I-95 CC – Volume & Turning Movement Project
Steering Committee Meeting #2
October 13, 2016

Agenda:

#	Topic	Speaker
1	Introductions and Welcome	Denise Markow, I-95 Corridor Coalition
2	Project Overview/Objectives • Overview • Background • Objectives	Stan Young, National Renewable Energy Laboratory (NREL)
3	Spotlight presentation – Using Mobile Devices Samples to Estimate Traffic Volumes in MN	Shawn Turner, Texas A&M Transportation Institute (TTI)
4	Project deliverables & timeline – UPDATES	Stan Young
5	Feedback from Steering Committee	Stan Young
6	Next meeting/webinar	Stan Young

Meeting Notes:

- The goal of the Volume and Turning Movements project is to accelerate the timeframe to achieve viable volume and turning movement data through probe data. The hypothesis is that information in existing probe data can be used to infer volume thresholds.
- There is a need for continual (24x7x365) volume (or conversely density if the data can better (or also) support this variable) estimates across the roadway network. As the current state-of-the-practice is the Highway Performance Monitoring System (HPMS) data which provides volume data, but it is limited and aggregated into hourly volumes with a 2-3 year lag in reporting. Turning movement count data is rare as it is only collected for special studies.
- The objectives of this project are to develop a framework for the delivery of probe-based volume and turning movement data, understand and document data requirement needs for DOT applications, create calibration and validation protocols, provide data products and anticipate future needs.
- Shawn Turner (TTI) provided a spotlight presentation on Using Mobile Devices Samples to Estimate Traffic Volumes in Minnesota.
  o This project was undertaken by Minnesota to determine if widely used mobile devices can accurately estimate traffic counts.

- o The approach to TTI's participation in this project as either an independent evaluator or as a development partner was investigated. It was determined that TTI would be an independent evaluator of products provided by other companies.
  - o Several companies expressed interest in the project. HERE and Streetlight will likely be part of the evaluation.
  - o As part of the evaluation structure, MnDOT counts will serve as the benchmark and count estimates from providers will be compared to them. The evaluation procedures are being agreed to by all in advance to provide fair conditions for all.
  - o MnDOT is interested in AADT volumes however the granularity of the data will be evaluated. The daily and hourly volumes for Monthly volume for average day of week (MADW) will be part of the comparisons for various site types (location category x level of traffic).
  - o Other evaluation factors include roadway coverage, level of integration effort (how easy is it to get into the state system), request turnaround time (how long does it take to develop).
  - o To prevent "reverse engineering" (such as applying a growth factor to historical counts), MnDOT data that is not available on public sites is being used in the evaluation.
  - o The next steps in this effort include finalizing the agreements with the participating providers and identifying specific comparison locations with MnDOT.
  - o Shawn provided his opinion on using probe data for volume and turning movement count estimates. He noted that he believes it will happen but is not sure of the timeframe.
  - o Tianjia Tang (FHWA) asked if TTI will be evaluating the estimating procedures or only the data (count estimates). They will only be evaluating the data however the providers have shared some of the processes under non-disclosure agreements.
  - o Daivamani Sivasailam (MWCOG) asked if there will be vehicle class included in the project. It will not be included as part of this particular project.
  - o Sutapa Bhattacharjee (NJTPA) asked which roadways will be included in this project. As part of this project, interstates, state highways, some major and minor collectors but not all local roads will be included.
- **Stan Young reminded the Steering Committee members to take the Volume and Turning Movement Application Survey (http://tinyurl.com/zozbnvm) as it is a primary method to getting agency input.** Committee members should share the survey link with others in their agency (such as planning, operations, traffic, construction, and research) whose input is meaningful and critical to this effort. This link may also be shared with cities and MPOs for their input and perspective as well. **All surveys need to be completed no later than COB October 28, 2016.**
- Stan noted that the VPP vendors (HERE, INRIX and TomTom) are currently in the contract phase and he hopes to have that phase done by the end of 2016. All three are planning to participate but in different ways.
- Stan reviewed the testbed status noting it should be functional by end of 2016, and refined in 2017. During the last quarter, several steering committee members volunteered and the project team is currently moving forward with a sample analysis / testbed from Maryland.
- Stan Young discussed the initial analyses of the Maryland data.

- o This early Maryland testbed was made possible through a Maryland SHA procurement of an INRIX Trip Data Set. The data set spans four months in 2015 for the months of February, June, July and October and include three vehicle types (three vehicle types (C1<14,000 lbs., C2>14,000 lbs. and <26,00 lbs. and C3>26,000 lb.). The project team anticipates analyzing this data against Maryland permanent count stations to learn the challenges, process, and determine if the initial estimates are within reasonable expectations.
  - o Preliminary analysis of this data was conducted by UMD CATT Lab and initial results were presented. The data includes 20 million trips that had some part of trip (a waypoint) in Maryland but did not necessarily begin or end in that state. This data was compared to ATR (automatic traffic recorder) count data (with 14 vehicle classifications) from 37 permanent sensors across Maryland.
  - o The process includes comparing INRIX data with the MD ATR data at hourly and daily levels and computing the corresponding penetration rates. Sample comparisons were presented for October 30, 2015, illustrating a median hourly penetration rate of 2.42% and daily penetration rate of 2.28%. Similar comparisons have been conducted for all 4 months of INRIX data with the resulting median hourly penetration rate: 1.66% and the median daily penetration rate: 1.67%.
  - o The next steps are to extend the analysis to other sensors in Maryland, break down the analysis for different vehicle classes and apply machine learning for predictive analytics.
  - o Steve Brown (PANYNJ) asked how vehicle class is attributed to probe data. Stan noted that he believes it is an approximation but will follow up on this question at the next meeting.
  - o Steve Brown (PANYNJ) asked if HERE and TomTom data would have vehicle classifications. It is not yet known what will be available from other providers.
  - o Denise Markow (I-95CC) asked about privacy concerns. Stan noted that they receive the data as a feed so they are not concerned at this time but with more granular data it could be a concern.
  - o Daivamani Sivasailam (MWCOG) asked how the team plans to develop AADTs from a 2.4% sampling. Stan noted that it is a function of the number of samples not the percentage and that 2.4% is the average. There is a large variation from hour to hour, day to day, and likely even site to site.
  - o Trish Hendren (I-95CC) asked about the next steps for turning movements. Stan noted that the turning movements are simply volumes on specific legs of an intersection and the trip data gives the whole trip. They are not currently aware of a level of count data that exists for comparison and still need to develop a validation method for turning movements.

- Denise closed the meeting, thanking all of the participants and noting that the value of probe data is great but that the addition of volume data will be of tremendous value.

Action Items:

- **Steering Committee** – **Please complete the Volume and Turning Movement Application Survey (http://tinyurl.com/zozbnvm) no later than COB October 28, 2016.** Committee members should share the survey link with others in their agency (such as planning, operations, traffic, construction, and research) as well as cities and MPOs for their input and perspective.
- **Stan** – Follow up at the next meeting regarding how vehicle class is attributed to probe data.

Next Steering Committee Meeting:

Date: **Thursday, January 26, 2017 - 1:30p.m. - 3:00p.m. (EST)**
Topics: **Survey Results and Analysis of Maryland Data**

Participants:

Project Team:
Trish Hendren, I-95 Corridor Coalition
Denise Markow, I-95 Corridor Coalition
Patty Reich, I-95 Corridor Coalition
Stan Young, NREL
Kaveh Sadabadi, UMD CATT

Steering Committee:	
Erik Sabina	Colorado DOT
Jesse Buerk, Zoe Neaderland	DVRPC
Tianjia Tang, Ed Strocko, Jimmy Chu	FHWA
John Hibbard	Georgia DOT
Glenn McLaughlin, Nicole Katsikies	Maryland SHA
Ginna Reeder	Massachusetts DOT
Daivamani Sivasailam, Marco Trigueros	MWCOG
Sutapa Bhattacharjee	NJTPA
Scott Benedict	Pennsylvania DOT
Steve Brown, Jennifer Bates	Port Authority of NY & NJ
Michael Dennis	South Carolina DOT
Mike Fontaine	Virginia DOT
Shawn Turner	Texas A&M Transportation Institute
Joe Guthridge, Terri Johnson	HERE

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