

# Vehicle Probe Project II



*Agency Project Team Webcast*  
April 30, 2015

*Dial 1-712-775-7031  
& enter 780245114# at the prompt*

# Housekeeping Items

- Please call Joanna at 610-662-5569 for difficulties with the web or audio application
- This is a **virtual meeting experience**
  - Please keep your phone muted until asking a question or speaking (press \*6 to mute/unmute individual phone lines)
  - Please do not place call “on hold” as your hold music will be heard by the group
- All materials & contact information will be available to participants after the webcast

# Webcast Participants

Agency	Participant
Connecticut DOT	Stephanie Molden
Florida DOT	JoAnn Oerter ( <i>Atkins</i> )
Maryland DOT/Maryland SHA	Debbie Bowden, Raqib Mohammed
New Jersey DOT	Neha Galgali, Sudhir Joshi, Simon Nwachukwu, Ira Levinton
North Carolina DOT	Kelly Wells, Mike Bruff
Pennsylvania DOT	Scott Benedict
Rhode Island DOT	Bill Nordstrom ( <i>Jacobs</i> ), Deanna Peabody ( <i>TraflInfo</i> )
South Carolina DOT	Dipak Patel
Virginia DOT	Mena Lockwood, Sanhita Lahiri, Paul Szatkowski, Ram Venkatanarayana, Michael Fontaine
FHWA	Vidya Mysore
Baltimore Metropolitan Council	Victor Henry, Ed Stylc
Delaware Valley Reg. Planning Comm.	Zoe Neaderland, Jesse Buerk
MWCOG	Andrew Meese, Wenjing Pu
North Jersey Transp. Planning Authority	Keith Miller, Solomon Caviness
South Jersey TPO	William Schiavi
Motion Maps, LLC	Bob Winick
New Jersey Institute of Technology	Dejan Besenski

**Please  
confirm  
that your  
line is  
muted  
\*6**

**Thank you!**



# Welcome & Introductions

***George Schoener***  
***I-95 Corridor Coalition***

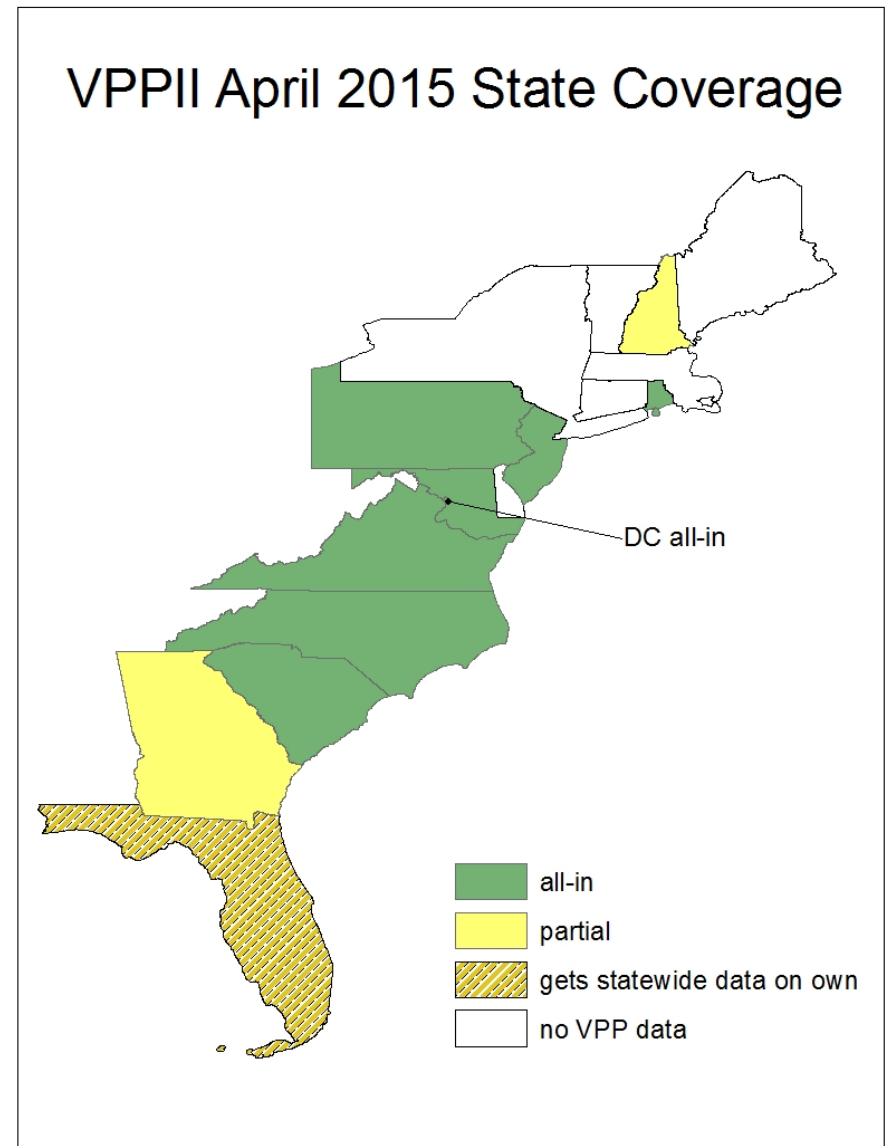
# Today's VPP Webcasts

- VPPII Agency Project Team Webcast  
(9:30am – 11:00am)
- VPP Arterial Validation Webcast  
(11:00am – noon)

# Agency Project Team Agenda

Topic		Speaker
1	Introductions & Welcome	George Schoener, I-95 Corridor Coalition (I-95 CC)
2	Data Use Agreement (DUA) Status & Contracting Issues	Kathy Frankle, University of Maryland (UMD)
3	VPPII Update – Data Validation & Tech Activities	Stan Young, Masoud Hamed, Reuben Juster, UMD
4	VPP Suite	Michael Pack, UMD CATT Lab George Schoener, I-95 CC
5	Updates by Agencies	All Facilitated by George Schoener, I-95 CC
6	Other VPPII Activities	George Schoener, I-95 CC
7	Wrap up & Thank you	George Schoener, I-95 CC

# VPP Data Coverage Summary



# DUA Status and Contracting Issues

***Kathy Frankle***  
***University of Maryland***

- VPP Coverage & VPPII Agreement Status
- VPP DUA Rev 9 Status

# VPP Coverage Summary

Jurisdiction	Agency Purchasing Data	Coverage	Vendor	Agreement & Coverage Status
Maine	Maine Turnpike			Working with them for coverage with TomTom on I-95
New Hampshire	NHDOT	Partial	INRIX	(3) year contract with TomTom to start Jan 2016.
Rhode Island	RIDOT	All-in	INRIX	Working on modified contact for July 1, 2016
New Jersey	NJDOT	All-in	INRIX	Working on modified contact for July 1, 2016
Pennsylvania	PennDOT	All-in	INRIX	Contract thru July 2017. All-in as of May 1, 2015.
Maryland	MSHA, MDTA	All-in	ALL	New contract to begin Sept1, 2016. All in with INRIX, redundant coverage with HERE & TomTom
District of Columbia	DDOT	All-in	INRIX	Under contract
Virginia	VDOT	All-in	INRIX	Under contract
North Carolina	NCDOT	All-in	INRIX	Under contract through Nov, 2015.
South Carolina	SCDOT	All-in	INRIX	Sent updated costs for next year.
Georgia	GDOT	Partial	INRIX	Working on modified contract for July 1, 2016. Adding coverage by HERE (see desired coverage).

States in Blue Boxes – UMD currently working to modify contracts that expire on June 30, 2015.

# DUA V9 Status

Agencies	Status	Notes
Connecticut DOT	Sent	DUA ver 8 executed
Delaware DOT	Sent	No response
DDOT	Sent	Expecting edits to DUA ver 9
FDOT	Sent	DUA ver 8 executed
GDOT	Sent	DUA ver 8 executed
Maine Turnpike	Sent	No response
Maryland SHA	Executed	1/16/2015
Massachusetts DOT	Sent	No response
NHDOT	Executed	12/11/2014
NJDOT	In process	Waiting for signed DUA ver 9
NYSDOT	Sent	DUA ver 8 executed
NCDOT	In process	Waiting for modified DUA ver 9 to be returned signed
PennDOT	Sent	Beginning process to sign DUA ver 9
RIDOT	Executed	4/10/2015
SCDOT	Sent	DUA ver 8 executed
Tennessee DOT	Sent	Not purchasing data
VDOT	Executed	1/13/2015

# Tech Coordination Update

***Stan Young, Masoud Hamed, Reuben Juster***  
***University of Maryland CATT Works***

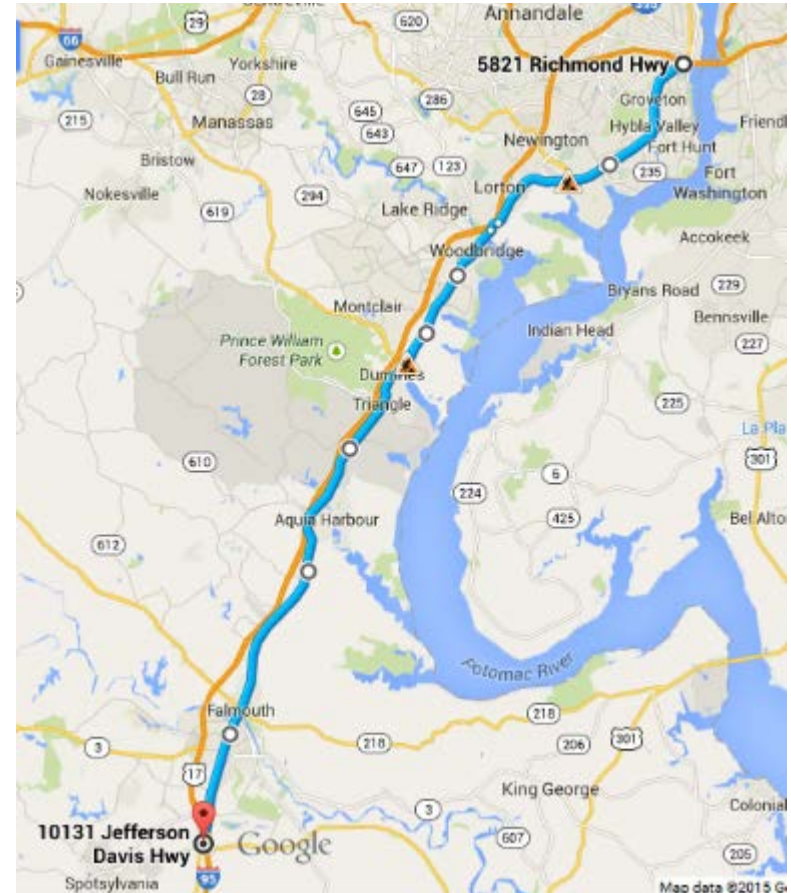
- Validation Summary
- Maryland Supplemental Coverage
- Volume & O/D

# Validation - Ongoing

- PA-07 & PA-08 Complete
  - PA08 (first multi-vendor) posted on website
- VA-09 & VA-10
  - Results being reviewed by vendors,
- MD09
  - Deployment Scheduled – Data Capture in place for HERE and INRIX

# Validation - Ongoing

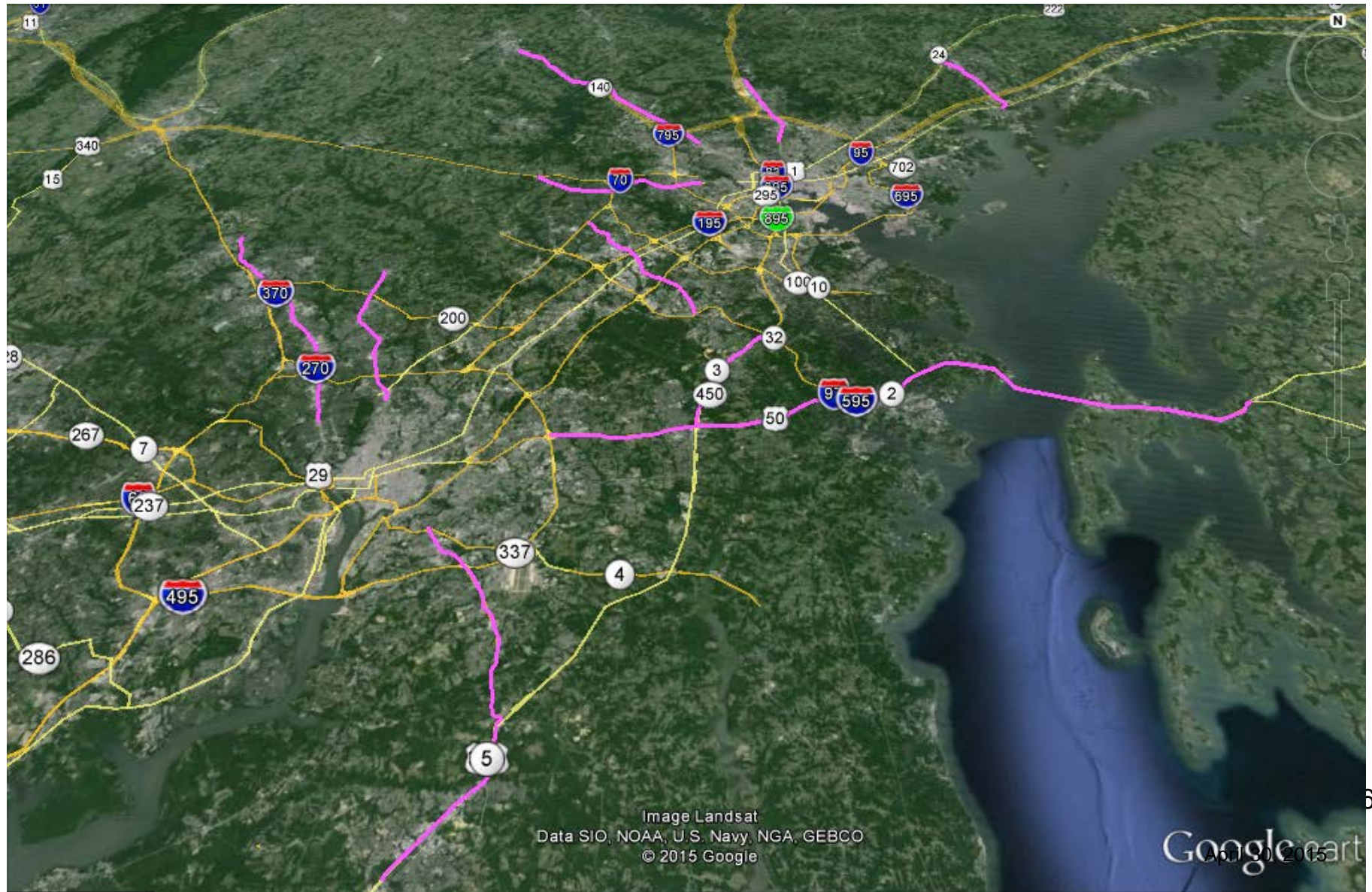
- VA-09
  - Results under review
- VA-10
  - In processing
- Similar to Arterial Validation Report
  - Traditional / Slowdown / Distribution Analysis performed
  - Reports available in May



# VA-09 Observations

- In general improvement in probe data on arterials compared to previous years
- Almost all major congestion episodes were captured by all vendors to some extent, with exception of a few missed cases
- However severity of slowdowns seem to be underestimated by all vendors

# Maryland Supplemental Coverage



# Maryland Supplemental Coverage

- 120 miles consisting of:
  - High end arterials
  - Freeway
- Went live on February 1, 2015
- Next validations will utilize these areas:
  - April – US 50 & US 40, tackling latency
  - June – Critical arterials
- Maryland anticipates creating an arterial management test bed

# Volume & OD

- Cooperative Research Initiative
  - Calibration/validation test bed
  - Focus group to refine product
  - Vendors develop, test, and report
- Goal is to accelerate timeframe to viable real-time volume data feed
- To include freeway, high-end arterial, and major intersections
- Interested members contact [rmjcar@umd.edu](mailto:rmjcar@umd.edu)

# VPP Suite

***George Schoener, I-95 Corridor Coalition***

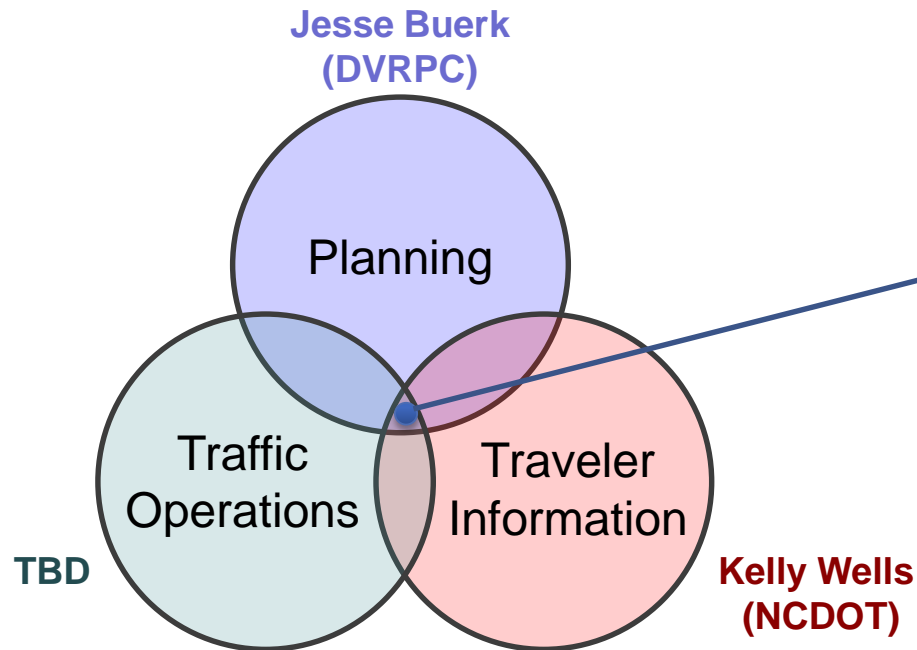
***Michael Pack, University of MD CATT Lab***

- Roles – Coalition & Agencies (George)
- New Co-chairs (George)
- User Group webcast (April 8, 2015) (Michael)
- New and Planned Features (Michael)
- Funding Status & Cutoff dates (Michael)

# Role within the VPP Suite (George)

- Coalition
  - Support VPP Suite User Group
  - Coordinate training of agencies for VPP Suite
- Agency Members
  - Use and fund VPP Suite

# The new co-chairs will create a cohesive synergy



**The co-chair's vision, leadership and guidance** will help provide for:

- ▶ A more comprehensive State & MPO perspective...  
↓
- ▶ that leads to better integration of Planning-Ops-Travel Info needs & considerations...  
↓
- ▶ for improved tools and products.

# User Group Meeting April 8<sup>th</sup>

(Michael)

- Highlights
  - New User Groups
  - Funding Status/Cutoff Dates
  - Change in Leadership

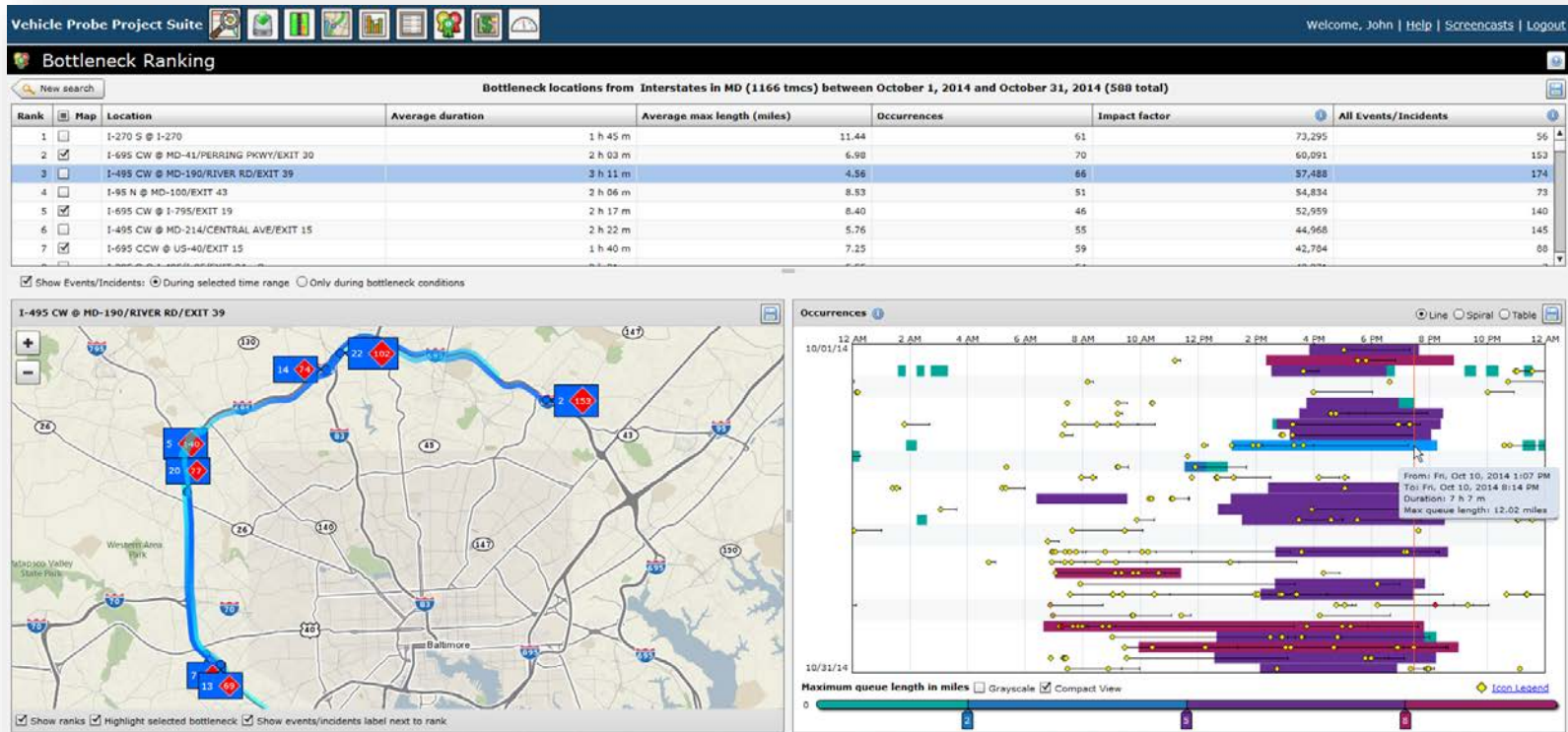
# New & Planned Features

# New Data Sources

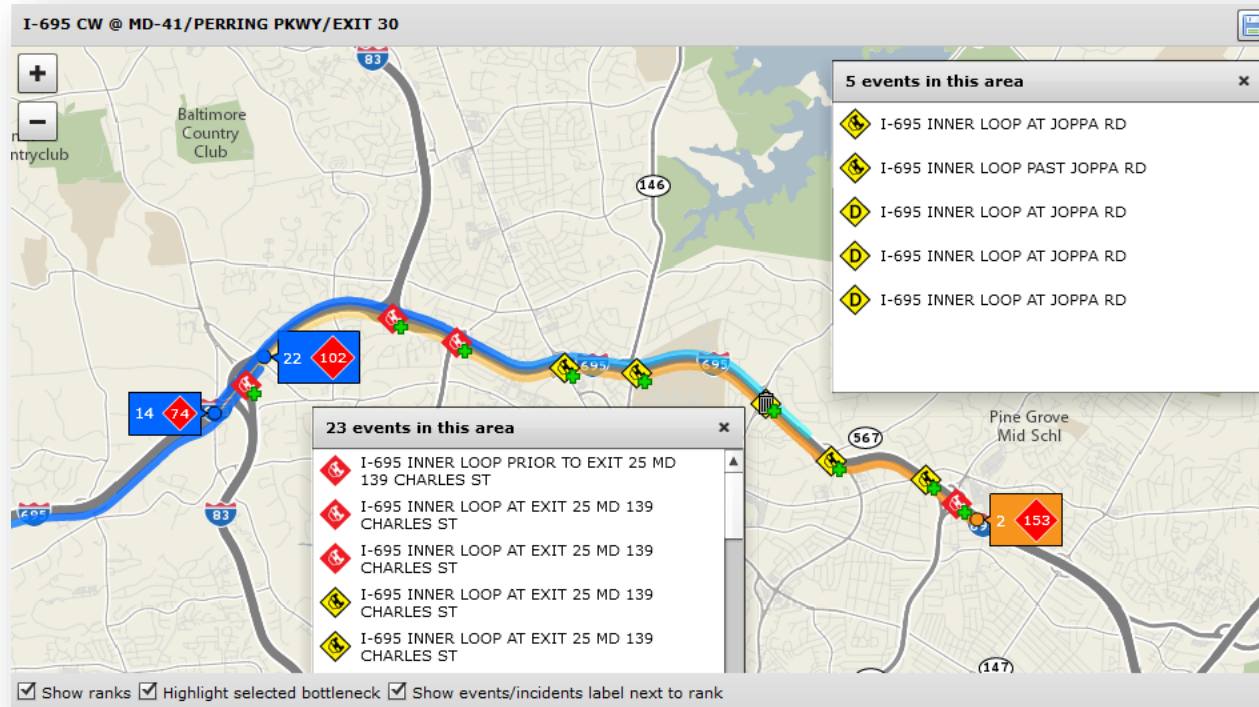
- Data Downloader Now Includes:
  - INRIX
  - HERE
  - TomTom
  - NPMRDS

# Bottleneck Ranking – Bottleneck/Event Data

Bottleneck Ranking now includes traffic event and incident data from RITIS and aligns those events to bottlenecks, with new features added into the Impact Factor table, map and 3 visualization choices



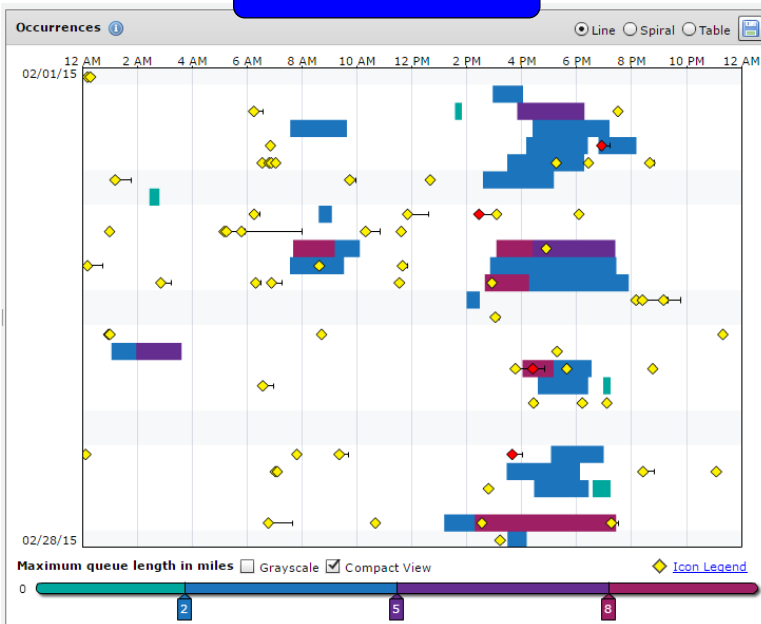
# Map Bottleneck/Event Detail



- Total number of events are shown in red diamonds
- Use zoom to reveal more event detail
- Clicking on the green crosses (areas of multiple events) opens a detail box for that location

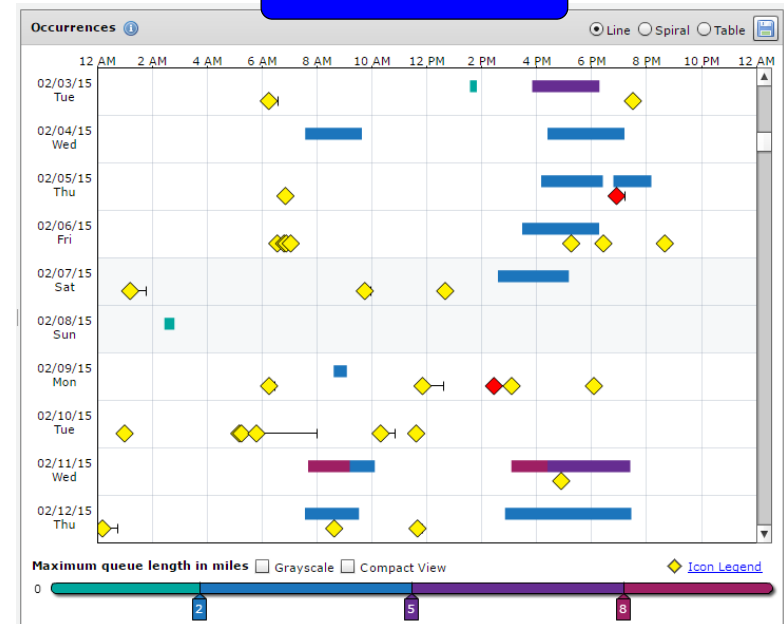
# Time-Table Visualization

Compact View



Get an overview-level understanding of the data

Multi-Screen View



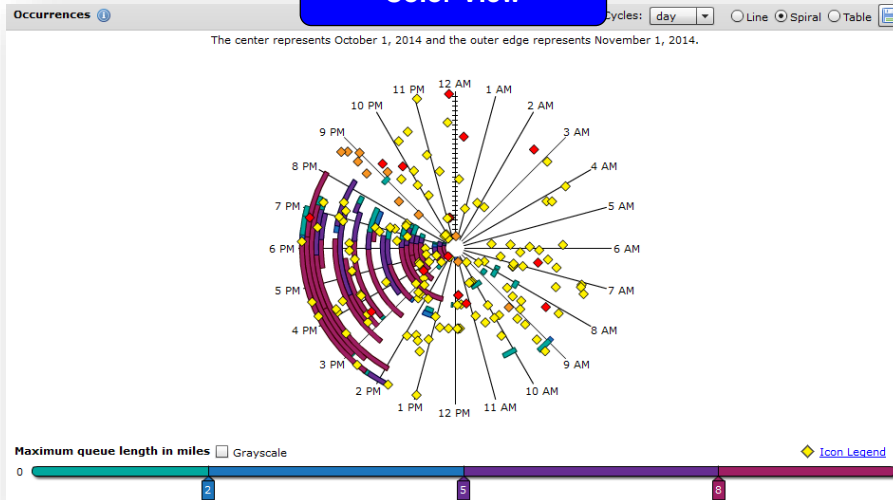
Scrollable to dig into the details

## Incident Icons Legend

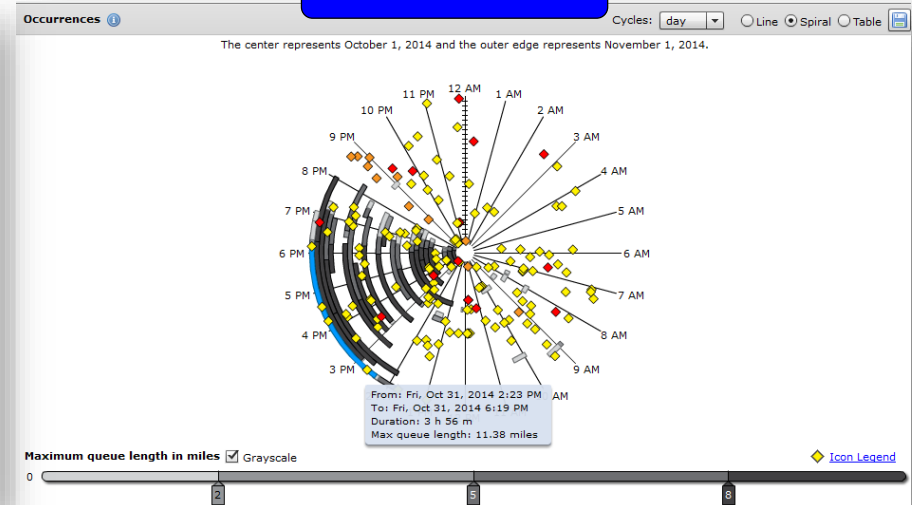
Red — Severe events and incidents    Orange — Roadwork    Yellow — All other events and incidents

# Time Spirals & Event Icons

Color View



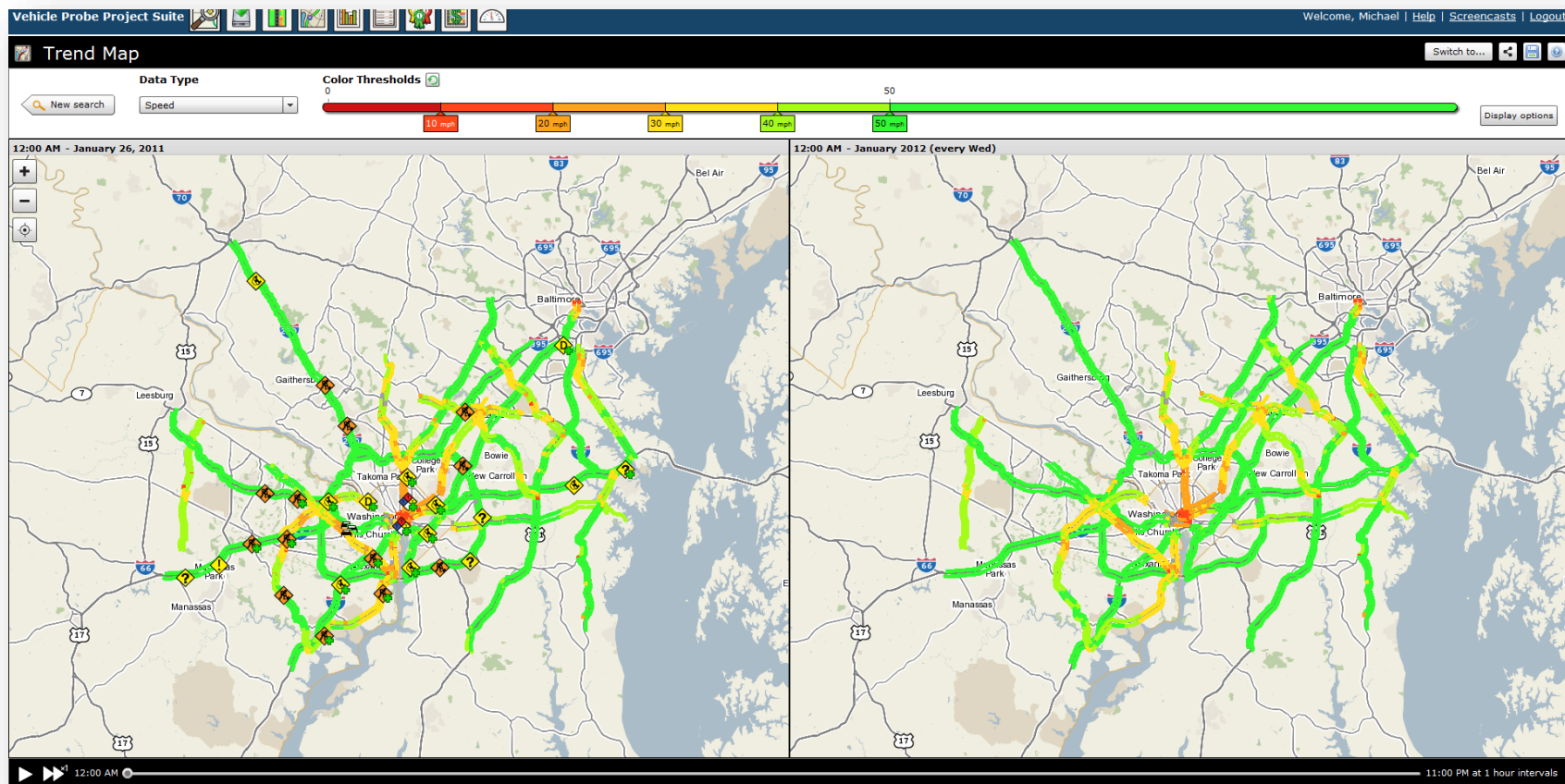
Grayscale View



## Incident Icons Legend

- Red — Severe events and incidents
- Orange — Roadwork
- Yellow — All other events and incidents

# Events on Trend Maps



# Harmonic Mean

- Improves upon how average speeds are calculated across our tools
- Has the benefit of preserving the relationship between speed and travel time
- Impacts the calculations of the **buffer time index, planning time index, user delay cost**, and all other performance metrics
- You will need to recreate any previous reports to take advantage of the harmonic mean

# User Documentation

Vehicle Probe Project Suite

7 Help

General Information

The Vehicle Probe Project Suite

► Data Types

► Bottlenecks

► TMC Codes

► Incident/Event Icons

Support

Tools

► Region Explorer

► Massive Raw Data Downloader

► Congestion Scan

► Trend Map

Performance Charts

Performance Summaries

Bottleneck Ranking

▼ User Delay Cost Analysis

► User Delay Cost Report Parameters

► Preferred Volume Formats

▼ How User Delay Cost is Calculated

Using AADT Counts

Limiting Volumes

Applying Vehicle Percentages

Vehicle-Miles of Travel

Travel Delay

Delay Cost

UDC Report Totals

Hourly Volume Distribution Charts

User Delay Cost Warnings

► Dashboard

Welcome, John | [Help](#) | [Screencasts](#) | [Logout](#)

User delay calculations are performed hourly at the TMC level, then aggregated across the requested geographic region for each day in the analysis period.

Calculating User Delay Cost with AADT Counts

When calculating Average Daily Traffic counts (ADT) from Annual Average Daily Traffic (AADT) counts, daily factors must be applied.

Day of Week	Adjustment factor
Monday to Thursday	+5%
Friday	+10%
Saturday	-10%
Sunday	-20%

Some TMC segments may span across two or more defined volume link locations, and vice versa (as shown in Figure 1). In order to obtain a single AADT measurement for TMCs that fall under this case, the AADT of the overlapped detector locations must be weighted by the distance of the portion of the TMC that falls into the range of each link location.

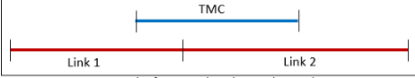


Figure 1: Example of a TMC and overlapping detector locations.

In order to be able to calculate many of the delay analysis measures, hourly profiles must be found for each TMC to give an hourly volume. In order to find these, the following calculations must be performed (assuming the necessary data is provided):

Define the functional class of the TMC — the functional class (Freeway or Non-Freeway) is defined based on TMC information. If the road class is Interstate, the functional class is Freeway. Any other road class is Non-Freeway.

Day type — weekday or weekend, the day of week determines which hourly profile to use. Note that all hourly weekend delay calculations rely solely on the two unique weekend profiles, regardless of congestion level or directionality (see Exhibit A-5).

Congestion level — can be one of: Low, Moderate, or Severe. Congestion level is found for each TMC segment through multiple steps:

• Calculate an average peak period speed using speed data from 6am - 10am and 3pm - 7pm. The days to select this data from depend on the desired outcome of the reports. If looking at a whole year and you only want to see annual values, each TMC will need to have the average speed calculated for all weekdays (giving one result). If looking at a week of data and you want to see values for every day of the week, the average speed would be calculated per weekday (giving 5 results), therefore five hourly profiles for each day of week.

• Get the free-flow speed for each TMC.

• Calculate a peak period speed reduction factor that will determine the congestion level. This is done by dividing the average peak period speed by the free-flow speed.

$$\text{speed reduction factor (SRF)} = (\text{average peak period speed} \div \text{freelane speed}) \times 100$$

For Freeways:

• SRF is greater than or equal to 90 (low congestion)

• SRF is between 75 and 90 (moderate congestion)

• SRF is below 75 (severe congestion)

For Non-Freeways:

• SRF is greater than or equal to 80 (low congestion)

• SRF is between 65 and 80 (moderate congestion)

• SRF is below 65 (severe congestion)

Determine the directionality of the TMC — Directionality defines which peak period (AM or PM) this TMC segment is congested worse during. This is found by calculating both peak period speeds (AM being 6am - 10am and PM being 3pm - 7pm). The lowest speed of the two determines the directionality. If the difference between the two speeds is less than or equal to 5, the directionality is considered Even. The same day selection rules for average peak period speed apply here.

Assign the hourly profile to the TMC — See the [hourly volume distribution charts](#) for percentages of the ADT for the day. For single days, the ADT for that day must be multiplied for each of the hourly factors in the profile.

www.I95Coalition.org

I-95 Corridor Coalition Vehicle Probe Project

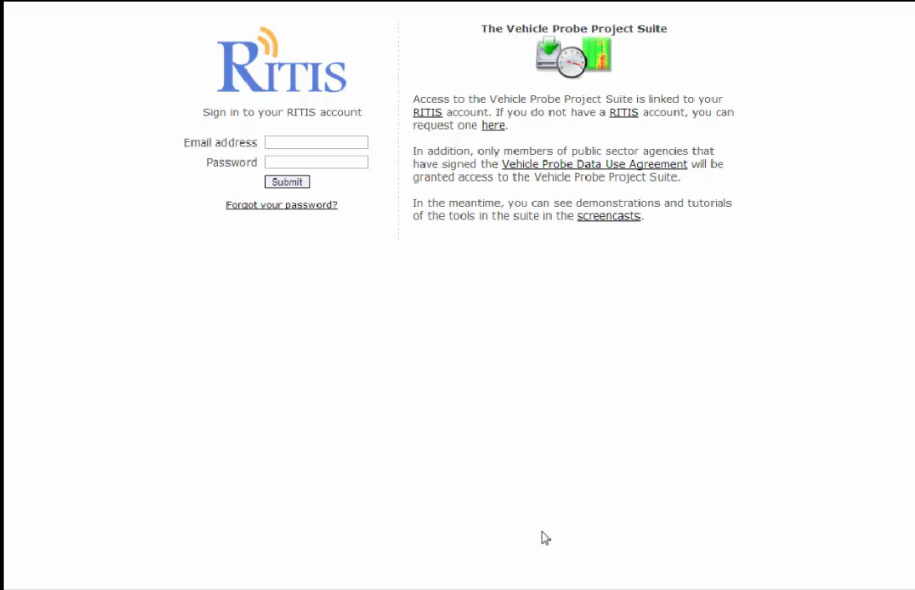
April 30, 2015

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# Tutorials

Vehicle Probe Project Suite Help | Screencasts | Login

▶ Tutorial



**The Vehicle Probe Project Suite**

Access to the Vehicle Probe Project Suite is linked to your [RITIS](#) account. If you do not have a [RITIS](#) account, you can request one [here](#).

In addition, only members of public sector agencies that have signed the [Vehicle Probe Data Use Agreement](#) will be granted access to the Vehicle Probe Project Suite.

In the meantime, you can see demonstrations and tutorials of the tools in the suite in the [screencasts](#).

**Getting Access**  
00:25

**The Tools Available**  
01:20

**Road Selection**  
02:53

**Time Period Selection**  
01:44

**The Region Explorer**  
04:21

**The Massive Data Downloader**  
01:42

**Retrieving Exports**  
00:48

**Congestion Scan**  
03:52

0:06 / 0:25

# Multi-vendor Integration Status

**Congestion Scan**

[Report a problem with this road...](#)

[Save as TMC set](#)

**2. Create one or more time periods to analyze.**

Day(s) | Month(s) | Year

A maximum of 7 days is allowed within a single date range

02/17/2015 - through - 02/23/2015

☐ Create a single time period for this range

☐ Limit to specific days of the week

☐ Create a time period for each day within this range

[Add time period](#)

Your selected time periods

[Remove all](#)

**3. Data Source**

Use the arrows, click and drag or double click to move available Data Sources to selected Data Sources.

Available Data Sources	Selected Data Sources
TomTom	INRIX
NPMRDS	HERE

☐ Separate results for each Data Source.

☒ Fusion

When a segment has data from more than one source...

Average the sources

Average the sources

**4. Gr**

☒ Use the priority of the list

☐ Use the lowest speed

☐ Use the highest speed

☐ Intelligent fusion

☐ 15 minutes

☒ 1 hour

[Submit](#)

- Data downloader is live.
- Users will soon be able to choose from different data sources for all other tools.
- Will be able to prioritize how the data is used and presented
- A fusion option will give users the ability to average the sources in a number of ways

# Multi-vendor Integration over Multiple Tools

## UDC

### 6. Select volume data source:

Use the arrows, click and drag or double click to move available Data Sources to selected Data Sources. Priority can be set for Data Sources by reordering them with the arrows to the right or click and drag.

Available Data Sources		Selected Data Sources
VDOT	→	INRIX
	←	

### 7. Select data source

Use the arrows, click and drag or double click to move available Data Sources to selected Data Sources.

Available Data Sources		Selected Data Sources
TomTom	→	INRIX
NPMRDS	←	HERE

## Future Functionality

☐ Separate results for each Data Source.

☒ Fusion

When a segment has data from more than one source...

8. Processing (optional):

Average the sources

Average the sources

Use the priority of the list

Use the lowest speed

Use the highest speed

Intelligent fusion

Priority can be set for Data Sources by reordering them with the arrows to the right or click and drag.

# Date-filtering Options (in-progress)

► 1. Within the range of **01/01/2015** to **01/31/2015**,

▼ 2. Using data from

☐ All days

☐ Except for...

☒ Only the following selected days...

**Holiday List**

☒ Select all

☒ New Years

☒ Martin Luther King Day

**Custom List** + Add

☐ Select all

☐ Superbowl Sunday 2015

☐ Jan 2015 snow storms

☐ Beginning of semester

Continue

**Add new Custom date(s)**

February ▼ 2015 ▼

25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
1	2	3	4	5	6	7

☐ Recurring date

Weekly ▼

Repeat every  week(s) on:

Sun

Mon

Tue

Wed

Thu

Fri

Sat

All Days, or; Excluding certain days (holidays/custom list), or; Including only certain days

# Date-filtering Options (in-progress)

- ▶ 1. Within the range of **last 5 months**,
- ▶ 2. Using data from **all days**,
- ▼ 3. That occurs in and on

## Months of year

✓ Jan	✓ Feb	✓ Mar	✓ Apr
✓ May	✓ Jun	✓ Jul	✓ Aug
✓ Sep	✓ Oct	✓ Nov	✓ Dec

☐ Current month of year ⓘ

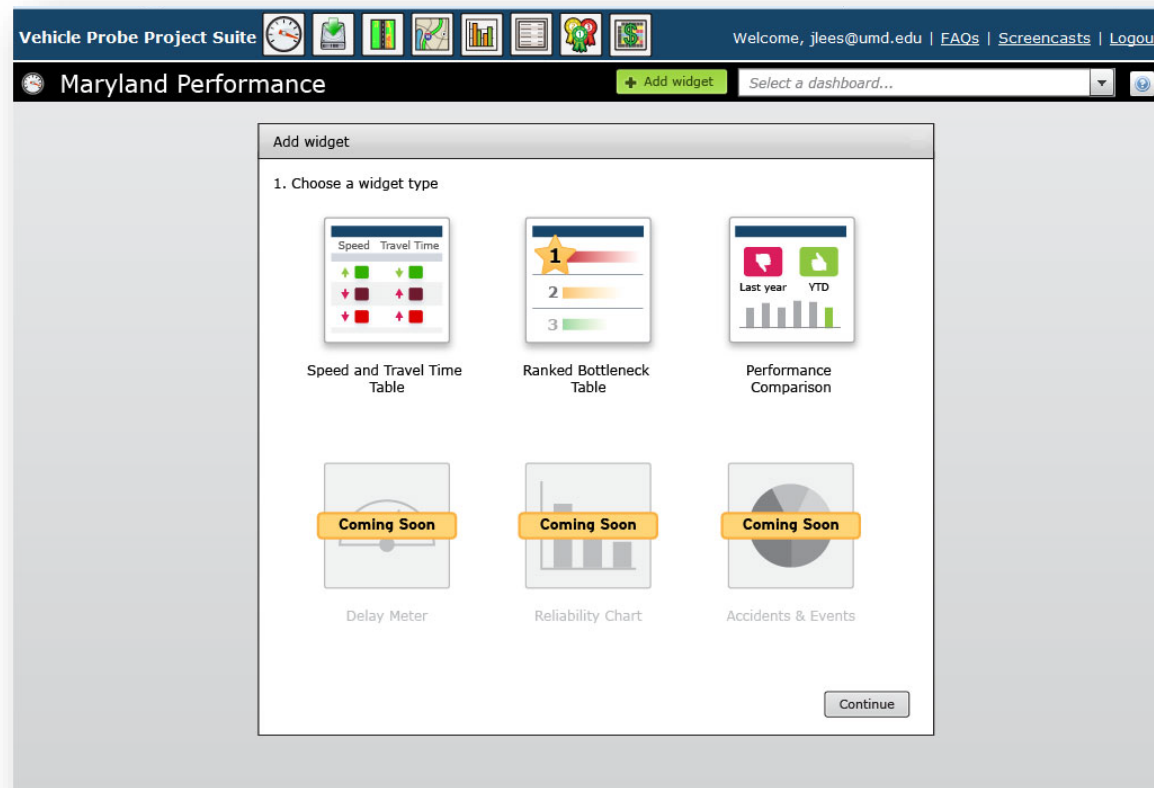
## Days of week

✓ Sun	✓ Mon	✓ Tue	✓ Wed	✓ Thu	✓ Fri	✓ Sat
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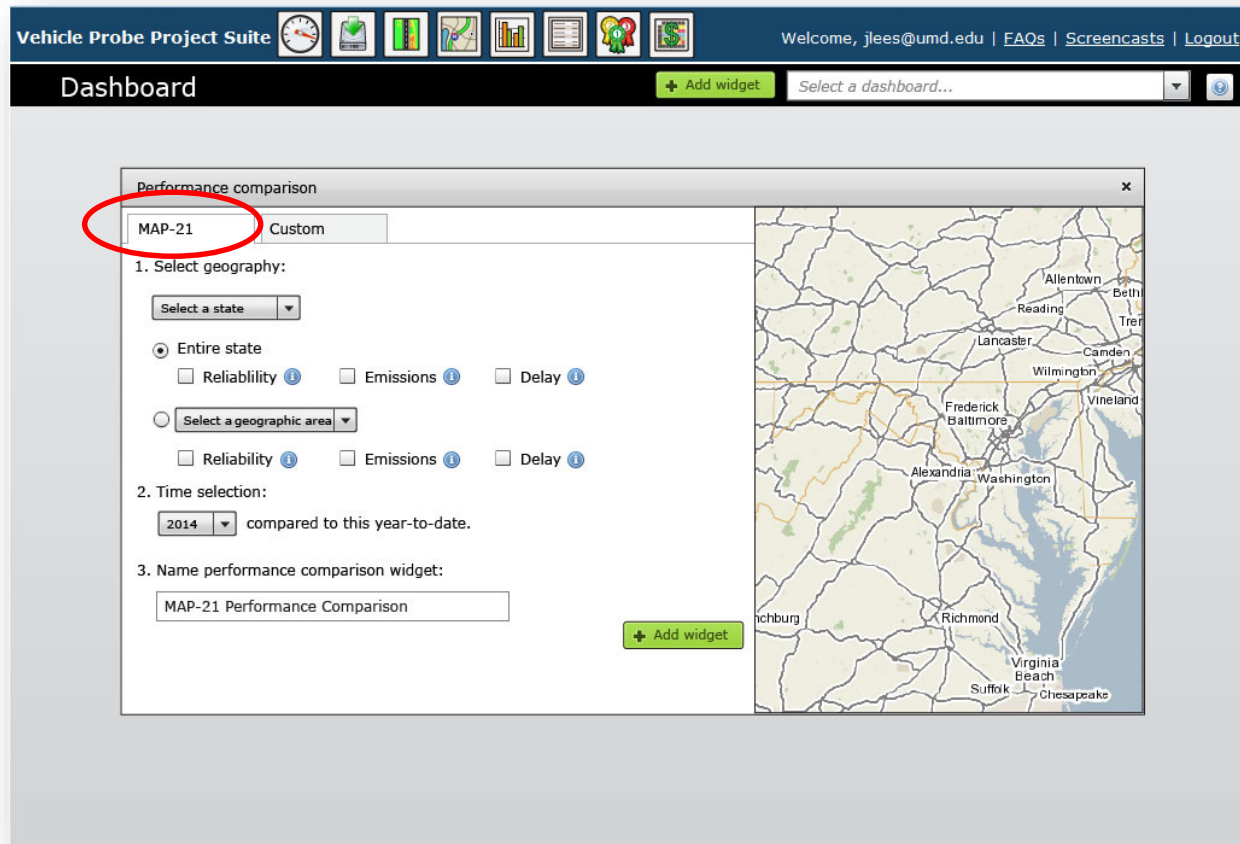
☐ Current day of week ⓘ

- Exclude certain days/months, etc.

# MAP-21 Dashboards (Coming Soon)



# The Dashboard Includes MAP-21 Performance Comparisons...



# ...and Custom Comparisons

Dashboard + Add widget Select a dashboard...

Performance comparison

MAP-21 **Custom**

1. Select geography:

Road Region List of TMC codes Saved TMC Set

i-495 Advanced

Your selected roads Remove all

I-270 Save as TMC set

2. Add metrics:

☒ Planning Time Index ☐ Reliability

☐ Travel Time Index ☐ Emissions

☐ Buffer Time Index ☐ Delay

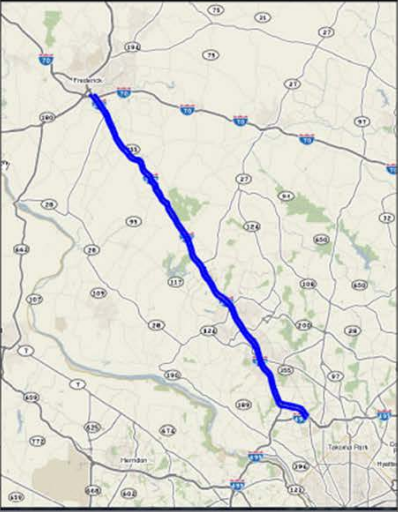
3. Time selection:

☐ 2014 compared to this year-to-date.

☐ Advanced Time Selection

4. Name performance comparison widget:

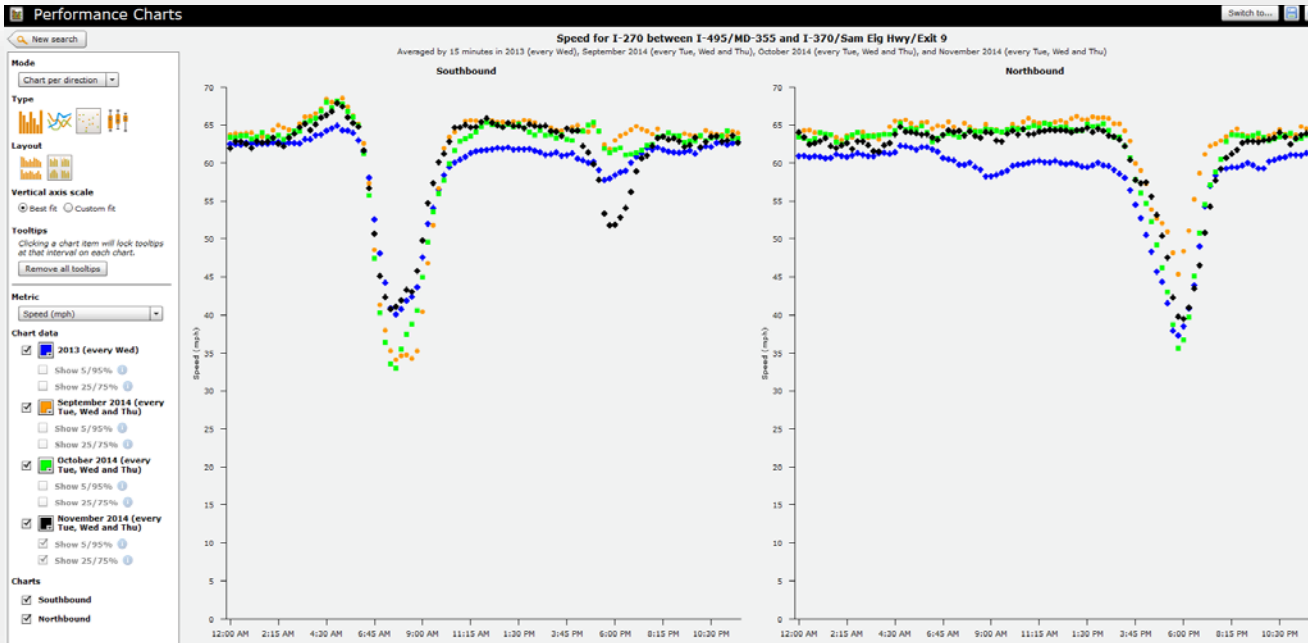
Custom Performance Comparison



# Reliability Widgets at a State & Geographic Area Level



# NPMRDS Integration



- Where appropriate, NPMRDS data has been integrated into all of the previously mentioned tools
- NPMRDS data produces meaningful results when looking at a month and/or an entire year's worth of aggregated performance measure data
- The Probe Data Analytics Tools show where gaps exist in the NPMRDS when viewing individual days and/or weeks worth of data

# Funding Status and Cutoff Dates

Reminder: Federal funding expired in Jan. 2015.

**On July 1, 2015, the VPP Suite will be disabled for agencies that have not worked out a funding plan with the CATT Lab for their 2015 contributions.**

States, MPOs, etc. who have already contributed (or worked out a plan) will continue to have unrestricted access.

States/MPOs/users are receiving follow-up calls to confirm participation.

# Funding Status and Cutoff Dates

Agencies	Status
Connecticut DOT	No response
Delaware DOT	No response
District DOT	Considering
Florida DOT	In-progress
Georgia DOT	In-progress
Maine Turnpike	Considering
Maryland SHA	In-progress
Massachusetts DOT	No response
New Hampshire DOT	Considering
New Jersey DOT	Gone Silent
New York State DOT	No Response
North Carolina DOT	In-progress
Pennsylvania DOT	Funding Received
Rhode Island DOT	In-progress
South Carolina DOT	Considering
Tennessee DOT	Not Contacted
Virginia DOT	Funding Received

# Updates by Agencies

***All Agencies  
Facilitated by George Schoener  
I-95 Corridor Coalition***

# Poll Question

- Is your agency using VPP data to generate travel time messages for work zones?

# Other VPPII Activities

## ***George Schoener*** ***I-95 Corridor Coalition***

- Website changes
- Upcoming meetings/events

# Website Changes

- New Coalition website up!
  - Additional files/links to be added to VPP Suite page
- Important links
  - Main page: <http://www.i95coalition.org/>
  - VPP: <http://www.i95coalition.org/projects/vehicle-probe-project/>
  - VPP Suite: <http://www.i95coalition.org/projects/vehicle-probe-project-suite/>

# VPP & Other Events/Activities

Coalition Activities/Presentations/Meetings	Date	Location
I-95 Corridor Coalition Significant Events Response Conference	May 12-13	Linthicum Heights, MD
5 <sup>th</sup> International Transportation Systems Performance Measurement Workshop (TRB)	May 31 – Jun 2	Denver, CO
ITS America Conference	May 31 – Jun 3	Pittsburgh, PA
<b>VPPII Agency Project Team Webcast</b>	<b>Sept. 24, 2015 10:30am-noon</b>	<b>Webcast</b>

# Wrap up & Thank you

***George Schoener***  
***I-95 Corridor Coalition***

## **NOTICE:**

Next VPPII Agency Project Team Webcast  
Thursday, Sept. 24, 2015  
10:30am - noon

# VPPII Contact Info

- **General project questions:**

George Schoener at 703-389-9281 or [geschoener@comcast.net](mailto:geschoener@comcast.net)

- **Road Coverage Info & Data Validation:**

Stan Young at 301-792-8180 or [seyoung@umd.edu](mailto:seyoung@umd.edu) or

Reuben Juster 301-314-0426 at [rmjcar@umd.edu](mailto:rmjcar@umd.edu)

- **Vehicle Probe Project Suite:**

UMD CATT Lab at [vpp-support@ritis.org](mailto:vpp-support@ritis.org)

- **Contracting Issues:**

Kathy Frankle at 410-414-2925 or [kfrankle@umd.edu](mailto:kfrankle@umd.edu)

# Thank You



**I-95 CORRIDOR  
COALITION**