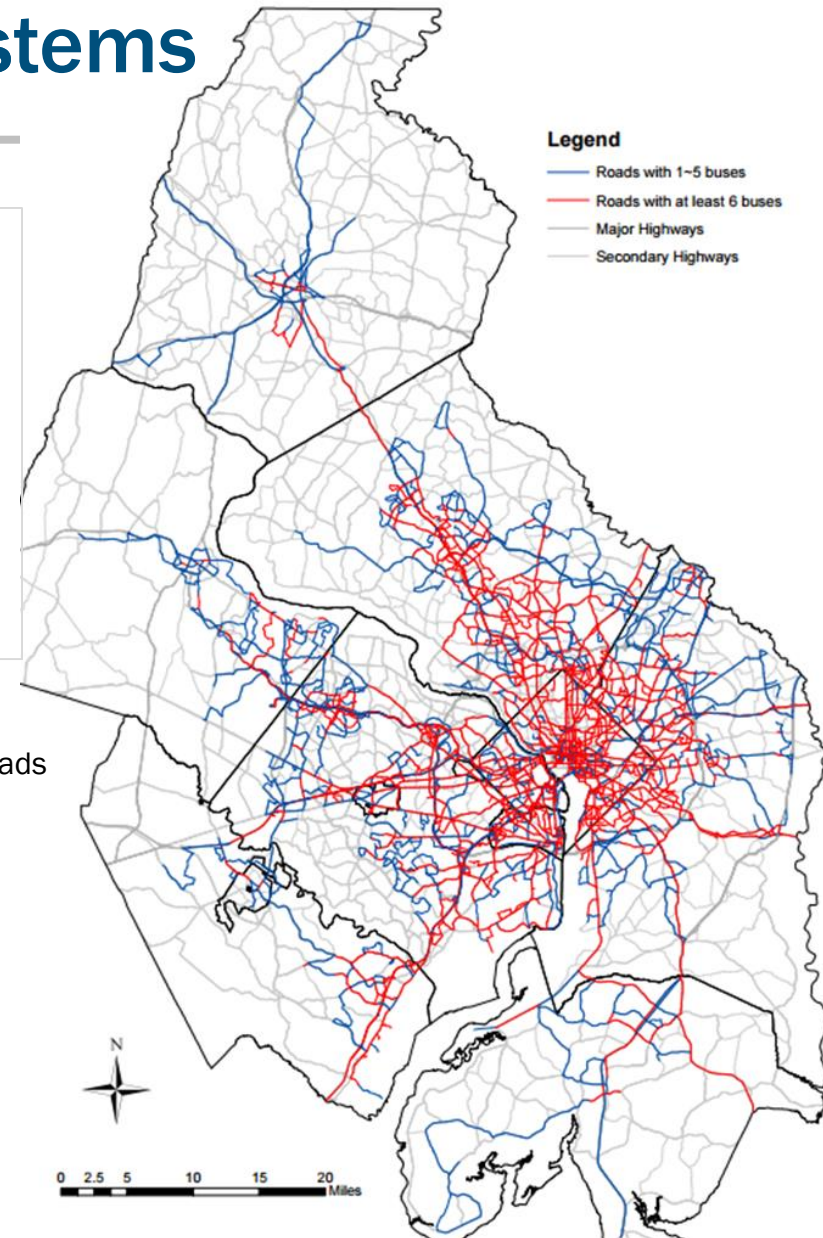
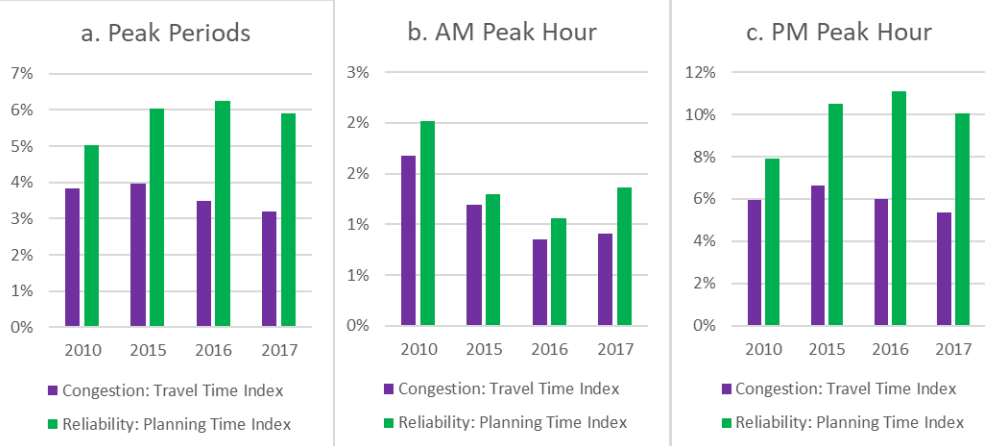
Example of Congestion on Highways

Annual Average Travel Time Index by Highway Category: Total AM and PM Peaks

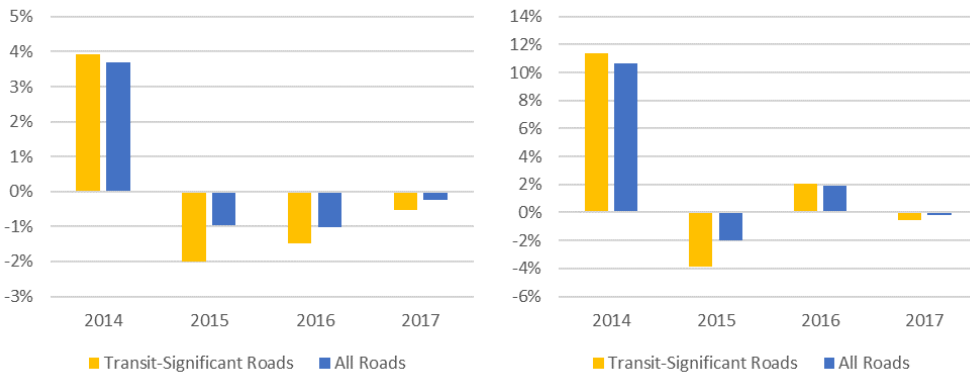


Congestion on Transit Systems

Transit-Significant Roads Compared to All Roads



Congestion and Reliability Year-to-Year Changes of Transit-Significant Roads



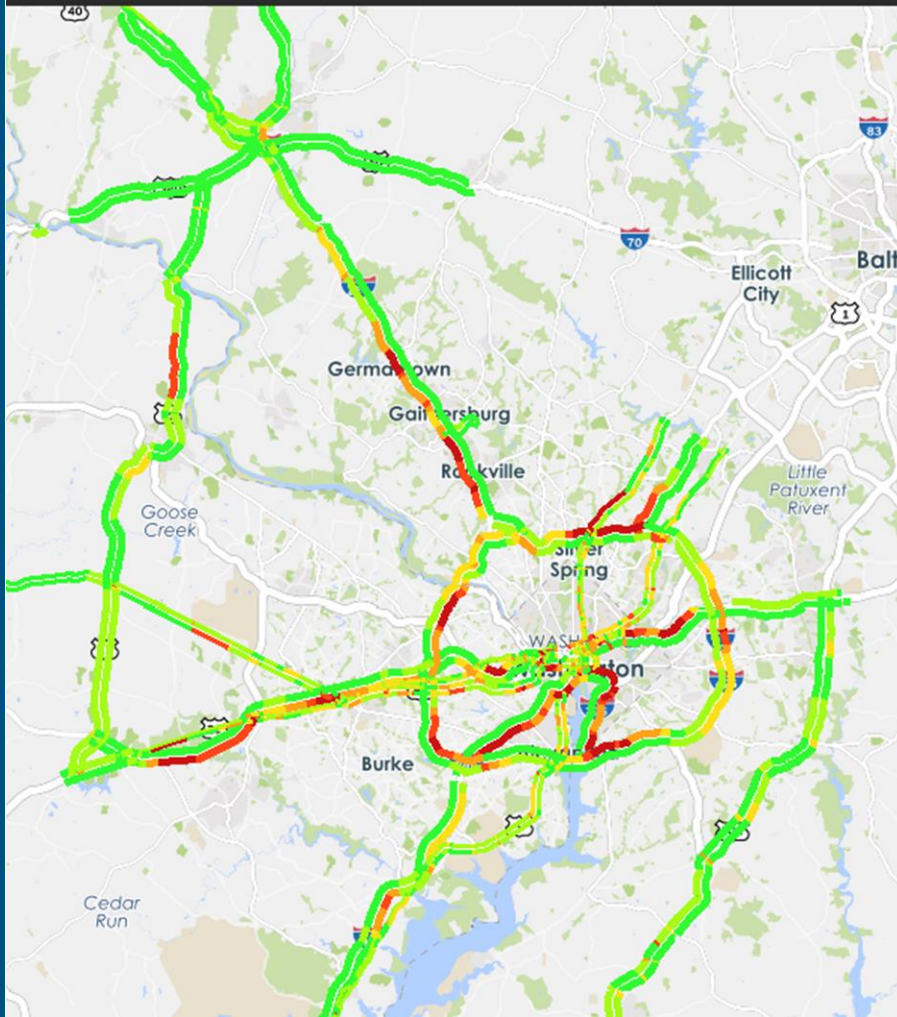
National Comparison of the Washington Region's Congestion

Texas A&M Transportation Institute (2014 data)			INRIX Traffic Scorecard (2016 data)			TomTom Traffic Index (2016 data)		
Annual Hours of Delay per Auto Commuter			Average Hours Wasted in Traffic			Extra Travel Time compared to Free Flow Conditions		
Metro Area	Value	Rank	Metro Area	Value	Rank	Metro Area	Value	Rank
Washington	82	1	Los Angeles	102	1	Los Angeles	45%	1
Los Angeles	80	2	New York	91	2	San Francisco	39%	2
San Francisco	78	3	San Francisco	79	3	New York	35%	3
New York	74	4	Atlanta	70	4	Seattle	34%	4
San Jose	67	5	Miami	64	5	San Jose	32%	5
Boston	64	6	Washington	63	6	Miami	30%	6
Seattle	63	7	Boston	60	7	Portland	29%	7
Chicago	61	8	Chicago	57	8	Honolulu	29%	8
Houston	61	8	Seattle	55	9	Washington	29%	9
Riverside	59	10	Dallas	54	10	Boston	28%	10

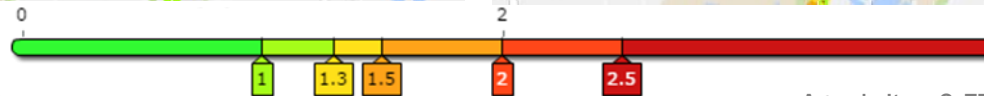
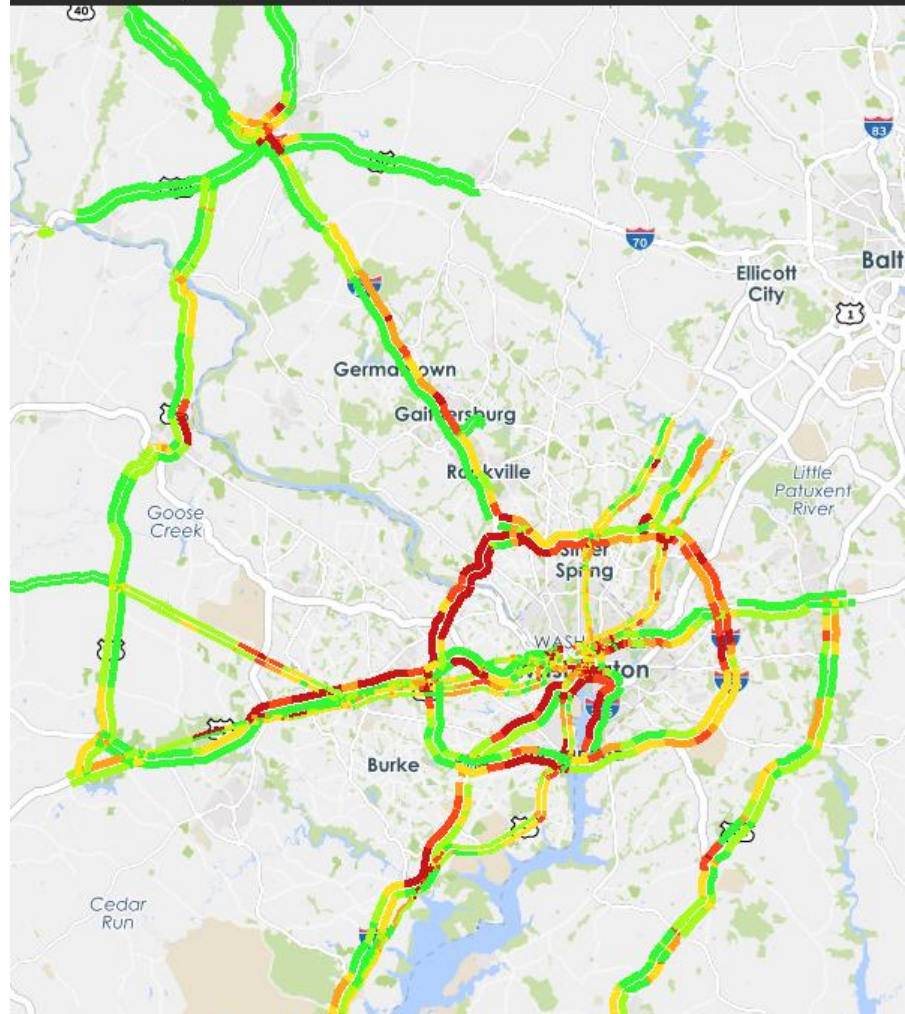


Draft of Appendix A 2017 Peak Hour TTI

08:00 AM - 2017 (Every weekday)

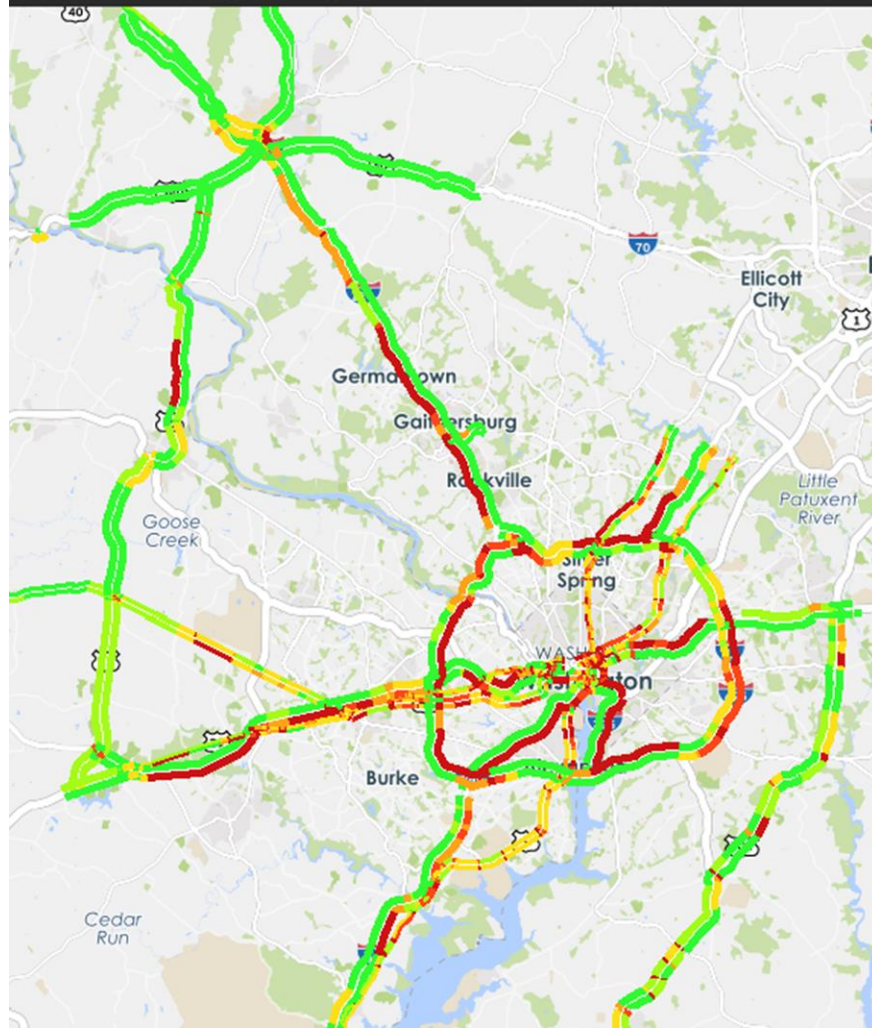


05:00 PM - 2017 (Every weekday)

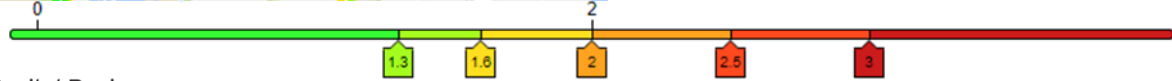
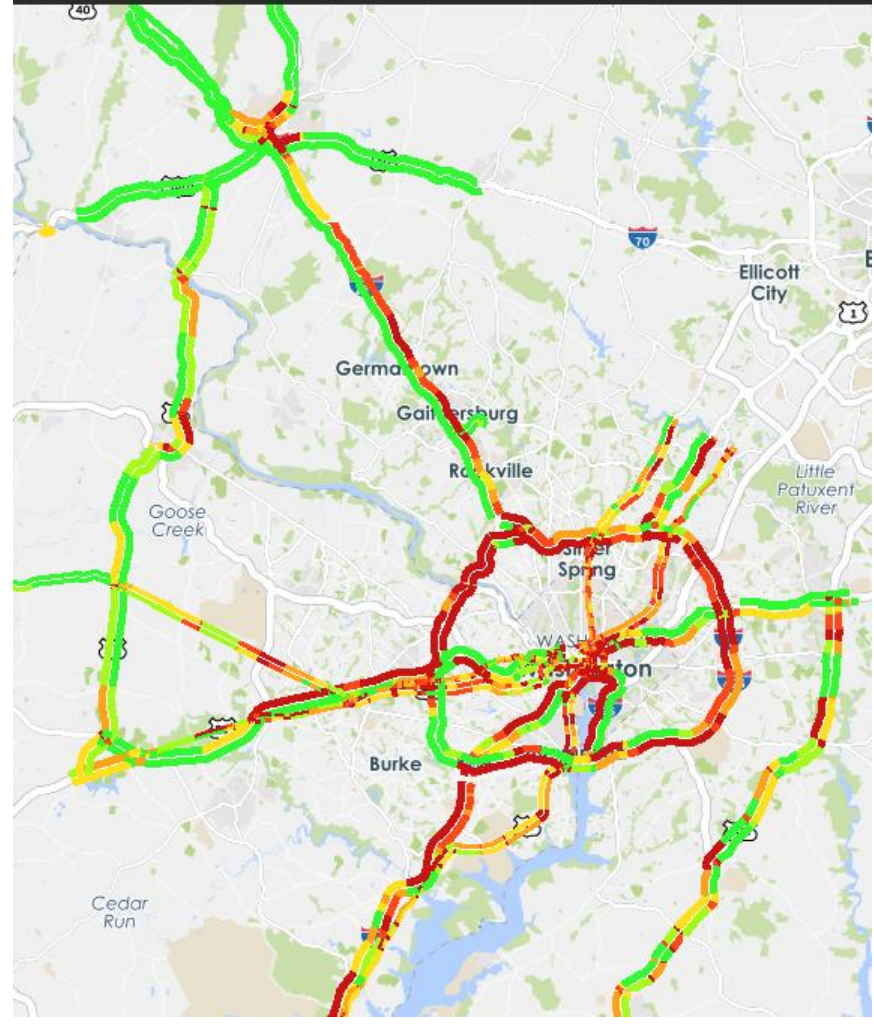


Draft of Appendix B 2017 Peak Hour PTI

08:00 AM - 2017 (Every weekday)

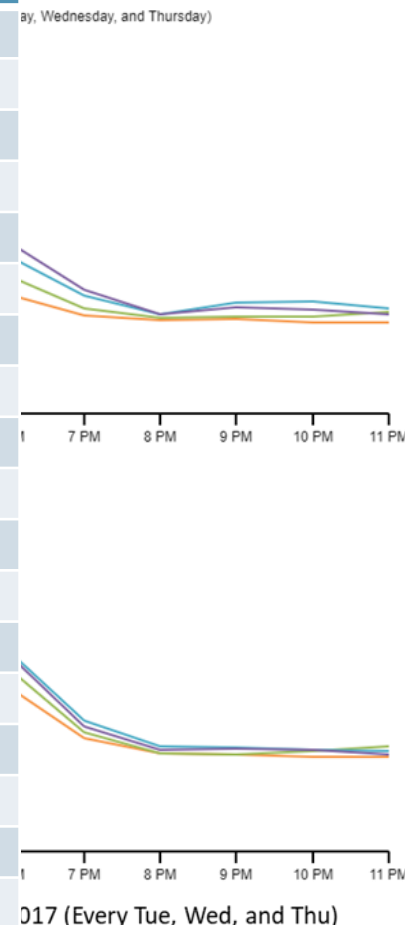


05:00 PM - 2017 (Every weekday)



Draft of Appendix C 2010 and 2015-2017 Travel Times Along Major Freeway Commute Corridors

	Definition
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	MD-295 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-50/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 th St. Bridge



TPB Performance-Based Planning (PBPP) Activities Update



What is Performance-Based Planning and Programming (PBPP) ?

- The PBPP process is a requirement for MPOs, States, and providers of public transportation originating in the federal surface transportation MAP-21 and FAST Acts.
- PBPP is the **application of performance management** within the planning and programming process **to achieve desired performance outcomes** for the multimodal transportation system. PBPP includes a range of activities and products:
 - Development of **long range transportation plans**
 - Federally-required plans and processes – such as Strategic Highway Safety Plans (SHSPs), Asset Management Plans, the Congestion Management Process (CMP), and Transit Agency Asset Management and Safety Plans
 - Programming documents, including State and metropolitan Transportation Improvement Programs (STIPs and **TIPs**)



Federally Prescribed Goals

	GOAL AREAS	NATIONAL GOALS
1	SAFETY	Achieve significant reduction in traffic fatalities and serious injuries on all public roads
2	INFRASTRUCTURE CONDITION	Maintain highway system in a state of good repair
3	CONGESTION REDUCTION	Achieve significant reduction in congestion on the National Highway System
4	SYSTEM RELIABILITY	Improve efficiency of surface transportation system
5	FREIGHT MOVEMENT AND ECONOMIC VITALIT	Improve Freight Network; Support regional economic development; Rural communities access to national and international markets
6	ENVIRONMENTAL SUSTAINABILIT	Enhanced transportation system performance while protecting and enhancing natural environment
7	REDUCED PROJECT DELIVERY DELAY	Elimination of delays on project development and delivery



Federally Prescribed Performance Measures

	GOAL AREAS	NATIONAL GOALS
1	SAFETY	<ul style="list-style-type: none"> Highway - Traffic Fatalities and Serious Injuries Transit – Fatalities and Injuries; Derailments; Collisions; Fires; Evacuations for life safety
2	INFRASTRUCTURE (ASSET) CONDITION	<ul style="list-style-type: none"> Roadway – Pavements and Bridges Transit – Revenue vehicles, Non revenue equipment, Track infrastructure, and Facilities/Stations
3	CONGESTION REDUCTION	Delay per capita
4	SYSTEM RELIABILITY	<ul style="list-style-type: none"> Highway - Reliable Travel Times Highway - Peak Hour Travel Times Meets Expectations Transit – Major / Other Mechanical System Failures
5	FREIGHT MOVEMENT AND ECONOMIC VITALIT	<ul style="list-style-type: none"> Reliable Truck Travel Times Interstate System Mileage Uncongested
6	ENVIRONMENTAL SUSTAINABILIT	Criteria Pollutants Emissions Reduced

Highway Safety Performance Measures

- Performance Measures (ALL in 5-year rolling average)
 - (1) Number of Fatalities
 - (2) Rate of Fatalities per 100 million VMT
 - (3) Number of Serious Injuries
 - (4) Rate of Serious Injuries per 100 million VMT
 - (5) Number of Non-Motorized Fatalities and Serious Injuries
- Implementing Agency (State DOTs) – set 2018 targets by August 31, 2017
- TPB – approved 2018 targets on January 17, 2018
- Annual requirement: TPB’s 2019 targets will need to be approved January 2019



System Performance: Highway and Freight

	Performance Measures
National Highway System	Interstate Travel Time Reliability (TTR) - Percent of person-miles traveled on the Interstate System that are reliable
	NHS (Non-Interstate) Travel Time Reliability (TTR) - Percent of person-miles traveled on the non-Interstate NHS that are reliable
	Greenhouse Gas Emissions - Percent Change in Tailpipe CO2 Emissions on the NHS

	Performance Measures
Freight Movement	Freight Reliability (TTTR) - Percent of the Interstate System Mileage providing for Reliable Truck Travel Times

- State DOTs – set Targets by May 20, 2018
 - GHG Emissions not until September 28, 2018
- TPB – set Targets by November 15, 2018 (GHG: March 26, 2019)



Travel Time Reliability (TTR) Measures

- Measurement of travel time reliability on the Interstate and non-Interstate National Highway System (NHS)
 - State DOTs must establish 2- and 4-year targets (2019 and 2021 respectively) for the Interstate, but only a 4-year target for the non-Interstate NHS, by May 20, 2018.
- Measurement to assess freight movement on the Interstate System: Truck Travel Time Reliability (TTTR).
 - State DOTs must establish 2- and 4-year targets by May 20, 2018
- All TTR targets will be reported in the State's baseline performance period report due by October 1, 2018.
- MPOs must either support the State targets or establish their own quantifiable 4-year targets within 180 days of the State target establishment.

System Performance: CMAQ Program (Congestion Mitigation and Air Quality)

	Performance Measures
CMAQ Program: Traffic Congestion	Peak Hour Excessive Delay – Annual hours of peak hour excessive delay per capita
	Mode Share - Percent of non-SOV Travel on the NHS
CMAQ Program: Emissions Reduction	Emission - CMAQ-funded projects on-road mobile source total emission reductions for each applicable criteria pollutant and precursor

- State DOTs – set Targets by May 20, 2018
- TPB (MPO) – also set Targets by May 20, 2018
 - Demonstrate State-MPO Coordination

CMAQ Program: PHED, Non-SOV, Emissions Measures

- CMAQ Program: Traffic Congestion measures apply to the urbanized area (PHED, non-SOV)
 - Applicable State DOTs and MPOs must coordinate on and collectively establish a single, unified 2-year and 4-year target for each applicable urbanized area (>1 million people).
- CMAQ Emissions measure applies to non-attainment or maintenance areas.
 - Applicable State DOTs and MPOs must coordinate on and collectively establish a single, unified 2-year and 4-year target for each applicable pollutant and non-attainment or maintenance area.
- A baseline report for the first performance period is due October 1, 2018, and must include 2- and 4-year targets and a description of the data collection method to be used.



Next Steps

- CMAQ Program: PHED, Non-SOV, Emissions (due May 20)
 - Coordinate with DOTs on data, measures, forecasting methodology, and targets.
 - Brief TPB on measures and draft targets at April 18 meeting.
 - TPB adopt targets at May 16 meeting.
- Highway and Freight Congestion: TTR Measures
 - Preferred forecasting methods identified by April 2018.
 - DOTs set initial targets by May 2018.
 - TPB briefed in June and adopt targets in July for incorporation into Visualize 2045 long range plan.



Acknowledgement

Andrew Messe and Eric Randall for
review of presentation



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