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

*6

Thank you!
Welcome & Introductions

George Schoener
I-95 Corridor Coalition
Today’s VPP Webcasts

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

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

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

States in Blue Boxes – UMD currently working to modify contracts that expire on June 30, 2015.
# DUA V9 Status

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

Stan Young, Masoud Hamedi, 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
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

Jesse Buerk (DVRPC)

Planning

Traffic Operations

Traveler Information

Kelly Wells (NCDOT)

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 8th

(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 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

Get an overview-level understanding of the data

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

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

www.I95Coalition.org  I-95 Corridor Coalition Vehicle Probe Project

April 30, 2015
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

User delay calculations are performed hourly at the THC 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 (AADT) from Annual Average Daily Traffic (AADT) counts, daily factors must be applied.

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Adjustment Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Thursday</td>
<td>+1%</td>
</tr>
<tr>
<td>Friday</td>
<td>+10%</td>
</tr>
<tr>
<td>Saturday</td>
<td>-10%</td>
</tr>
<tr>
<td>Sunday</td>
<td>-20%</td>
</tr>
</tbody>
</table>

Some THC 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 THCs that fall under this case, the AADT of the overlapped detector locations must be weighted by the distance of the portion of the THC that falls into the range of each link location.

![Diagram of THC and overlapping detector locations.]

In order to be able to calculate many of the delay analysis measures, hourly profiles must be found for each THC 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 THC — the functional class (Freeway or Non-Freeway) is defined based on THC 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 weekday delay calculations rely solely on the two unique weekend profiles, regardless of congestion level or directionality (see Exhibit 4-5).

- Congestion level can be one of: Low, Moderate, or Severe. Congestion level is found for each THC 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 report. If looking at a whole year and you only want to see annual values, each THC 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 6 results), therefore five hourly profiles for each day of week.
  - Set the free-flow speed for each THC.
  - 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.

**Determine the directionality of the THC — Directionality defines which peak period (AM or PM) this THC 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 0, the directionality is considered even. The same day selection rules for average peak period speed apply here. Assign the hourly profile to the THC — See the hours volume distribution charts for percentages of the AOD for the day. For single days, the AOD for that day must be multiplied for each of the hourly factors in the profile.**
Tutorials
Multi-vendor Integration Status

• 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

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.

7. Select data source: Use the arrows, click and drag or double click to move available Data Sources to selected Data Sources.

Future Functionality

- Separate results for each Data Source.
- Fusion
  - When a segment has data from more than one source...
    - 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**
   - Select all
   - Superbowl Sunday 2015
   - Jan 2015 snow storms
   - Beginning of semester

3. That occurs in and on
4. During

Add new Custom date(s)

- Name custom date(s)...
- Recurring date
- Weekly
- Repeat every
- weeks on:

![Calendar with dates January 1 to February 28, 2015]
Date-filtering Options (in-progress)

- Exclude certain days/months, etc.

- Within the range of last 5 months,
- Using data from all days,
- That occurs in and on

**Months of year**

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

**Days of week**

- Sun
- Mon
- Tue
- Wed
- Thu
- Fri
- Sat

- Current month of year

- Current day of week
MAP-21 Dashboards (Coming Soon)
The Dashboard Includes MAP-21 Performance Comparisons…
...and Custom Comparisons
Reliability Widgets at a State & Geographic Area Level

Maryland
MAP-21 Reliability

Target: 2.4%
Year-to-Date 2015: 2.2%
Month-to-Date December: 2.3%

Geographic Area X
MAP-21 Delay

Target: 2.4%
Year-to-Date 2015: 2.2%
April: 2.5%

Updated Dec 5, 2014 9:55 AM (44s ago)
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.

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

<table>
<thead>
<tr>
<th>Agencies</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut DOT</td>
<td>No response</td>
</tr>
<tr>
<td>Delaware DOT</td>
<td>No response</td>
</tr>
<tr>
<td>District DOT</td>
<td>Considering</td>
</tr>
<tr>
<td>Florida DOT</td>
<td>In-progress</td>
</tr>
<tr>
<td>Georgia DOT</td>
<td>In-progress</td>
</tr>
<tr>
<td>Maine Turnpike</td>
<td>Considering</td>
</tr>
<tr>
<td>Maryland SHA</td>
<td>In-progress</td>
</tr>
<tr>
<td>Massachusetts DOT</td>
<td>No response</td>
</tr>
<tr>
<td>New Hampshire DOT</td>
<td>Considering</td>
</tr>
<tr>
<td>New Jersey DOT</td>
<td>Gone Silent</td>
</tr>
<tr>
<td>New York State DOT</td>
<td>No Response</td>
</tr>
<tr>
<td>North Carolina DOT</td>
<td>In-progress</td>
</tr>
<tr>
<td>Pennsylvania DOT</td>
<td>Funding Received</td>
</tr>
<tr>
<td>Rhode Island DOT</td>
<td>In-progress</td>
</tr>
<tr>
<td>South Carolina DOT</td>
<td>Considering</td>
</tr>
<tr>
<td>Tennessee DOT</td>
<td>Not Contacted</td>
</tr>
<tr>
<td>Virginia DOT</td>
<td>Funding Received</td>
</tr>
</tbody>
</table>
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 & Other Events/Activities

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

- **Road Coverage Info & Data Validation:**
  Stan Young at 301-792-8180 or seyoung@umd.edu or
  Reuben Juster 301-314-0426 at rmjcar@umd.edu

- **Vehicle Probe Project Suite:**
  UMD CATT Lab at vpp-support@ritis.org

- **Contracting Issues:**
  Kathy Frankle at 410-414-2925 or kfrankle@umd.edu
Thank You