Item #2
MOITS
June 10, 2014

2014
Congestion Management Process (CMP) Technical Report

Updated Draft

MOITS Policy Task Force and Technical Subcommittee
June 10, 2014

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COG/TPB Staff

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

Revisions and Updates

- The Draft Report dated May 30, 2014 (link to the document: http://goo.gl/RMpvJ3):
  - Revised transit related contents based on WMATA comments
  - Revised local TDM table based on Commuter Connections Subcommittee member comments
  - Added one more recommendation: monitor freight movement

Suggestions and Discussions

- Examine “freight-significant” sub-network
  - Comment received from Freight Subcommittee
  - How to define “freight-significant” sub-network
- Examine “transit bus-significant” sub-network
  - Comment received from TPB Board Meeting
  - How to define “transit bus-significant” sub-network
- Monitoring results of the above sub-networks can be summarized in future:
  - Quarterly NCR Congestion Report
  - Periodical updates to Freight Subcommittee and Regional Bus Subcommittee
  - CMP Tech Report

I-95 Vehicle Probe Project Data (1/2)

- Access https://vpp.ritis.org/suite/
- Advantages
  - Ability to analyze reliability in addition to magnitude of congestion
  - Ability to look at measures that address the experience of a traveler rather than just systems/network analyses
  - Ability to look at sub-networks of particular interest like NHS, transit, or freight

I-95 Vehicle Probe Project Data (2/2)

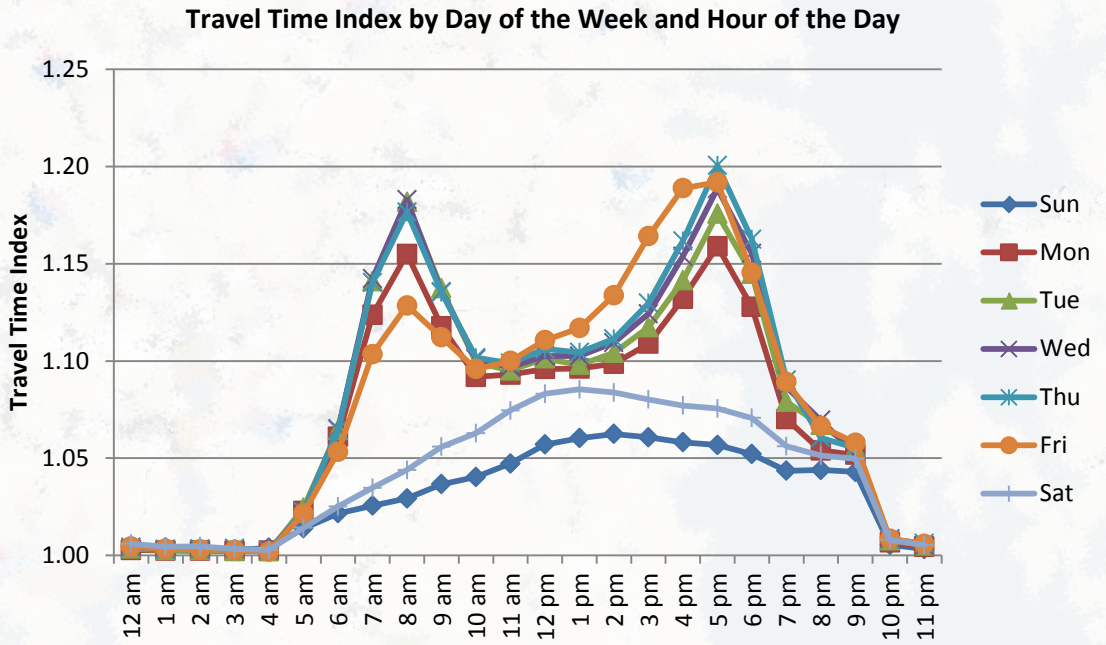
- World after July 1, 2014
  - Coalition member agencies will realize up to a 50% reduction in cost
  - Three vendors: INRIX, HERE and TomTom
  - Member agencies may choose from these vendors to procure traffic speed and travel time data
    - Implications to COG/TPB
  - Later this year, real-time volume and origin-destination data to augment speed and travel time

Proposed Probe Data Working Group (PDWG)

- Objective: improve regional coordination in using private sector probe-based traffic data for transportation systems performance monitoring and reporting
  - Consistency in technical details
  - Thorough and transparent documentation
- Aimed at assisting TPB member agencies
- Structure
  - As one of the subcommittees/groups of MOITS
  - Meet quarterly

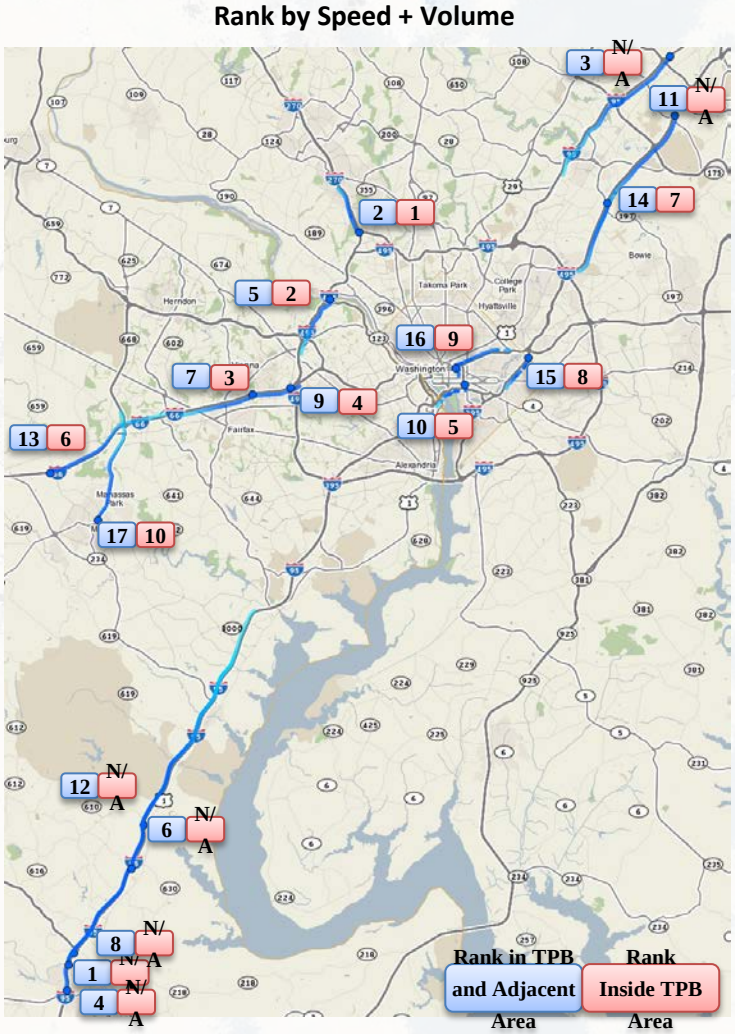
Congestion Day-of-Week Variations

- Middle weekdays (Tue, Wed & Thu):
  - AM peak: almost identical
  - PM Peak: Thu > Wed > Tue
- AM Peak:
  - Tue/Wed/Thu > Mon > Fri
- PM Peak:
  - Fri > Thu > Wed > Tue > Mon
  - Friday: expanded congested hours
- Lunch effect on middle weekdays
- Weekend
  - Sat > Sun
  - Highest hours: 12 - 3 pm



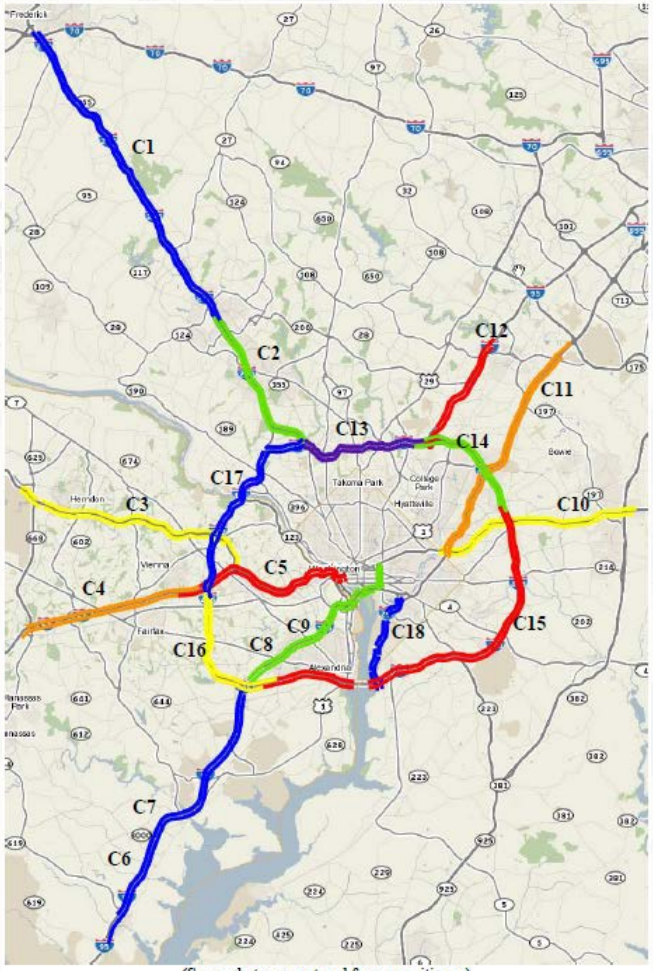
Bottleneck Ranking: Speed vs. Speed + Volume

- Rank by speed: individual perspective
- Rank by speed + volume: system perspective
- Rank changes from speed to speed + volume in the TPB Planning Area:
  - I-270 Spur SB @ I-270: from 3rd to 1st
  - I-495 CW @ AM Bridge: from 1st to 2nd
  - I-66 EB @ Vaden Dr/Exit 62: from 8th to 3rd
  - I-66 EB @ I-495/Exit 64: from 6th to 4th
  - I-395 NB @ 2nd St: unchanged at 5th
  - I-66 WB @ VA-234/Exit 47: from 2nd to 6th
  - MD-295 NB @ MD-197/Exit 11: unchanged at 7th
  - DC-295 NB @ Eastern Ave: from 9th to 8th
  - US-50 WB @ 10th St: from 4th to 9th
  - VA-28 SB @ Prescott Ave/Sudley Rd: unchanged at 10th



Travel Times along Major Freeway Commute Routes - Route Definition

Route Code	Description
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 11th St. Bridge



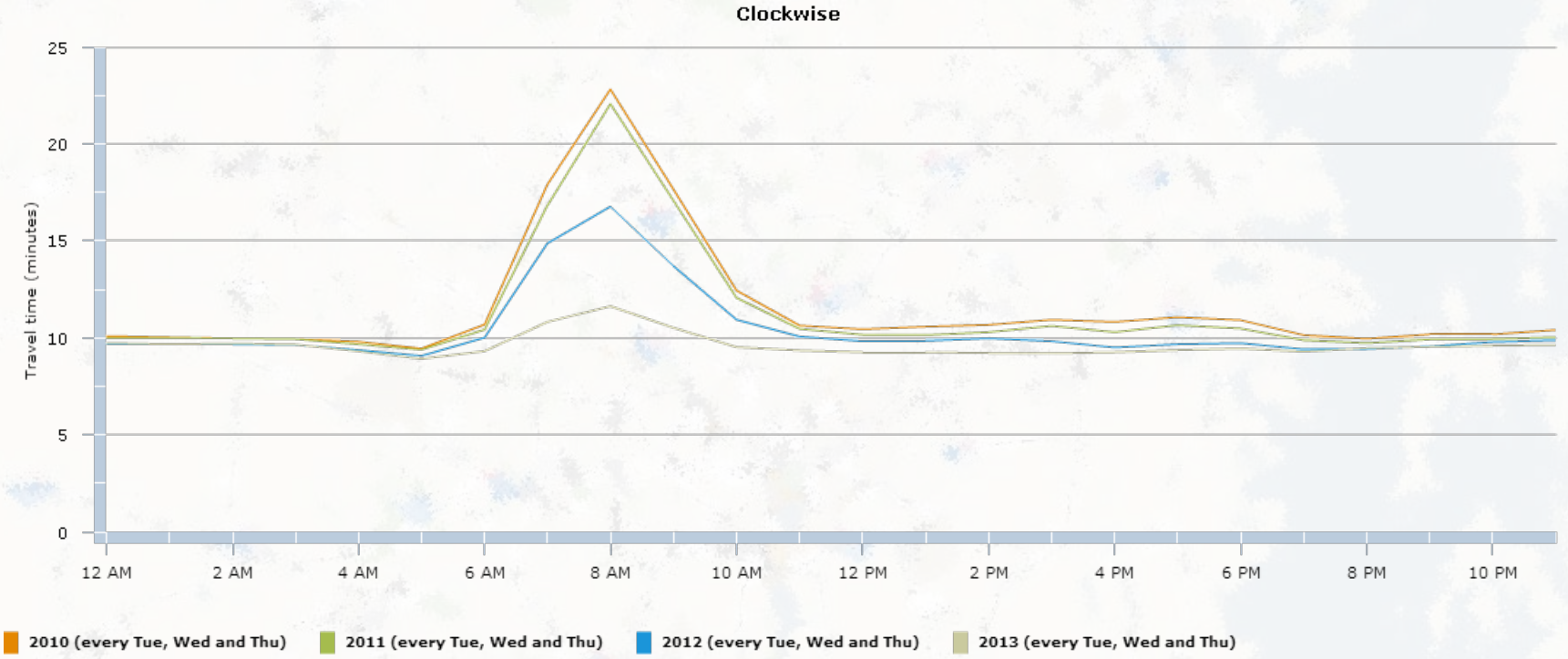
(Screenshot was captured from vpp.ritis.org)

Travel Times along Major Freeway Commute Routes - AM Peak Travel Times, 2010-2013

Route	Length (miles)	Average Travel Time in Peak Period (min)				Reliable (95th) Travel Time* in Peak Period (min)				2013 Change in Average Travel Time in Peak Period (min)			2013 Change in 95th Travel Time in Peak Period (min)		
		2010	2011	2012	2013	2010	2011	2012	2013	vs. 2010	vs. 2011	vs. 2012	vs. 2010	vs. 2011	vs. 2012
C1: I-270 SB from I-70 to I-370	24	33	29	29	29	81	65	60	58	-4	0	0	-23	-7	-2
C2: I-270 SB from I-370 to I-495	10	16	14	13	14	35	34	29	29	-2	-1	0	-7	-5	0
C3: VA-267 EB from VA-28 to VA-123	14	18	18	15	15	43	39	29	29	-3	-2	0	-14	-10	0
C4: I-66 EB from VA-28 to I-495	12	19	20	17	17	48	41	35	32	-3	-3	0	-16	-9	-2
C5: I-66 EB from I-495 to TR Bridge	13	20	19	16	17	43	42	34	34	-3	-3	0	-9	-8	-1
C6: I-95 NB from VA-234 to Exit 169	20	25	24	24	24	61	61	59	56	-1	0	-1	-5	-5	-3
C7: I-95 NB HOV from VA-234 to Exit 169	18	18	17	17	17	28	27	24	23	-1	-1	0	-5	-4	-1
C8: I-395 NB from I-95 to H St.	13	24	24	23	23	66	68	65	62	-1	-2	-1	-3	-6	-2
C9: I-395 NB HOV from I-495 to US-1	11	14	14	13	13	31	30	29	27	-1	-1	0	-5	-3	-2
C10: US-50 WB from US-301 to MD-295	14	17	16	16	16	32	31	28	28	-1	0	0	-4	-3	0
C11: MD-295 SB from MD-198 to US-50	16	21	20	19	19	50	47	42	40	-2	-1	0	-10	-6	-2
C12: I-95 SB from MD-198 to I-495	8	11	10	9	9	28	28	20	19	-2	-1	0	-9	-9	-1
C13: I-495 IL from I-270 to I-95	10	12	11	11	11	18	18	18	16	-1	0	0	-3	-2	-2
C14: I-495 IL from I-95 to US-50	9	10	10	9	9	12	12	12	12	0	0	0	0	-1	0
C15: I-495 IL from US-50 to I-95	28	28	28	27	29	41	38	41	46	1	1	2	5	8	5
C16: I-495 IL from I-95 to I-66	10	17	17	14	11	39	36	34	16	-7	-6	-3	-22	-20	-18
C17: I-495 IL from I-66 to I-270	14	16	16	15	15	25	24	25	26	-1	-1	0	1	2	1
C13: I-495 OL from I-95 to I-270	10	20	19	17	18	43	44	38	38	-2	-1	1	-5	-6	0
C14: I-495 OL from US-50 to I-95	10	12	12	11	11	24	25	22	20	-1	0	0	-4	-5	-2
C15: I-495 OL from I-95 to US-50	29	31	30	29	28	46	46	43	39	-3	-2	-1	-7	-7	-5
C16: I-495 OL from I-66 to I-95	11	10	10	10	10	12	12	11	10	-1	-1	0	-2	-1	0
C17: I-495 OL from I-270 to I-66	14	15	15	15	14	23	23	20	18	-1	-2	-1	-5	-5	-2
C18: I-295 NB from I-495 to 11th St. Brdg.	6	10	9	10	9	28	25	30	25	0	0	0	-3	-1	-5

* The majority (95%) of trips spent equal to or less than the reliable (95th) travel time on the specified route. On average, a traveler could successfully complete the travel on the specified route within the reliable travel time during 19 out of 20 trips (only 1 trip could exceed the reliable travel time).

C16: I-495 IL from I-95 to I-66



Caution: data did NOT differentiate GP lanes and Express Lanes

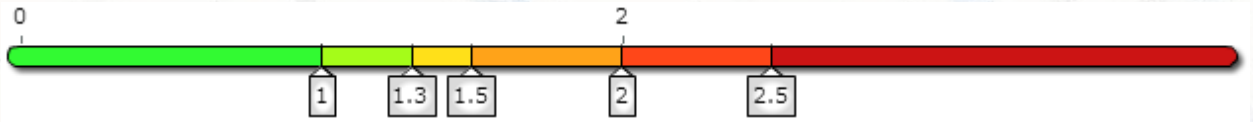
Arterial Highway Congestion

- In the past probe vehicles collected speed, delay, travel time information on a single day for routes shown on the following table
- VPP data available for all the routes at the TMC level
- Last FY staff performed a comparative study
- CMP report shows 2012 average congested conditions based on Travel Time Index for the AM and PM peak period
- Custom analysis can be performed on the data

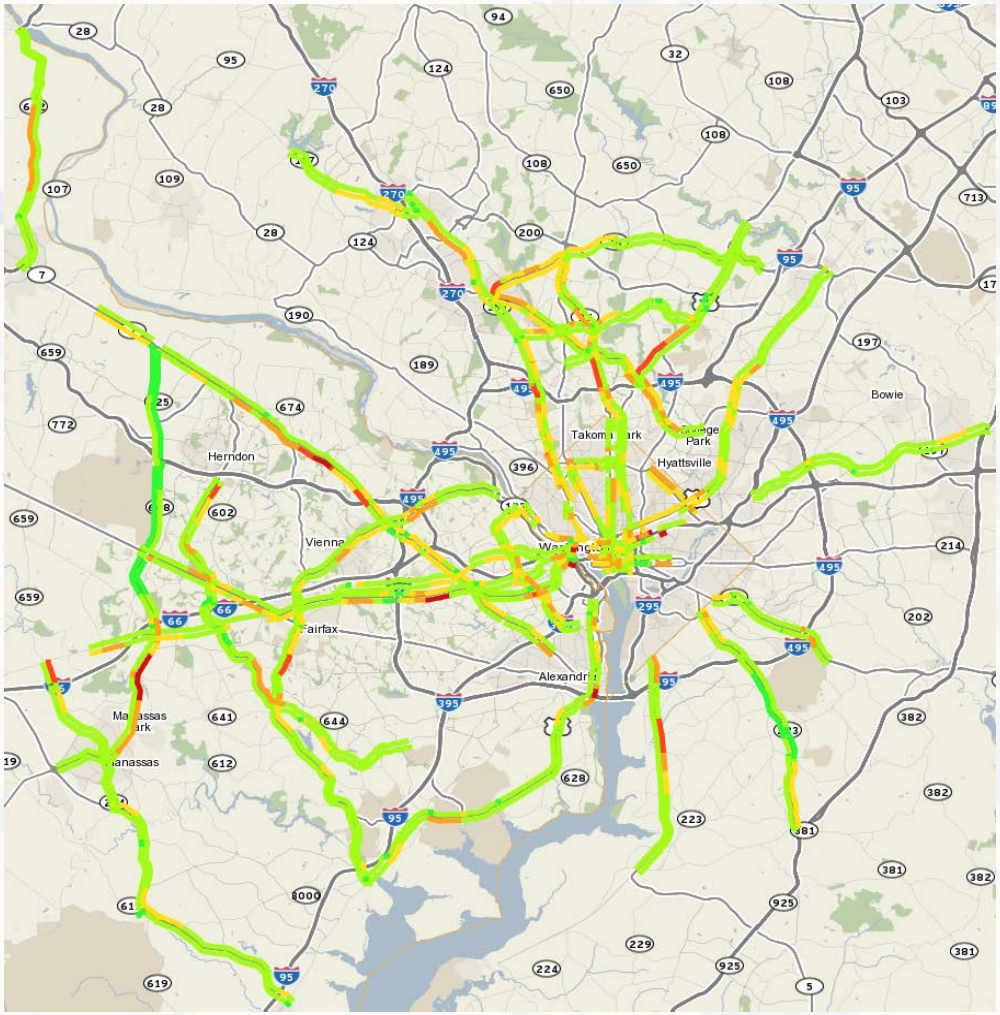
Arterial Routes – Congestion Monitoring Program

State	Route	From/To	To/From	Length (miles)
DC	14th St	Independence Ave	K St	1.0
DC	16th St	K St	Eastern Ave	6.1
DC	17th St	Pennsylvania Ave	Independence Ave	0.5
DC	7th St/Georgia Ave Sec. 1	Independence Ave	New Hampshire Ave	2.8
DC	7th St/Georgia Ave Sec. 2	New Hampshire Ave	Eastern Ave	3.5
DC	Canal Rd/M St	30th St	Chain Bridge	3.7
DC	Connecticut Ave	K St	Nebraska Ave	4.0
DC	Constitution Ave	Louisiana Ave	14th St NE	1.5
DC	H St	Pennsylvania Ave	14th St NW	0.6
DC	Independence Ave	17th St	2nd St SE	1.9
DC	K St/New York Ave	21st St NW	Bladensburg Rd	4.2
DC	L St	Pennsylvania Ave	14th St NW	1.1
DC	Military Rd	Connecticut Ave	Georgia Ave	2.5
DC	Pennsylvania Ave	Constitution Ave	15th St NW	0.8
DC	Rhode Island Ave	7th St	Eastern Ave	3.5
DC	South Dakota Ave	Bladensburg Rd	Riggs Rd	3.0
DC	US 50	17th St	T. R. Bridge	0.9
DC	US 29	M St	Whitehurst Fwy	0.5
DC	Wisconsin Ave	M St	Western Ave	4.1
MD	MD 117	Muddy Branch Rd	Clarksburg Rd	6.8
MD	MD 193	Colesville Rd	Adelphi Rd	4.6
MD	MD 198	MD 650	Old Gunpowder Rd	5.2
MD	MD 210	Southern Ave	Livingston Rd	10.5
MD	MD 355 Sec. 1	MD 124	MD 547	10.1
MD	MD 355 Sec. 2	MD 547	Western Ave	5.3
MD	MD 4	Southern Ave	Dowerhouse Rd	7.0
MD	MD 450	US 301	B. W. Pkwy	12.1
MD	MD 586	MD 28	MD 193	5.0
MD	MD 193	US 29	MD 185	4.2
MD	MD 28	Veirs Mill Rd	New Hampshire Ave	9.0
MD	MD 5	Suitland Pkwy	Accokeek Rd	12.2
MD	MD 97 Sec. 1	Eastern Ave	University Blvd	4.2
MD	MD 97 Sec. 2	University Blvd	MD 28	5.3
MD	Randolph Rd	MD 355	Columbia Pike	9.1
MD	US 1 Sec. 1	MD 198	MD 193	8.1
MD	US 1 Sec. 2	MD 193	Eastern Ave	5.3
MD	US 29	East-West Hwy	Fairland Rd	7.1
VA	US 15	VA 7	Lovettsville Rd	12.6
VA	US 50 Sec. 1	VA 28	Nutley St	13.4
VA	US 50 Sec. 2	Nutley St	Fort Myer Dr	12.3
VA	US 1	15th St	VA 123	20.0
VA	US 29 Sec. 1	G.W. Pkwy	Gallows Rd	9.0
VA	US 29 Sec. 2	Gallows Rd	VA 236	8.8
VA	US 29 Sec. 3	VA 236	Bull Run PO Rd	7.5
VA	VA 120	I 395	Chain Bridge	8.3
VA	VA 123 Sec. 1	VA 193	VA 7	5.8
VA	VA 123 Sec. 2	VA 7	VA 236	7.1
VA	VA 123 Sec. 3	VA 236	US 1	14.8
VA	VA 234 Sec. 1	US 1	Hoadley Rd	10.2
VA	VA 234 Sec. 2	Hoadley Rd	US 29	13.2
VA	VA 28 Sec. 1	Wellington Road	Compton Rd	7.0
VA	VA 28 Sec. 2	Compton Rd	VA 7	17.0
VA	VA 7 Sec. 1	Braddock Rd	Gallows Rd	9.5
VA	VA 7 Sec. 2	Gallows Rd	VA 193	10.0
VA	VA 7 Sec. 3	VA 193	VA 28	8.0
VA	VA 286 Sec. 1	Sunrise Valley	US 50	6.2
VA	VA 286 Sec. 2	US 50	Rolling Rd	20.0
VA	Wilson Blvd	Roosevelt Blvd	Fort Myer Dr	4.7
	Total			402.7

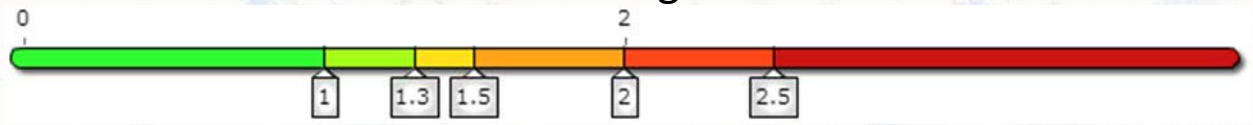
AM Peak Hour Congestion 8 – 9 AM



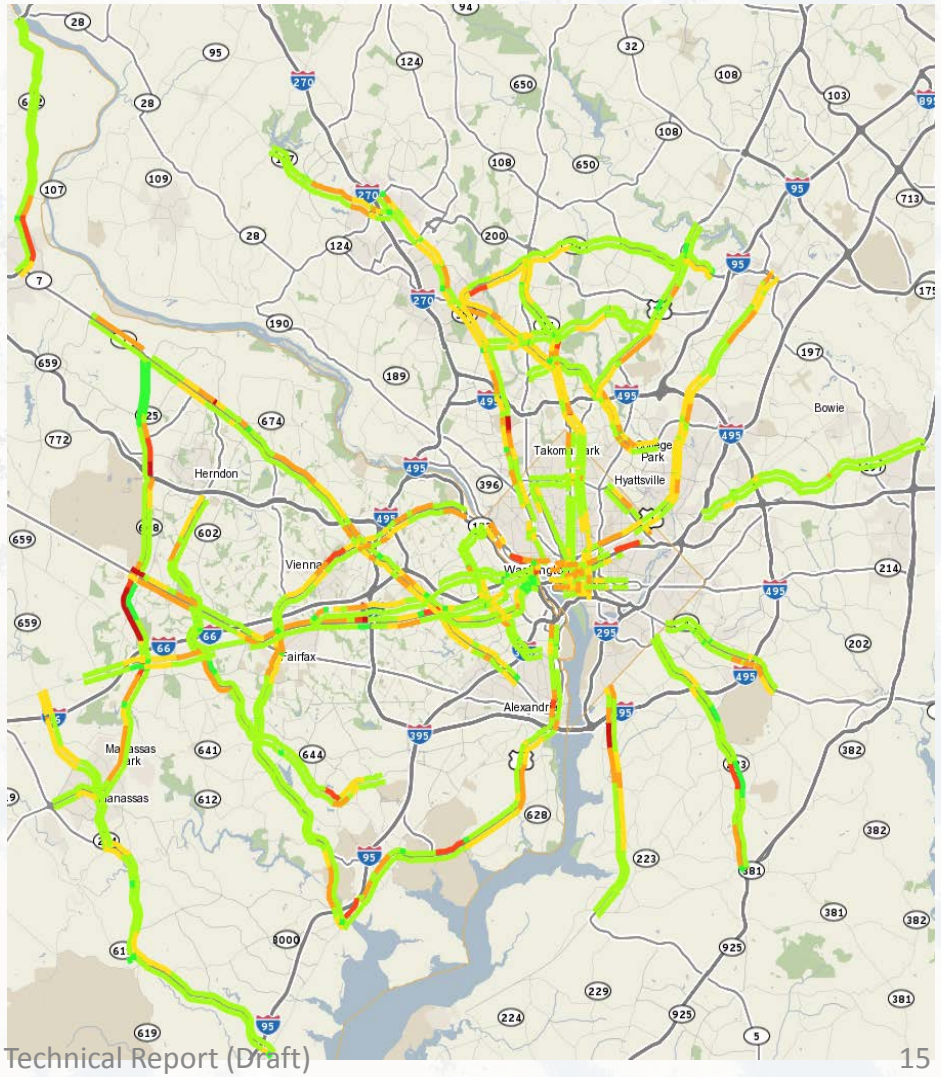
Congestion levels are categorized by the value of TTI: TTI = 1.0: Free flow
1.0<TTI<=1.3: Minimal
1.3<TTI<=1.5: Minor
1.5<TTI<=2.0: Moderate
2.0<TTI<=2.5: Heavy
2.5<TTI: Severe



PM Peak Hour Congestion 5 – 6 PM



Congestion levels are categorized by the value of TTI: TTI = 1.0: Free flow
1.0<TTI<=1.3: Minimal
1.3<TTI<=1.5: Minor
1.5<TTI<=2.0: Moderate
2.0<TTI<=2.5: Heavy
2.5<TTI: Severe



Mobile Devices and Social Media

- The combination of mobile devices and social media along with the growing availability of “big data” is having a rapidly evolving impact on the transportation sector
- Travelers can get information on the go to make decisions about route, mode, and time-of-day
- Travelers are becoming accustomed to having information delivered to them; the transportation sector is responding
- Safety is a concern

Mobile Devices

- A majority of American adults own a smartphone
- Data is made available to users in a number of forms from both transportation providers and third-party developers
  - Internet based
    - Mobile Versions of Websites (State 511, Transit Agencies)
    - Email Alerts (511, MARC, WMATA)
    - Traffic Maps (Google, INRIX, WAZE)
    - Real-time Bus/Train Arrivals (WMATA, NextBus)
    - Bikeshare Availability
    - Carshare Availability/Reservations
  - Non-internet based
    - Text alerts (State 511, WMATA, MARC)
    - Real-time Bus Arrivals via Telephone (WMATA)

Social Media

- One-way or two-way communication between agencies and the public
  - Police Departments, DOTs, Transit Agencies
- Crowd-sourced data
  - WAZE
- MATOC

Other Information

- Weather Radar
- Emergency Alerts
- Automatic Vehicle Location (AVL) for Snow Plows
- Office of Personnel Management (OPM) App

Review Schedule

- May 13, 2014 – Initial presentation to MOITS
- May 20, 2014 – Presentation to Commuter Connections Subcommittee
- June 5, 2014 – Presentation to Freight Subcommittee
- June 6, 2014 – Initial presentation to TPB Tech Committee
  - **Comments due Wednesday, June 18, 2014**
  - Please send comments to COG/TPB staff: Erin Morrow (emorrow@mwcog.org)
- **June 10, 2014 – Final presentation to MOITS**
- June 27, 2014 – Final presentation to TPB Tech Committee (tentative)
- July 18, 2014 – Presentation to Travel Forecasting Subcommittee (tentative)