VPP Suite User Group

Quarterly Web Meeting
November 17, 2016
Please confirm that your line is muted

*6

Thank you!
Agenda & Meeting Overview

Kelly Wells, NCDOT
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
</table>
| 10:30am – 10:35am | Agenda & Meeting Overview  
Introductions & Coalition Update | Kelly Wells, NCDOT  
Denise Markow, I-95 Corridor Coalition |
| 10:35am – 10:50am | Spotlight Presentation  
• BMC – Using Congestion Scan & Trend Map for Labor Day Travel  
Decision-making | Ed Stylc, BMC |
| 10:50am – 10:55am | Project Update: Volume & Turning Movements from Probe Data | Elham Sharifi, UMD CATT |
| 10:55am – 11:10am | VPP Suite Improvements  
• Review of Action Items from Previous Meeting  
• Survey Results – Update  
• Deploy Status Table – Q3  
• What’s New  
• What’s on the Horizon | John Allen, UMD CATT Lab |
| 11:10am – 11:40am | New Bottleneck Tracking & Ranking Algorithm  
• Live Demo | Drew Lund, UMD CATT Lab |
| 11:40am – 11:55am | Agency Input Session | All agencies |
| 11:55am – Noon | Next Steps and Coalition Updates | Patricia Hendren, I-95 Corridor Coalition |
Welcome Denise Markow, PE
TSMO Program Coordinator

• Former Administrator Bureau of Transportation Systems Management and Operations, NHDOT

• Many years of I-95 Corridor Coalition volunteer experience

• ITS-New England Board Member

• BS/MS Civil Engineering University of New Hampshire

• BS International Relations and French, University of Wisconsin-Madison

dmarkow@i95coalition.org
301.789.9088
## Today’s Attendees

<table>
<thead>
<tr>
<th>Agency</th>
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<tbody>
<tr>
<td>Baltimore Metropolitan Council</td>
<td>Ed Stylic, Eileen Singleton</td>
<td>North Carolina DOT</td>
<td>Kelly Wells, Jenifer Gonsalves, Chris Ricks</td>
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<td>DVRPC</td>
<td>Jesse Buerk, Zoe Neaderland</td>
<td>Virginia DOT</td>
<td>Scott Cowherd</td>
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<td>FHWA</td>
<td>Katherine Masetti, Tom Knofczynski (Sabra Wang &amp; Associates)</td>
<td>SJTPO</td>
<td>Andrew Tracy, Bill Schiavi, David Heller</td>
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<td>MWCOG</td>
<td>Andrew Meese, Daivamani Sivasailam</td>
<td>UMD – CATT &amp; CATT Lab</td>
<td>John Allen, Drew Lund, Eshragh Sepideh, Elham Sharifi</td>
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<td>New Jersey DOT</td>
<td>Neha Galgali, Sudhir Joshi, Ira Levinton</td>
<td>I-95 Corridor Coalition</td>
<td>Trish Hendren, Denise Markow</td>
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<tr>
<td>NJTPA</td>
<td>Keith Miller</td>
<td>KMJ Consulting (Coalition Support)</td>
<td>Karen Jehanian, Joanna Reagle</td>
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TSMO Discussion

Denise Markow, I-95 Corridor Coalition

- TSMO in the Coalition
What is TSMO?

• Transportation System Management & Operations (TSMO) is an integrated approach to optimize the performance of existing infrastructure by implementing multimodal, intermodal, and often cross jurisdictional systems & services.

• TSMO is not routine road maintenance like resurfacing or guardrail replacement.

• TSMO strategies improve system efficiency, enhance public safety and security, reduce traffic delays of road users, and improve access to traveler information.
Why TSMO for the Coalition?

- Bringing together Coordinated Incident Management and Travel Information Services for cross cutting exchanges
- Capitalizing on synergies and joint interests
- Providing relevant, robust and rich information to our members
- Reinforce that the I-95 Coalition represents multiple organizations and perspectives
- Support Agency TSMO activities
Using the Suite for Planning Holiday Travel

Ed Stylc, Planner Analyst
Want to know what Labor Day weekend traffic might be like?

BMC provides data to help you plan your holiday travel

Presentation to the Vehicle Probe Project Users Group – November 17, 2016
Labor Day Travel

- The Labor Day holiday weekend provides Marylanders one last chance to get out and have some end-of-the-summer fun, especially those looking to head to the Eastern Shore.

- In 2015, more than 354,000 vehicles crossed over the Chesapeake Bay Bridge during the Labor Day weekend.
Located in the heart of the Mid-Atlantic on the east coast, the Baltimore region includes:

- Anne Arundel County, Maryland
- Baltimore City, Maryland
- Baltimore County, Maryland
- Carroll County, Maryland
- Harford County, Maryland
- Howard County, Maryland
Chesapeake Bay Bridge

Baltimore Metropolitan Council

November 17, 2016
Developing Travel Time Recommendations

- Maryland Transportation Authority (MdTA) which manages the state toll facilities provided recommendations for best travel times

- Wanted a “flashy” graphical support of the findings that the public would find appealing and would be easy to comprehend

- NPMRDS dataset selected including trucks and passenger vehicles; speed used as measure for simplicity

- A 3-year analysis utilizing the multi-road congestion scan in the VPP Suite supported the recommended times for Labor Day weekend travel
VPP Suite Apps / Visuals Used

Trend Map

Congestion Scan
Animations of Labor Day Weekend

- All 5 days (Thursday through Monday) shown side by side on the BMC website.
- Directions to online users mentioned that they could examine the entire Baltimore Region not just the Bay Bridge area.

BMC Public relations staff reached out to the following agencies for comments:

- Maryland Transportation Authority (MdTA)
- State Highway Administration
- AAA Mid Atlantic
Travel Suggestions for Labor Day 2016

The Maryland Transportation Authority (MdTA) offers travel tips for the Labor Day holiday weekend:

Travel off-peak when heading to and from the Eastern Shore. The best times to travel the Bay Bridge this weekend include:

- Thursday - before 10 a.m. and after 10 p.m.
- Friday - before 10 a.m. and after 10 p.m.
- Saturday - before 7 a.m. and after 5 p.m.
- Sunday - before 10 a.m. and after 10 p.m.
- Labor Day - before 10 a.m. and after 10 p.m.
Labor Day Weekend 2016

- Did the same travel patterns hold true?
Tropical Storm Hermine

- Traffic for the entire weekend would be impacted
- Beaches closed on Saturday 8:30pm “until further notice”
- MD Governor urges those who had not already departed to stay home until the storm has passed
- 255 miles east to southeast of Ocean City, Maryland (Sunday 5:00am)
Conclusions/Lessons Learned

• Know your audience (performance measures)
• Eye popping VPP graphics will get you noticed!
• BMC received mentions from local media outlets (Technically Baltimore, AAA Mid Atlantic, Baltimore Sun)
• Plans to do similar press releases on future holiday travel weekends
• NPMRDS and INRIX scans congestion scans were similar
• Travelers heeded storm warnings
• Don’t mess with Mother Nature!
COG Quarterly Publication

- Highlighting BMC’s Regional Coordination
- Sent to state elected officials in Annapolis
- Holiday Travel Article pages 16-23
- I-95 Corridor Coalition, CATT Lab, VPP Project highly cited throughout
- Interview with Michael Pack. Selected quote:

  “A better informed public means better decision-making,” Pack said. “If you get people to make better travel decisions, then you’re minimizing the kind of congestion that is out there and you’re minimizing the number of incidents. It may seem hard to believe but good traveler information can save lives.”

For More Information

Ed Stylc
(410) 732-0500 x1031
estylc@baltometro.org
www.baltometro.org
Project Update:
Volume & Turning Movements from Probe Data

- Steering Committee (SC) Meetings:
  - Meeting held on October 13, 2016. Shawn Turner (TTI) provided a spotlight presentation on Using Mobile Devices Samples to Estimate Traffic Volumes in Minnesota.
  - Next Steering Committee Meeting: January 26, 2017

- Volume & Turning Movement Application Survey
  - Forwarded to SC (9/26). The deadline for completion is October 28th. The results are currently being summarized.

- Vendors
  - Working to have VPP vendors (HERE, INRIX & TomTom) under contract by end of 2016. All three are planning to participate but in different ways.

- Testbed
  - The testbed should be functional by end of 2016 and refined in 2017.
  - Currently moving forward with a sample analysis / testbed from Maryland. Initial analyses presented at SC Meeting #2.

- Project documents
VPP Suite Improvements

John Allen, University of Maryland CATT Lab

- Review of Action Items from the Previous Meeting
- Survey Results – Update
- Deploy Status Table – Q3
- What’s New
- What’s on the Horizon
Review of action items from the previous meeting

> Will MPO geographies be made available for MAP-21 dashboard and widgets?
  - Yes, it’s in the development pipeline (pending final rule)

> Some members requested the Suite Improvements Prioritization Survey be reopened
  - The survey was reopened from August 4th to 12th
## VPP Suite Improvements Survey Results

<table>
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<tr>
<th>Feature</th>
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<tr>
<td>Origin-Destination Data Analytics</td>
<td>21</td>
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<tr>
<td>Fine-grain Zooming on Maps</td>
<td>20</td>
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<tr>
<td>Sub-segment Data Storage/Retrieval</td>
<td>18</td>
</tr>
<tr>
<td>&quot;My Reports&quot; List</td>
<td>17</td>
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<tr>
<td>Data Quality Filtering</td>
<td>14</td>
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<tr>
<td>Treeversity Features Integration</td>
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<td>Email Report Notification</td>
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<tr>
<td>Cumulative Frequency Diagram Plots</td>
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<td>Data Quality/Availability Visualizations</td>
<td>13</td>
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<tr>
<td>Traffic Volume Data Integration from Real-time Detectors</td>
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<td>New Dashboard Widgets</td>
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### Status Update

- Internal tracking table developed
- Looking at ranked improvements plus other suggestions
- Updating our Master Timeline now
- Will provide users with some form of an improvement deploy schedule

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I-95 Corridor Coalition › VPP Suite User Group
November 17, 2016
Q3 Deploy Status Table

- Posted on 10/18/2016 under the **New Features** tab on the I-95 CC VPP Suite page

- **12** improvements made during Q3, **28** so far this year

- Two small format changes:
  - Added numbers in the feature bar that denotes multiple improvements
  - Added a notation to indicate significant, high-value improvement deployments

- Comments / suggestions always welcome!
What’s new since the last meeting

› **Hadoop computing platform**
  – Faster results
  – Longer time periods
  – Larger TMC sets

› **New bottleneck tracking & ranking algorithm**
  – More accurate picture of congestion
  – Better represent different events
  – New graphs, maps, tables

› **Map-21**
  – “Quick Widgets” (**MAP-21** tab auto-defines measures by geography; **Advanced** gives you full latitude to choose)
  – New measures (Avg. Truck Speed / Truck travel Time Reliability)

› **Congestion Scan**
  – Added a Partial Road Selection option under **Advanced** in the **Select a road** section
  – Take a screenshot at different screen resolutions
What’s on the horizon

- Front-end modernization (Phase 1)
  - Rework front end to newer web standards (Flash to JavaScript)
  - Revamping color schemes, icons, layouts, etc. (for both query forms and results pages)
  - Create a new feature, “My History” (next slide)
What’s on the horizon (cont’d.)

My History
- Manage all your downloads and reports with this new interactive table
What’s on the horizon (cont’d.)

> Map selection
  - Create and customize TMC sets using a map function under “Select roads”

![Map selection screenshot from VPP Suite User Group presentation on November 17, 2016]
Results pages

- New fonts, layout and ability to go dark or light
What’s on the horizon (cont’d.)

Advanced time selection
- Full control of analysis times (include/exclude holidays, certain dates, certain times, etc.)

1. Select a date range
2. Include/exclude special dates
3. Customize days of week/months
4. Choose the hours
5. Save as a custom time period
For more information, please contact:

John Allen
Center for Advanced Transportation Technology Laboratory
jallen35@umd.edu  |  215.666.3057 (c)
New Bottleneck Tracking & Ranking Algorithm
Drew Lund, Database Administrator
New Bottleneck Tracking & Ranking Algorithm

November 17, 2016
Recap – why the change?

> The prior algorithm, though innovative at the time, had a number of challenges related to:
  
  - Duplicate counting
  - Representing bottleneck “dynamics” (growing, shrinking, merging)
  - Processing (expensive/resource hog)

> You helped us vet our new algorithm
  
  - through a Focus Group
  - from feedback and questions over time
What’s changed?

> **It’s more accurate**
  - better identification of the actual bottleneck location (head)
  - improved accounting of bottleneck dynamics (grow, shrink, merge)
  - enhanced bottleneck ranking calculations (impact results)

> **New features**
  - more descriptive terminology / definitions
  - multiple display options
  - advanced graphics, maps and tables

> **Performance has greatly improved:**
  - Get results *much* faster
  - Date range no longer limited to a 3-month maximum
Terminology / definitions to remember

› **Occurrence**
  - congestion, whose head is at a given point on the road *at a single point in time*

› **Element**
  - congestion, whose head is at a given point on the road *that can change in length over time*

› **Impact**
  - The aggregation of queue length over time for congestion originating at each location, in mile-minutes
A basic bottleneck story (growing & shrinking)

Congestion occurs because of morning rush merging at Location A.
A basic bottleneck story (growing & shrinking)

Additional traffic caused by the morning rush builds up. Congestion starts backing up at this point.
A basic bottleneck story (growing & shrinking)

Congestion continues to grow...

Element space-time diagram
A basic bottleneck story (growing & shrinking)

The morning rush is subsiding, lessening congestion.
A basic bottleneck story (growing & shrinking)

Rush hour ends and traffic begins to normalize.
A basic bottleneck story (growing & shrinking)

Normal traffic flow.

Element space-time diagram
A basic bottleneck story (growing & shrinking)

This is the resulting bottleneck impact.
A basic bottleneck story (merging)

A work zone at Location A causes congestion due to a lane closure.
A basic bottleneck story (merging)

The work zone at Location A continues to cause congestion. As rush hour begins, Location B also begins to experience congestion due to constrained merging conditions.
A basic bottleneck story (merging)

Congestion from Location A continues to build upstream, merging with congestion from Location B.
A basic bottleneck story (growing & shrinking)

The work zone at Location A is removed and traffic begins to dissipate, moving back to Location C. Meanwhile, congestion at Location B persists.
A basic bottleneck story (growing & shrinking)

Rush hour comes to an end and traffic returns to normal at Location B. There is still some residual congestion.
A basic bottleneck story (merging)

Traffic has returned to free-flow conditions.

Element space-time diagram
A basic bottleneck story (merging)

This is the resulting bottleneck impact.
Thanks!

Drew Lund, Database Administrator
Center for Advanced Transportation Technology Laboratory
Alund1@umd.edu | 301-405-2874
Agency Input Session

“What’s on your mind?”
Coalition VPP-related Meeting Consolidation Efforts

Patricia Hendren,
Executive Director, I-95 Corridor Coalition
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Participants</th>
<th>Old Timing</th>
<th>Moving Forward</th>
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<tbody>
<tr>
<td>VPP Data Validation and Reports</td>
<td>Design, coordinate and conduct probe data validations for states. Disseminate validation results. Note: data validation required under VPP contract.</td>
<td>UMD CATT, KMJ and VPP vendors</td>
<td>Monthly Webinar</td>
<td>Monthly webinar communication replaced by distribution of validation reports to individual states and members.</td>
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<tr>
<td>VPP Management Team Meeting</td>
<td>Internal review of issues related to VPP project and VPP Suite and preparation for Agency Project Team meetings</td>
<td>Coalition, UMD, UMD CATT Lab, KMJ and Stan Young</td>
<td>Every 6-8 weeks</td>
<td>Replaced with Quarterly I-95 Coalition Wide project management meeting</td>
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<tr>
<td>VPP Agency Project Team Web Meetings</td>
<td>Discuss VPP with members including contract issues, validation, brief Suite update &amp; spotlight on how members are using the VPP.</td>
<td>Mgmt. Team, DOTs, MPOs &amp; DOT consultants</td>
<td>Quarterly</td>
<td>Combined with VPP User Group</td>
</tr>
<tr>
<td>VPP Suite User Group</td>
<td>Discuss VPP Suite features and functions; request feedback &amp; spotlight use cases by User Group members.</td>
<td>Coalition, UMD CATT Lab, KMJ, DOTs, MPOs, other agencies &amp; DOT consultants</td>
<td>Quarterly</td>
<td>No Change</td>
</tr>
<tr>
<td>VPP Suite Focus Groups</td>
<td>Delve into various aspects of the VPP Suite tools – interface, analysis, results, reporting - to improve Suite experience.</td>
<td>UMD CATT Lab, varying agency participants, KMJ</td>
<td>As needed</td>
<td>As needed</td>
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</tbody>
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*No change for the VPP Suite User Group*
Next Meeting

- Look for information about the next meeting in the upcoming VPP Newsletter
Thank You!

For Questions, please contact:

**VPP/VPP Suite** – Denise Markow 301.789.9088 or dmarkow@i95coalition.org

**VPP Suite Technical Support** – vpp-support@ritis.org

**Logistics** – Joanna Reagle 610.228.0760 or jreagle@kmjinc.com