Integrating the I-95 Vehicle Probe Project Data and Analysis Tools into the FAMPO Planning Program
I-95 Corridor Coalition Background

• The I-95 Corridor Coalition is an alliance of transportation agencies, toll authorities, and related organizations, including public safety, from the State of Maine to the State of Florida.

• The Coalition provides a forum for key decision and policy makers to address transportation management and operations issues of common interest.

• Began in the early 1990’s as a small informal group of transportation officials working together to more effectively manage incidents across jurisdictional boundaries and was formally established in 1993.

• The Coalition's perspective evolved from a concentration on highways to one that encompasses all modes of travel and focuses on the efficient transfer of people and goods between modes.

• Today, the Coalition emphasizes information management as the foundation of seamless operations across jurisdictions and modes.
I-95 Corridor Coalition Public Sector Members in Virginia

- Virginia Department of Transportation
- National Capital Region Transportation Planning Board
- Potomac & Rappahannock Transportation Commission
- Fredericksburg Area MPO
- Richmond Regional MPO
- Hampton Roads TPO
Vehicle Probe Project (VPP) Background

• Provides comprehensive, continuous real-time travel information to member agencies as well as a suite of analysis tools to gauge system performance

• Data provided by Inrix®

• Project began in 2008 with core freeway coverage in six states (NJ to NC) totaling 1,500 centerline freeway miles and 1,000 miles of arterials.

• Coverage expanded to 14 states, 7,800 freeway and 39,995 miles of arterials in 2012
How is Inrix® Data Collected?

- Commercial fleet GPS systems
- Roadway sensors and cameras
- Automobile GPS systems
- Smartphone applications
VPP Data Analysis Tools

- Vehicle Probe Project Dashboard
- Congestion Scan
- Historic Probe Data Explorer
- Bottleneck Ranking
- User Delay Cost Analysis
VPP Dashboard

Real-time traffic and incident data
Congestion Scan

Detailed exploration of congestion on a single stretch of roadway over time
Historic Probe Data Explorer

- A collection of visualizations that provide insight into traffic conditions and patterns over a selected period of time.

- Allows for the exploration of probe data averaged over large date ranges and can be used to gauge the performance user defined roadway segments.

- Visualization techniques include:
  1. Charts
  2. Contour Plots
  3. Trend Maps
  4. Performance Summaries
Historic Probe Data Explorer

Speed and Travel Time Charts:

- Average Speed (mph) over Hour of day for VA-3 between Harrison Rd and I-95
  - Averaged for every weekday
  - Westbound
  - Eastbound

Legend:
- Mar 2013 (every weekday)
- Jul 2013 (every weekday)

Average Speed: Average recorded speed.
Historic Probe Data Explorer

Trend Maps –
Average speed on Route 3 at 5pm in the months of March and July
Historic Probe Data Explorer

Contour Plots
## Historic Probe Data Explorer

### Performance Summaries

#### Performance summaries for VA-2 between Harrison Rd and I-95
Mar 2013 Westbound

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<th>Buffer Time (minutes)</th>
<th>Travel Time Index</th>
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- **Average Speed**: Average recorded speed.
- **Buffer Time**: The extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival (95% Travel Time - Average Travel Time).
- **Buffer Index**: The buffer index is expressed as a percentage and its value increases as reliability gets worse (95% Travel Time / Average Travel Time).
- **Planning Time**: How much total time a traveler should allow to ensure on-time arrival (Average Travel Time + Buffer Time).
- **Planning Time Index**: The total travel time that should be planned when an adequate buffer time is included (95% Travel Time / Free-flow Travel Time).

The planning time index differs from the buffer index in that it includes typical delay as well as unexpected delays. Thus, the planning time index compares near-worst case travel time to a travel time in light or free-flow traffic.

For example, a planning time index of 1.50 means that, for a 15-minute trip in light traffic, the total time that should be planned for the trip is 24 minutes (15 minutes × 1.50 = 24 minutes).

- **Travel Time**: Total time taken to travel along the stretch of road (Distance Traveled / Speed).
- **Travel Time Index**: Travel time represented as a percentage of the ideal travel time (Travel Time / Free-flow Travel Time).
Bottleneck Ranking

Detailed exploration of bottlenecks on roadway network over a defined time period.
Bottleneck Ranking

How are bottlenecks defined?

• Current reported speeds are compared to the reference speed (85\textsuperscript{th} percentile of observed speed for all time periods).

• If the reported speed falls below 60% of the reference, the road segment is flagged as a potential bottleneck.
User Delay Cost

Measures cost to roadway users as a result of incidents/congestion
Integration with FAMPO Initiatives

Congestion Management Process

• Compile a web-based monthly “Top 10 Bottleneck List” with accompanying data and mapping to monitor system performance
• Use to identify areas in need of improvements
• Create yearly congestion reports
• Compare before and after conditions of completed roadway projects in order to gauge improvements system performance

Long-Range Planning/Modeling

• Incorporate analysis tools and bottleneck lists into project prioritization methodology (also can be used for CMAQ/RSTP project prioritization)
• Use data to validate and assist in calibrating the FAMPO Travel Demand Model

Performance Based Planning (MAP-21 Requirement)

• Incorporate VPP analysis data and tools into the Federal performance based planning program (once guidance is delivered from U.S. DOT)